

ABSTRACT

Lappeenranta-Lahti University of Technology LUT
School of Business and Management
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Inka Kolu

Implementation of environmental sustainability practices to supply processes

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108 pages, 5 figures, 2 tables and 4 appendices

Examiners: Professor Katrina Lintukangas and Professor Anni-Kaisa Kähkönen

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The significance of sustainability in business is constantly increasing and companies' accountability of sustainability extends more further to their supply chains. Procurement is expected to have more and more actions with which it aims to ensure and improve environmental operations of its suppliers and with which it helps a company to reach its sustainability goals. Practices of sustainable supply management are however fragmented and many companies are struggling on how to implement sustainability practices in practice. The objective of this study is to examine how environmental sustainability practices can be implemented to different supply processes by researching relevant sustainability practices and mechanisms to implement those. Tendering and contract management, category management and supplier management are determined to be relevant supply processes for this study.

This study was conducted as a qualitative case study and data was collected by interviewing ten professionals working with sustainable procurement, procurement and environment. Research findings implicate that in tendering and contract management sustainability can be implemented by including supplier code of conduct to all relevant documents and by utilizing environmental sustainability criteria in requests for quotation with a help of evaluation group to identify relevant environmental aspects and legal restrictions of public procurement. In category management sustainability can be implemented most effectively by conducting a sustainability analysis of environmental risks and opportunities as a part of a category strategy formulation. In supplier management best practices regarding sustainability are regular meetings, communication and information sharing which can be further promoted by for example different supplier sustainability assessments, collaboration projects, trainings and by involving supplier's top management.

TIIVISTELMÄ

Lappeenrannan-Lahden teknillinen yliopisto LUT
Kauppamatkustuksen tiedekunta
Hankintojen johtaminen

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Ympäristövastuukäytänteiden toteuttaminen hankintaprosesseissa

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Vastuullisuuden merkitys liiketoiminnassa korostuu jatkuvasti yhä enemmän ja yritysten vastuu vastuullisuudesta ulottuu yhä pidemmällä sen toimitusketjuihin. Hankinnalta vaaditaan yhä enemmän toimia, joilla se pyrkii sekä varmistamaan että kehittämään toimittajiensa ympäristötoimia ja joiden avulla se tukee yritystä vastuullisuustavoitteiden saavuttamisessa. Vastuullisen hankintajohtamisen käytänteet ovat kuitenkin hajautuneita ja moni yritys kamppailee sen kanssa, kuinka vastuullisuuskäytänteitä tulisi käytännössä toteuttaa. Tämän tutkimuksen tarkoituksena on selvittää miten ympäristövastuukäytänteitä voidaan toteuttaa eri hankintaprosesseissa tutkimalla sekä oleellisia vastuullisuuskäytänteitä että mekanismeja niiden implementoimiseksi. Kilpailuttaminen ja sopimushallinta, kategoriahallinta sekä toimittajahallinta on määritelty oleellisiksi hankintaprosesseiksi tätä tutkimusta varten.

Tutkimus toteutettiin laadullisena tapaustutkimuksena ja aineisto kerättiin haastattelemalla kymmentä vastuullisen hankinnan, hankinnan sekä ympäristön parissa työskentelevää ammattilaista. Tutkimuksen tulokset osoittavat, että kilpailuttamisessa ja sopimushallinnassa vastuullisuutta voidaan implementoida sisällyttämällä toimittajien eettiset ehdot kaikkiin oleellisiin asiakirjoihin sekä hyödyntämällä ympäristövastuullisia kriteerejä tarjouspyynnöissä käyttämällä apuna arviointiryhmää oleellisten ympäristönäkökohtien ja julkisen hankinnan lain tuomien rajoitteiden tunnistamisessa. Kategoriahallinnassa vastuullisuutta implementoidaan tehokkaimmin suorittamalla vastuullisuusanalyysi ympäristöriskeistä ja -mahdollisuuksista osana kategoriastategian muodostamista. Toimittajahallinnassa parhaita käytänteitä vastuullisuuden suhteen ovat säännölliset tapaamiset, kommunikaatio ja tiedon jakaminen, joita voidaan edistää muun muassa erilaisilla toimittajien vastuullisuusarvioinneilla, yhteistyöprojekteilla, koulutuksilla sekä toimittajan ylimmän johdon osallistamisella.

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Helsinki, April 28, 2021

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1 INTRODUCTION

The development of sustainability as a strategic challenge for companies in the recent decades has been continuous and companies are increasingly pressured to operate in a sustainable manner and adopt environmentally conscious practices (Coyle, Thomchick & Ruamsook 2015). Increased transparency and the free flow of information have increased demands against businesses to uphold higher standards and address environmental and social concerns along with economic benefits (Meixell & Luoma 2015). Sustainability in Finland 2021 report by Finnish Business & Society (FIBS 2021) addresses that 100 % of the companies consider sustainability relevant to them and 51 % believe that the importance of sustainability will increase greatly in the next five years whereas the same percentage in 2019 was 31 %. It is distinct that sustainability is becoming a controversial issue for many forward-looking companies.

Procurement and supply chains are one of the key factors in a fulfillment of corporate sustainability (Lamming & Thompson 1996; Sarkis & Dhavale 2015; Meixell & Luoma 2015) and in a competitive global market, it is increasingly essential to implement sustainability practices into supply management (Vahidi, Torabi & Ramezankhani 2018). As company can be only as sustainable as its entire supply chain (Nieminen 2016), companies focusing on sustainability strategies and aiming to meet sustainability requirements must consider those in their supply chains as suppliers form a major part of any supply chain and suppliers following sustainability strategies are able to deliver products and services in accordance with the buyer company's sustainability criteria (Vahidi et al. 2018). Consistent and tight supplier relationship, which is a critical factor in gaining a competitive advantage, is achieved when both the buyer and the supplier are engaged into sustainability (Carter & Jennings 2001). These notices complexify the management of sustainability even more. Related to that, 40 % of the companies according to Sustainability in Finland report (FIBS 2021) inform supply chain management to be one of the key challenges in the management of corporate responsibility and this challenge of ensuring the commitment of business partners and subcontractors is even greater than in previous years.

According to the literature review by Carter and Easton (2011) environmental aspects of supply management has led the focus of research over the past decades which is comprehensible as environment is a key component of sustainability's triple bottom line and due to climate change it has been in the media spotlight. Natural resources are also facing significantly increased pressure as a result of globalization and a rapid development of third world economies (Meixell & Luoma 2015). In order to achieve environmental performance improvements and identify the conditions that are necessary for successful environmental adaptation, companies have to work together within supply chains (Canning & Hanmer-Lloyd 2001) and already back in 1996 (Lamming & Thompson) it was observed that linking a company's environmental policy closely with purchasing function's activities is a potentially effective way of managing environmental policy. Ferri and Pedrini observed in 2018 that taking environmental sustainability into account on procurement has more distinct impact on company's profit than the impact of social sustainability and the ability of paying attention to environmental sustainability is in a key role in pursuing for a better position in a market. Markman and Krause (2016) also prioritize the aspect of environmental sustainability as they suggest that there are certain principles which should be applied in sustainable supply management and according to them sustainability practices should prioritize first the environmental dimension of sustainability and after that social and economic dimensions of sustainability.

However, according to the study by Morali & Searcy (2013) companies are facing various challenges in integrating sustainability into supply management. They point out that many corporations are still looking for the best ways to include and carry out sustainability practices and principles into their supply chains even though the theory and practice of sustainable supply management have been evolving fast. They also state that integration of all three dimensions of sustainability into supply chains is quite limited and most companies focus primarily on the economic dimension of sustainability on their sustainable supply management strategies. The limitation of available capabilities and resources, especially in small and medium sized companies, frequently hinders effective actions and responses to environmental pressures which in turn hurts customers (Lee & Klassen 2008).

Setting sustainability goals for suppliers is becoming more common among companies as they are aiming to reach their internal sustainability goals and targets according to their sustainability strategies. To engage suppliers to corporate sustainability goals which go beyond the legal requirements related for example to environmental sustainability require diverse and more complex practices and principles in supply management. The topicality of the issue is identified also in the case company and suppliers are involved in the case company's environmental sustainability goals. In the earlier literature, sustainability practices in supply management have not been researched distinctly in specific corporate supply processes. Therefore, from a theoretical perspective, the research problem focuses on practices how sustainability can be implemented into different supply processes to engage suppliers to environmental sustainability and these supply processes are identified from a corporate context. Tendering and contract management, category management and supplier management are seen as supply processes of procurement in which environmental sustainability can be considered possibly from slightly different theoretical perspectives and at least covered from different practical manners. The purpose of the study is to examine different environmental sustainability practices and mechanisms to successfully implement those to different supply processes and which help to engage suppliers to environmental sustainability to support the buyer company's sustainability goals.

1.1 Objectives and research questions

This study will focus on environmental sustainability from a supply processes' point of view. Because of the issues addressed above and the case company's need for guidelines of how to involve sustainability practices into different supply processes and engage supplier to environmental sustainability, this study focuses on implementing environmental sustainability into supply chains in the corporate world. The aim of this study is to research different principles and practices which help companies to manage their supply chains in a way which is in line with their own sustainability strategy.

Areas for research are divided into three different supply processes identified from a corporate context. These processes are highly integrated to each other when it comes to

embedding sustainability into supply chains. If sustainability is not taken into account in tendering processes and contracts with chosen suppliers, it is harder and possibly even impossible to require sustainable actions from suppliers afterwards in the supplier management process. In supplier management process monitoring and collaboration is needed to ensure that the supplier is actually operating and fulfilling promises during the contractual period in an agreed way. When there is a great number of suppliers in a company, category management could provide some eases for sustainability planning as suppliers could be categorised for example based on their features and their riskiness related to environmental sustainability. That way environmental sustainability strategies could be formed and targeted in a more extensive way and actual principles and practices could be implemented in a supplier management level.

Based on these objectives, research questions were formed and will be answered in the chapter 5 at the end of research. The main research question is:

“How sustainability practices can be implemented to supply processes?”

Sub-questions support the main question by concentrating to sustainability practices and ways to implement those. These sub-questions are:

“What are the sustainability practices in supply management?”

“What are the mechanisms to implement those practices?”

There are some limitations in this research to manage the data gathering process and to clarify the outcome of the research. Sustainability is considered from the environmental aspect. Social and economic aspect of sustainability are limited out of this research as challenges related to all three aspects of sustainability differ from each other and that way sustainability practices and ways to implement them to supply processes do differ. Nevertheless, this does not prevent the exploitation of the framework and study findings in

the implementation of social and economic sustainability practices in the future as these still do have many similarities and point of contacts from the process point of view.

1.2 Conceptual framework and key concepts

The conceptual framework of this study is being created based on the aims of the research which are focusing on finding proper supply management practices in three different supply processes to engage suppliers to environmental sustainability. Key concepts and themes and their linkages to the topic of the study as well as their relationships are also included in the framework. The conceptual framework is presented in the Figure 1 below.

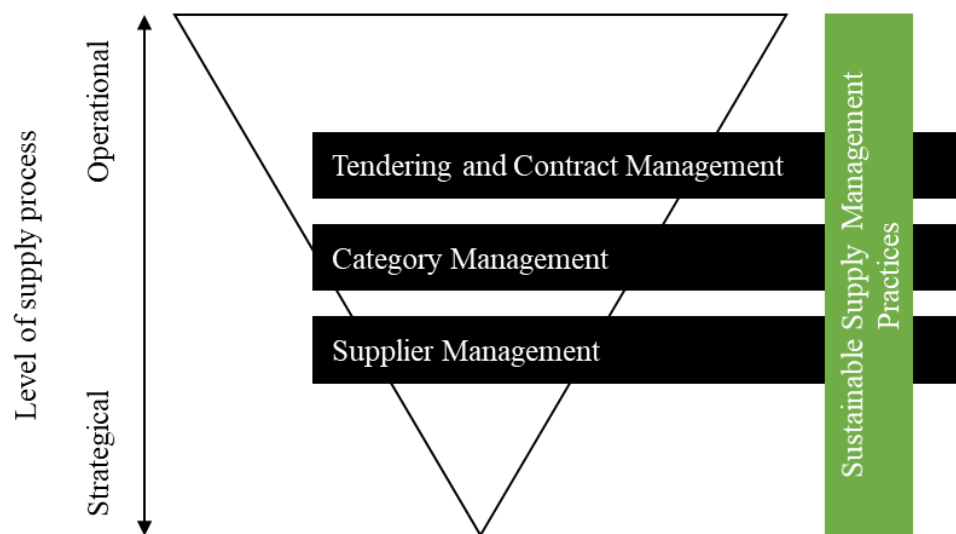


Figure 1. Conceptual framework

The main concepts of this study are sustainable supply management practices and three different supply processes (tendering and contract management, category management and supplier management). Next these main concepts are presented shortly to understand the conceptual framework in a more inclusive way. Later in the chapter 2 the main concepts will be described more deeply from a boarded perspective and earlier literature related to them will be presented.

Sustainable supply management practices refer to the consideration of sustainability dimensions in supply management practices. Sustainable supply management can be defined as “the extent to which supply management incorporates environmental social, and economic value into the selection, evaluation and management of its supply base”. (Giunipero, Hooker & Denslow 2012, 260). Sustainable supply management practices are internal and external strategies and practices of a company that are implemented to achieve more sustainable supply chain (Morali & Searcy 2013) and those determine how a company manages sustainability in a way that goals of a company are reached in a sustainable and profitable manner (Kähkönen, Lintukangas and Hallikas 2018).

Tendering is a process in which products and services are procured and it includes acts of planning, selecting, evaluating and buying (van Weele 2013). Tendering has traditionally been seen as a way to continuously optimise purchasing and supply chains (Iloranta & Pajunen-Muhonen 2015).

Contract management aims to ensure that “what was agreed by both parties is implemented and no value is eroded” (Cordell & Thompson 2018, 141). Contracts play an important role in procurement as contractual problems interact directly with competitive screening and problems of risk management. (Dimitri, Piga & Spagnolo 2006)

Category management in a procurement context can be defined as “the practice of segmenting the main areas of organisational spend on bought-in goods and services into discrete groups of products and services according to the function of those goods or services and, most importantly, to mirror how individual marketplaces are organised” (O’Brien 2015, 6). Category management is a continuous process in which market data is gathered, analysed and processed to create and execute spend strategies delivering long-term benefits for business by changing the way how expenditure and resources are managed (Cordell & Thompson 2018).

Supplier management refers to purposeful grip of a buyer on managing suppliers and it includes for example development of a supplier to meet common and individual objectives,

a utilization of common innovations between a buyer and a supplier and collaboration with a supplier (Iloranta & Pajunen-Muhonen 2015).

1.3 Structure of the study

The study has of five main chapters and sub-chapters. In the first chapter the introduction to the topic of research is presented. Purpose behind the topic and its importance is also introduced in the first chapter. In addition, first chapter includes objectives and research questions as well as conceptual framework and definitions of key concepts. Chapter two concentrates on the theories and earlier literature of the key concepts of this research which were briefly introduced in the first chapter. The aim of the theoretical chapter is to understand environmental sustainability more widely in the context of supply management. Environmental sustainability's meaning and importance in supply management practices along with drivers and benefits related to that are examined. In the latter half of the theoretical chapter, tendering and contract management, category management and supplier management are discussed from a perspective of sustainability and related practices.

Fourth and fifth chapters represent the empirical part of the study. The research methodology, case company, data collection and analysis are presented in the fourth chapter. In that chapter also the reliability and validity of the study are discussed. In the fifth chapter the analysis and results of the interviews are presented. By exploring the data, that chapter aims to understand how in different supply processes and phases of them environmental sustainability can be considered and what tools and models can be utilized in those processes to reach suppliers' engagement related to environmental sustainability. The sixth chapter concludes the study by answering to the research questions and summarizing the main empirical findings. In the final chapter also limitations and suggestions for future research are presented.

2 SUSTAINABLE SUPPLY MANAGEMENT PRACTICES

This chapter focuses on defining the key concepts and theory of the research. Firstly, the concept of sustainability is discussed from a perspective of supply management and supply management practices. Drivers, benefits and challenges related to sustainability are covered as well. After that supply processes from a perspective of sustainability integration are discussed in more detail. By conducting a precise and extensive perception of key concepts, it will be easier to assess how sustainability and supply processes can be integrated most effectively.

2.1 Environmental sustainability

Sustainability as a concept in business environment is not new and the development of it as a strategic challenge for companies has been continuous in the recent decades (Coyle et al. 2015). Sustainable development was defined first time in 1987 by World Commission on Environment and Development (also known as Brundtland's commission). In its report *Our Common Future* (1987, 41), sustainable development was defined as a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". This definition is widely recognized to integrate social, environmental and economic issues but is according to Gimenez, Sierra and Rodon (2012) difficult for companies to apply as it does not provide enough guidance how present versus future need should be identified. Hundreds of definitions and interpretations for sustainability have come up since the term sustainability entered management literature in 1990's which has led to a situation in which an encompassing definition of sustainability is unclear (Linton, Klassen & Jayaraman 2007; Ahi & Searcy 2015). In addition to the unclear consensus of the sustainability's definition, other terms and synonyms are used, both in research and companies, to refer to a sustainable behaviour of company. These terms usually are interchangeable but in this study the term sustainability is used for the consistency.

Corporate sustainability is an ambiguous term as its development and evolution has been led by an economic view of a company (Angus-Leppan, Benn & Young 2010) but already in 1998 Elkington determined that company's success is not solely dependent on its financial condition and performance but also on environmental and social welfare. Attempts to understand how all three dimensions of sustainability inter-relate usually arise ambiguities (Toubolic & Walker 2015). The triple bottom line concept suggests that companies do not only need to engage in environmentally and socially responsible behaviour along with economic responsibility but also that positive financial gains can be achieved in that process (Gimenez et al. 2012). Thus, Elkington's triple bottom line approach is the most common way to operationalise the definition of sustainability (Gimenez et al. 2012) and a belief that managing the triple bottom line will lead to improved profitability and efficiency over a long term is constantly widening (Closs, Speier & Meacham 2011).

Also term environmental sustainability holds multiple definitions with different nuances. Environmental sustainability can be referred to "engaging in practices that do not compromise environmental resources for future generations" (Alhaddi 2015) and which seeks to maintain natural capital, "both as a provider of inputs and as a "sink" for wastes" (Goodland 1995). Montgomery and Sanches (2002) determine environmental sustainability as a management of natural resources. Rohweder (2004) inserts a perspective of a company to that definition by stating that environmental sustainability means the management of direct environmental problems and risks of a company as well as effective and sustainable use of natural resources. Harmaala and Jallinoja (2012) comply with that by stating that environmental sustainability means company's aims to operate in the best way possible for the environment. Also, Rela, Awang, Ramli, Md Sum & Meisanti (2020) note that awareness of environmental effects of company's own operations and efforts to manage those are essential in environmental sustainability.

More precisely in a corporate context environmental sustainability can be described as a company's aims to operate in the most for the environment way and it could include a protection of water, air and soil, a reduction of greenhouse gases and other emissions and pollution, a protection of diversity of nature, an effective and conversing use of natural resources, energy efficiency, reductions of waste, a decrease in the consumption of

hazardous, harmful and toxic materials, managing health and environmental risks of chemicals as well as a decrease in the frequency of environmental accidents. (Harmaala & Jallinoja 2012, Gimenez et al. 2012)

Important aspects of corporate environmental sustainability can be identified also by utilizing Global Reporting Initiative. Global Reporting Initiative (GRI) is a leading framework for sustainability reporting that consist of different sets of standards. Topic specific standards are divided to three sections according to the sustainability's triple bottom line approach: GRI 200 (Economic), GRI 300 (Environment) and GRI 400 (Social). GRI 300 -standard includes eight different aspects of environment: *materials, energy, water and effluents, biodiversity, emissions, waste, environmental compliance and supplier environmental assessment*. Each of these environmental aspects create their own standard numbered from 301 to 308 and each standard has various individual disclosures. GRI 300 standard is presented more precisely in Appendix 1. Detailed (Global Reporting Initiative 2020) As GRI has achieved a status of de facto -standard in a corporate sustainability reporting (Weidinger, Fischler & Schimdpeter 2013), aspects included in GRI 300 -standard can be seen as central and essential to incorporate whenever environmental sustainability is addressed.

Closs et al. (2011) divide environmental sustainability practices into categories of conservation, usage reduction and business practices. This division is presented in the Figure 2 below. Conservation category focuses on better management and reduction of use of energy, water and nature overall. Usage reduction is related to waste and recycling, green house gases and end of life management. Packaging and facility construction are according to them related to sustainable business practices. Sustainable sourcing as a main theme of this research is considered also as an environmentally sustainable business practice. From this research's point of view, all the presented main categories and their sub-themes of the Figure 2 are considered as relevant topics inside the theme of environmentally sustainable sourcing.

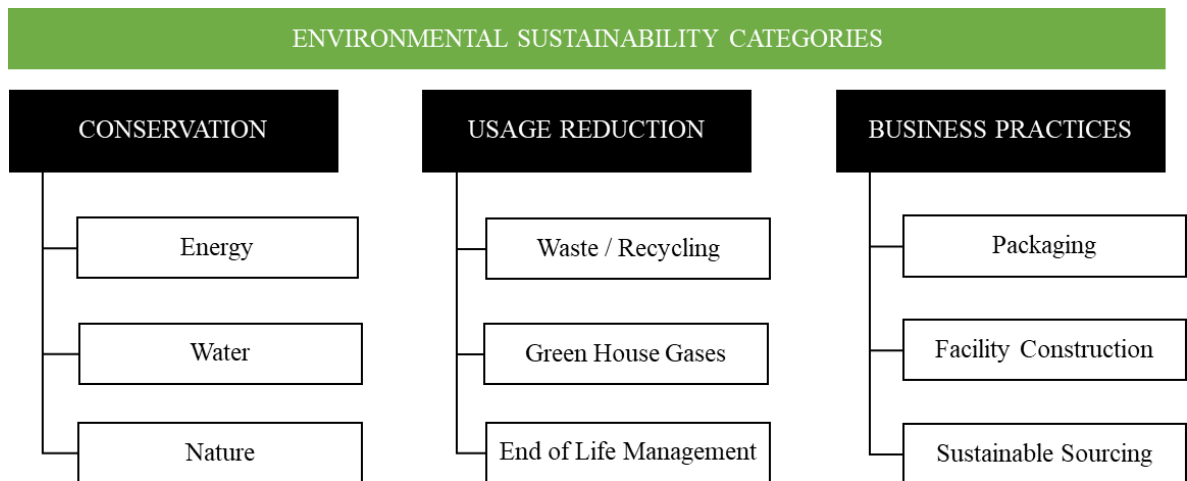


Figure 2. Environmental sustainability categories (Closs et al. 2011)

It is worth noticing that both in GRI and Closs's et al. (2011) grouping, suppliers and sourcing are noted as an independent and important part when determining environmental sustainability and its aspects. Environmental sustainability in supply management and practices related to it are discussed in detail in the next chapters.

2.1.1 Sustainable supply management as a concept

Sustainable supply management combines the concepts of sustainability and supply management. Sustainability was addressed in the chapters above and regarding that it must be stated that triple bottom line approach is also a prominent approach to sustainability in supply management (Toubolic & Walker 2015). At this point, it might be also beneficial to understand the bigger picture behind the topic of this study and to that ISO 20400 standard provides a helpful framework as it clarifies how to implement sustainability into procurement. It includes four main phases (presented in the Figure 3): understanding the fundamentals, integrating sustainability into the procurement policy and strategy, organizing the procurement function towards sustainability and integrating sustainability into procurement process. The focus of this study is on the last phase. Integration of sustainability into procurement processes is often done by procurement professionals or other individuals that are responsible for the actual procurement. Along with integrating sustainability into

existing procurement processes, sustainability should be considered in planning and requirements related to it should be integrated into specifications. Sustainability should be integrated also in supplier selection and contract management. All these aspects should be taken into account when making decisions related to the sustainability improvements of procurement processes. (ISO 20400 2017)

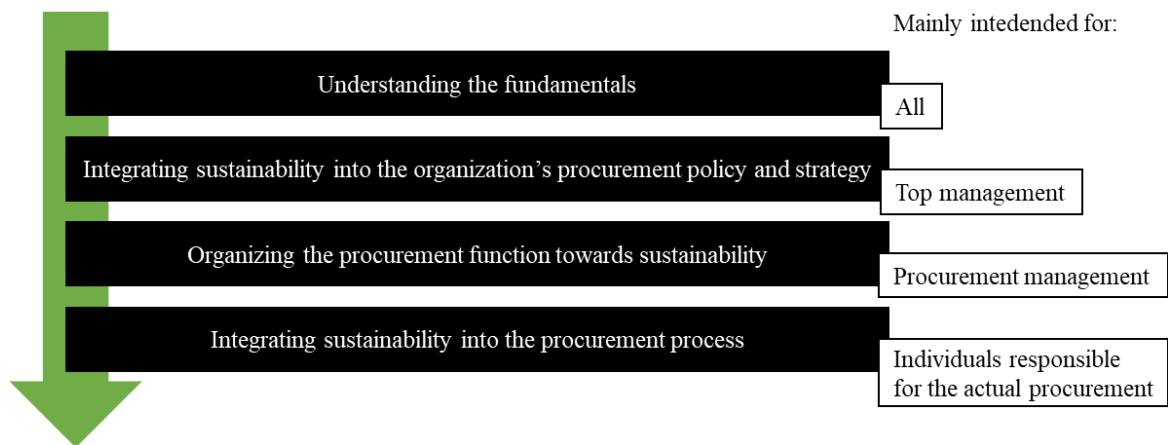


Figure 3. Implementing sustainability into procurement (modified ISO 20400 2017)

To proceed investigating the integration of sustainability and supply management more deeply, a brief definition of supply chain management is provided. Lambert, Cooper and Pagh (1998) define supply chain management as the integration of key business processes of end-users to original supplier which provide services, products and information that add value to stakeholders. After reviewing literature and number of definitions of supply chain management Mentzer, DeWitt, Keebler, Min, Nix, Smith and Zacharia (2001, 18) developed a single encompassing definition for supply chain management according to which it is “the systematic, 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”. This definition adds the purpose of long-term performance improvement for all parties of a supply chain compared to the definition by Lambert, Cooper and Pagh. Stock and Boyer (2009) also propose a single consensus definition for supply management and detail the definition of long-term performance. According to them supply chain management is a management of a relationship network and organizations and

business units facilitate the flow of materials, services, finances and information from the producer to final customer while adding value, maximizing profitability and achieving customer satisfaction.

Sustainable supply management can be defined in many ways and the conceptualizations of it may differ for example regarding the level of specificity. As research in the area of sustainable supply management is relatively new from a historical perspective, compared to supply or supply chain management, it is important and useful to understand the diversity of perspectives when it comes to definitions of sustainable supply management.

Pagell and Wu (2009) refer to sustainable supply management simply as the specific managerial actions taken to make supply chains more sustainable and which aim to reach the end goal of the generating a truly sustainable supply chain. Carter and Rogers (2008) define sustainable supply chain management as a strategic and transparent integration and achievement of social, environmental and economic goals of a company in the coordination of key interorganizational business processes which aim to improve the long-term economic performance of a company and its supply chains. Their definition was the most comprehensive according to the literature review of sustainable/green supply chain management by Ahi and Searcy (2013). Seuring and Müller's (2008) definition is similar as they define sustainable supply chain management as the management of information, material and capital flows and cooperation of the companies in the supply chain while considering goals of all three economic, social and environmental dimensions of sustainable development originated from requirements of customers and stakeholders. According to Badurdeen, Iyengar, Goldsby, Metta, Gupta & Jawahir (2009, 57) sustainable supply chain management involves "the planning and management of sourcing, procurement, conversion and logistics activities involved during pre-manufacturing, manufacturing, use and post-use stages in the life cycle in closed-loop through multiple life-cycles with seamless information sharing about all product life-cycle stages between companies by explicitly considering the social and environmental implications to achieve a shared vision". Closs, Speier and Meacham (2011, 102) include a risk perspective to the definition as they state that a sustainable supply chain reflects the company's "ability to plan for, mitigate, detect, respond to and recover from potential global risks".

Ahi and Searcy (2013, 339) propose a new, more comprehensive definition for sustainable supply chain management after reviewing and identifying the characteristics of corporate sustainability and supply chain management discussed in the earlier research literature. According to them sustainable supply chain management is “the creation of coordinated supply chains through the voluntary integration of economic, environmental, and social considerations with key inter-organizational business systems designed to efficiently and effectively manage the material, information, and capital flows associated with the procurement, production, and distribution of products or services in order to meet stakeholder requirements and improve the profitability, competitiveness, and resilience of the organization over the short- and long-term”. Compared to the previous definitions they examined, their definition highlights value in improving profitability and efficiency characteristics (in managing flows through lifecycles of products and/or services). They also emphasize performance characteristic and how effective and efficient management of supply chains affect competitiveness.

Despite the variety of definitions, according to Chen and Kitsis (2017) the study of sustainable supply management is still truly complicated. Sustainability as a concept is challenging to translate into tangible actions and incorporate those practices within and between companies (van der Heijden, Cramer & Driessen 2012). Implementing sustainability in to supply chains is complex process also because numerous context dependent variables exist which either enable or hinder the progress and implementation process requires pursuing of all three, environmental, economic and social, dimensions of performance (Ahi & Searcy 2015).

Difficulty and the lack of explicit significance of sustainable supply management can also be perceived from Global reporting Initiative (GRI), the most widely used sustainability reporting guidelines in the world. GRI have fairly few supply chain related standard disclosures; altogether 17 out of all 150 standard disclosures. These supply chain related standard disclosures include for example “Other indirect greenhouse gas (GHG) emissions (scope 3)”, “percentage of new suppliers that were screened using environmental criteria”, “significant actual and potential negative environmental impacts in the supply chain and actions taken”, “percentage of new suppliers that were screened using labor practice

criteria”, “operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor”, “percentage of new supplier that were screened using human rights criteria” and “percentage of new supplier that were screened using criteria for impacts on society”. (Global Reporting Initiative 2013)

However, at the same time it has been identified that supply chain professionals have an outstanding position to have impact on sustainability practices (Carter & Rogers 2008). Unfortunately, the application of sustainability principles into supply management is suffering from a scarcity of established theories, models and frameworks (Ahi & Searcy 2015). Ahi and Searcy (2015) also state that measuring the sustainability level of supply chains and monitoring their performance towards sustainability over time is becoming an essential requirement. This sets severe challenges for supply chain professionals to truly implement sustainability into their supply chains, let alone measuring and monitoring the performance of it.

2.1.2 Practices of sustainable supply management

Albeit, as stated above, there is a scarcity of findings related to the application of sustainability into supply management (Ahi & Searcy 2015), a variety of tools exist which can be utilized to manage and assess supply chain sustainability (Amann, Roehrich, Eßig & Harland 2014) and research of the topic is constantly increasing. Leading companies have launched their own sustainable supply management practices which aim to improve the sustainability and meet expectations of stakeholders of a company (Hong, Zhang & Ding 2018). In practice, there is a great need among managers of a coherent roadmap for sustainability practices (Wolf 2014) and many companies are still exploring the best practices for them to implement sustainability into supply chains. Green, Zelbst, Meacham & Bhadauri (2012) suggest that top management should identify and implement sustainable practices into company’s operations which also spread out through supply chains.

Hollos, Blome and Foerstl (2012) state that environmentally sustainable practices aim to reduce waste and preserve natural resources in a company's own operations and operations of its suppliers. To ensure sustainability of their supply chains, companies utilize different practices and according to Li, Fang and Song (2019) all company's practices, no matter if they are internal or external, can be classified as sustainable supply management practices if they are making supply chain more sustainable from any dimension of sustainability. Morali and Searcy (2013) agree with Li et al. (2019) as they state that sustainable supply management practices involve internal and external strategies of a company that are implemented to achieve more sustainable supply chain from a perspective of all three dimensions of sustainability. According to Kähkönen et al. (2018) sustainable supply management practices determine how companies manage and implement sustainability to reach goals of a company in a sustainable and profitable manner.

Necessary activities for a successful implementation of sustainable supply management are for example integrated behavior, mutually sharing information, mutually sharing risks and rewards, cooperation, the same goals and focus on serving customers, integration of processes and partners to build and maintain long-term relationships (Mentzer et al. 2001). Chen & Kitsis (2017) agree with that as they state that companies manage challenges related to supply chain sustainability with various practices and initiatives, including for example communication, information sharing, collaboration, trust building and risk management.

Sustainable supply management practices can be categorized in various ways and it is highly dependent for example on the perspective of the study on sustainable supply management and how the author sees it as a concept. Beske, Land and Seuring (2018) divide sustainable supply management practices into strategic orientation, supply chain continuity, collaboration, risk management and pro-activity for sustainability categories. Paulraj, Chen and Blome (2017) categorize them to sustainable product design, sustainable process design, sustainability collaboration with supplier and sustainability collaboration with customers. According to Hong et al. (2018) key practices are supply chain coordination and trust, supply chain learning, supply chain strategic orientation, supply chain risk management and supply chain continuity. Marshall, McCarthy, Heavy and McGrath (2015) categorize sustainable supply practices first according to sustainability dimensions and after that into process-based

and market-based practices. Previously mentioned division of sustainable supply management practices into internal and external ones (Li et al. 2019; Morali & Searcy (2013) is supported also by Gualandris, Golini and Kalchschmidt (2014) and Vachon and Klassen (2006).

In this chapter sustainable supply management practices will be presented according to that internal and external categorization. More specific categorization at this point is not necessary as more detailed ways to incorporate and implement sustainability specifically into tendering and contract management, category management and supplier management processes are in the focus of study and will be examined under the chapter 2.2.

Internal sustainable supply management practices aim to reduce direct environmental (and social) impacts of a company and practices may help a company to create innovations which prevent pollution or minimize emissions, waste and effluents while improving sustainability performance (Gualandris et al. 2014). Carter et al. (1998) highlight the importance of top management support and commitment in fulfillment of internal practices. According to Gualandris et al. (2014) internal sustainable supply practices include for example certifications, environmental management systems, designs for the environment, life cycle analyses and reporting to increase the transparency of sustainability issues. Sustainable procurement training can also be classified as an internal practice (Leppelt, Foerstl, Reuter and Hartman 2013) which aim to improve knowledge of procurement professionals.

Carter, Ellram & Ready (1998) state that environmental management systems are the most important internal practices from a viewpoint of performance improvement of a company. Certifications of environmental management systems communicate about company's actions to customers, suppliers and other stakeholders. Many scholars stress the importance of ISO 14001 standard as internal environmentally sustainable practice (Seuring & Müller 2008, Zhu, Sarkis, Cordeiro & Lai 2008). Certifications and environmental management systems are important also as external sustainable supply management practices and will be addressed a little bit more in detail below.

Life-cycle analysis is a context dependent tool as life-cycle analysis can be developed from different perspectives with different goals and that way might lead to different results (Hagelaar, van der Vorst & Marcelis 2014). Johnsen, Howard & Miemczyk (2014, 337) define life-cycle analysis as “the consideration of the potential environmental impacts that a product can have during its life cycle”. Mattinen and Nissinen (2011) state that life-cycle analysis can focus on for example material and energy flows and economical aspects. Life-cycle analysis is one of the most essential internal practice according to Tate, Ellram and Dooley (2012) as it provides a practical approach for planning and procuring goods. In life-cycle analysis it is possible to assess only one impact category and carbon footprint is an example of this kind of approach in which only climate impacts are assessed analysis (Mattinen & Nissinen 2011). In a carbon footprint, the focus is on the climate and global warming potential of the product or service.

Transparent sustainability reporting is an important internal sustainability practice which communicates sustainability issues and sustainable actions of a company to stakeholders, including suppliers (Prado-Lorenzo, Gallego-Alvarez and Garcia-Sanchez 2009). Sustainability reporting is important in the formulation of sustainability image of a company and is one of the most important actors along with supplier collaboration (Kähkönen et al. 2018). A leading framework for sustainability reporting Global Reporting Initiative (GRI) has already been addressed in the chapters 2.1 and 2.1.1.

Gualandris et al. (2014) define external practices as a corporate level mechanism and metrics to assess and improve suppliers’ sustainability performance. In the literature most common external sustainable supply management practices supplier collaboration/training (Tate et al. 2012; Gualandris et al. 2014; Pagell & Wu 2009; Grimm, Hofstetter & Sarkis 2016; Leppelt et al. 2013; Grosvold, Hoejmose & Roehrich 2014), supplier code of conducts and other codes and standards (Grosvold et al. 2014; Leppelt et al. 2013; Leire & Mont 2010; Johnsen et al. 2014), certifications (Tate et al. 2012, Zhu et al. 2008; Grosvold et al. 2014; Johnsen et al. 2014) and supplier monitoring, assessments and audits (Min & Galle 2001; Leire & Mont 2010; Leppelt et al. 2013; Grimm et al. 2016). Leire and Mont (2010) note also pre-selection of supplier to be one of the external sustainable supply management practices and Gualandris et al. (2014) mention environmental requirements for suppliers. Grosvold et al.

(2014) list sustainability practices in a buyer-supplier relationship to include also manufacturing process and product design changes which aim to make them less resource intensive, a pollution reduction, an efficient use of raw materials, investments in emission reducing technology and rewards and sanctions. According to Pagell and Wu (2009) especially supplier collaboration and certification have received notable attention in regard to sustainability as best practices in supply management.

Supplier collaboration has been identified as an important external practice by many scholars. Tate et al. (2012) and Gualandris et al. (2014) highlight supplier collaboration to be one of the most important external sustainable supply management practice. Pagell and Wu (2009) highlight the importance of supplier collaboration in sustainability performance improvements. Grimm et al. (2016) suggest that supplier collaboration is a good way to ensure compliance with sustainability requirements. External environmental programmes, for example implementing supplier development programmes, have a positive impact on performance of all dimensions of triple bottom line (environment, social and economic) according to Gimenez et al. (2012). Also, Leppelt et al. (2013) suggest standardized conditions for supplier development to be important part of external sustainable supply management practices. Grosvold et al. (2014) list supplier training also into external practices.

Supplier code of conducts are commonly used external practices in companies and in the literature widely paid attention to (Grosvold et al. 2014; Leppelt et al. 2013; Leire & Mont 2010). Company specific code of conducts were developed to protect companies against social non-compliance in supply chains and are used to determine the terms and minimum requirements suppliers must fulfill to engage with the buyer (Johnsen et al. 2014). Content of supplier code of conduct is highly dependent on the company's internal practices or internal code of conduct and which sustainability aspects the buying company appreciates (Oehmen, De Nardo, Schönsleben & Boutellier 2010).

Leire and Mont (2010) include also following the international standards in external sustainable supply management practices. Companies, non-governmental organizations and

government representatives can work together and create multi-stakeholder codes where in 'code' is used in a loose sense as along with a list of requirements, these initiatives work also as an approach to deal with sustainability issues. Global Reporting Initiative (GRI) and Ethical Trading Initiative (ETI) are examples of these kind of codes. (Johnsen et al. 2014)

Codes can also be developed by international governmental organization and the best-known example is the United Nations Global Compact (UNGC) initiative which encourages companies to adopt sustainable policies and report their implementation. It is a principle-based framework and states ten principles related to human rights, labour, environment and anti-corruption. Instead of a regulatory instrument, it works more as a forum for discussion and network for communication. As a criticism towards it, UNGC does not contain mechanisms to sanction member companies' non-compliance with the principles and participation does not require demonstrated progress related to the issues. (Johnsen et al. 2014)

Certifications required from suppliers are a common way to ensure compliance with sustainability (Tate et al. 2012, Zhu et al. 2008; Grosvold et al. 2014). Certifications are commonly related to environmental management systems which are tools for companies to implement an environmental policy (Johnsen et al. 2014). Two main environmental management system standards are ISO 14001 and EMAS but there is also smaller, industry-specific environmental sustainability management systems and certifications. ISO 14001 standard is designed to be adopted in all companies despite the type of a company or industrial sector and it is seen as the most common and widely adopted environmental management systems. The idea of continuous improvement is an important aspect of ISO 14001 and other main elements are environmental policy, planning, implementation and operation, checking and management review. EMAS (the Eco-Management and Audit Scheme) includes an environmental management system consistent with ISO 14001 and a public statement of a company's environmental performance. EMAS must be verified by an external auditor. As there is a reporting element in EMAS, it is particularly interesting for companies when they are attempting to track the progress of their suppliers. (Johnsen et al. 2014)

Monitoring environmental sustainability of suppliers include gathering and processing supplier information for example from questionnaires and audits (Min & Galle 2001). Effective assessments of sustainability along with ensuring that sustainability requirements are met are necessary as according to Krause, Vachon & Klassen (2009) a realization of sustainability of a company is depending on how suppliers comply with the requirements and standards that are set for them. Leire and Mont (2010) observe continuous supplier monitoring and auditing and a development of scoring systems for ranking suppliers based on their sustainability performance as important practices to ensure sustainability in supply management. Leppelt et al. (2013) list monitoring of compliance, ethical audits, standardized process for supplier non-compliance and audit follow ups in case of non-compliance among external monitoring practices. Supplier assessments are good for ensuring compliance with sustainability requirements (Grimm et al. 2016). Vachon and Klassen (2006) add that following supplier's environmental actions used to receive environmental certification is important in ensuring continuity and maintaining sustainability of the supply base.

To summarize and conclude these chapters of sustainability and supply management practices, a framework by Johnsen et al. (2014) is beneficial as it presents links between sustainable supply strategy, implementation and enabling tools (Figure 4). Understanding of these links help companies to take the shift towards sustainability in supply management. A strategy development is an important first step in sustainability implementation process, but real challenges begin to emerge when strategy is attempted to put into practice. Referring to the Figure 3, usually procurement management is responsible for creating sustainability vision and setting goals, but implementation processes of sustainability are in the responsibility of individuals responsible for the actual procurement.

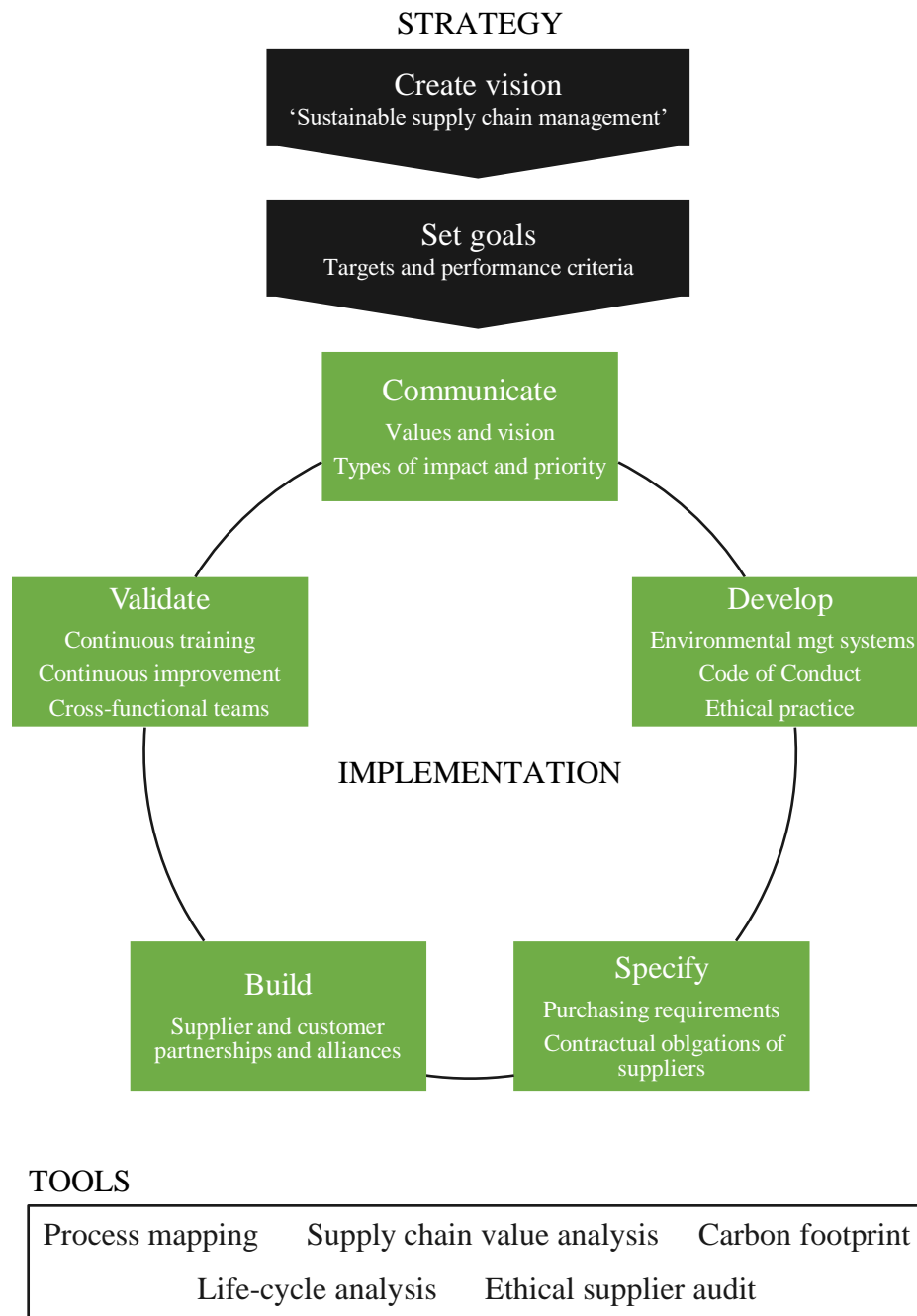


Figure 4. Framework linking sustainable supply strategy, tools and implementation (modified Johnsen et al. 2014)

In the actual implementation process it is important to approach the process from different aspects and these aspects should be either communicated, developed, specified, build or validated as the Figure 4 point outs. Most of the subjects of implementation process and tools are already covered or will be covered in theory chapters of this study.

2.1.3 Drivers and benefits of sustainable supply management practices

To understand more comprehensively the importance of sustainability in supply management and the context, it is beneficial to understand some of the different drivers and supporting factors behind it and possible benefits it may create to a company. Seuring and Müller (2008) identified several pressures and incentives for sustainability in supply chains in their literature review. Legal demands and regulation, customer demands, response to stakeholders and competitive advantage were the most common pressures to occur but also environmental and social pressure groups and reputation loss were observed in a number of papers. Their findings are in line with other literature of the field and these most common drivers are deepened below.

Legislation is a well identified driver for sustainable supply management by many scholars (Mann 2010, Carter & Rogers 2008). Legal constraints can either force companies to implement sustainable practices or leave the markets (Mann et al. 2010) According to Wolf (2014) central view is when companies adopt sustainable supply management strategies and practices, they are primarily reacting to outside influences like governmental regulation and non-governmental organization activism. Walls and Hoffman (2013) state that compliance with norms and policies reflects the lowest common denominator for less-unsustainable practices but to become more or even truly sustainable more innovative and radical approaches and “moral goodness” that exceeds institutionalized normative expectations voluntarily is needed. Consequently, legislation can also encourage companies to implement voluntarily more sustainability related practices. At the same time risks related to legislation are possibly reduced (Carter & Rogers 2008).

Prevailing view is that sustainable supply chain is predominantly reactive and propelled by external pressures (Wolf 2014). Chen and Kitsis (2017) support that idea by stating that stakeholder pressures are predominant drivers of sustainable supply management practices and Paulraj et al. (2017) by stating that multiple stakeholders can act as driving forces for sustainability practices such as sustainable supply management. Importance of external pressures and stakeholders is a vital part of sustainable supply management: in the literature

review by Ahi and Searcy (2013) they identified seven key characteristics for business sustainability and supply management separately. Stakeholder focus was noted to be a key characteristic for both of these concepts. Stakeholder expectations between different stakeholder groups may differ which makes it difficult for companies to react to all of them (Wolf 2014). For example highly polluting industries like utilities and energy are regulated more governmentally and therefore stakeholders may face more pressures toward those. Research by Wolf (2014) counters the impressions of external stakeholder pressure being the only driver for sustainable supply management and also points out that if a company is engaged into sustainability only if external stakeholders demand a company to do so, a company is pursuing reactive sustainable supply management. In that case, a company does not see sustainable supply management as a strategic objective.

Some authors argue that key drivers for sustainable supply management practices are not simply pressures of various stakeholders but internal motivation of a company (Vanpoucke, Quintens & Van Engelshoven 2016). In a proactive sustainable supply management strategy, sustainability is recognized as an important strategic objective to a company that is independent of claims of stakeholders and a company recognizes long-term sustainability's influence on its resource supply (Wolf 2014). Observation by Walls and Hoffman's (2013) that "moral goodness" may be required in companies to become more or truly sustainable is supported by Paulraj et al. (2017). They observed that corporate moral motives to engage sustainability practices into supply chain management play an important role in the amount of sustainability practices and sustainability performance outcomes. When moral motives are primary drivers for company's sustainability initiatives, the performance of a company is superior to economic self-interest driven companies. Vanpoucke et al. (2016) point out three types of internal motivation for sustainable supply management: legitimization (improvement of corporate environment management based on company's regulations, norms, values and beliefs), competitiveness (sustainable supply management is seen both as a need and an opportunity) and ecological responsibility (primary decisions makers of a company have innate concerns for the environment). Moral motives, as intrinsic drivers, are according to Chen and Kitsis (2017) however vastly ignored in sustainable supply research literature.

Supporting factors for sustainable supply management were observed in the literature review by Seuring and Müller (2008). Company-overlapping information was considered as a supporting factor in the most papers analysed. Management systems such as ISO 14001 and SA 8000, monitoring, evaluation, reporting and sanctions along with training education of procurement employees and suppliers and the integration of sustainable supply management into the corporate policy were also among the supporting factors for sustainable supply management. Significance of company-overlapping information is also noted by Lee & Klassen (2008). Findings of their study indicate that buyer's green supply management initiate and enable improvements in suppliers' environmental capabilities. The outcome could be a synergistic linkage in relationship between a buyer and supplier, resource acquisition and capability development and these findings could serve as a motivation to initiate green supply management.

Many benefits along with resource acquisition and capability development as benefits of sustainable supply management are discovered in the literature. Chen and Kitsis (2017) propose that environmental performance have positive effects on supply chains' economic performance. Carter and Rogers (2008) propose that supply chains which integrate environmental (along with social) resources and knowledge can be more difficult to imitate which can lead to a better economic sustainability in a company that has successfully integrated sustainability aspects. Especially in Nordics, a positive relation has been identified between environmentally sustainable companies and better revenue and market value (Bird, Momenté & Reggiani 2012). Potential economic advantages of environmental sustainability are costs savings (reduced packaging waste, reuse and disassembly), proactive shaping of future regulation and enhanced reputation (company is possibly more attractive to stakeholders like customers and suppliers). Implementation of ISO 14001 standard or environmental management systems in general can lead to reduced costs, shortened lead times and better product quality. (Carter & Rogers 2008).

Sustainable supply management is vital for companies as it integrates sustainability into business operations through which it minimizes sustainability risks, uplift corporate image and improve performance (Chen & Kitsis 2017). Results of the study by Paulraj et al. (2017) indicate that companies driven highly by moral motivations perform better than companies

that are driven by high levels of instrumental and relational motivations. Studies have found that environmental responsiveness is positively related to company's performance as sustainable supply management has a possible ability to boost employee morale and improve customer goodwill and stakeholder relationships (Paulraj et al. 2017). Sustainable supply management has also ability to effect to the corporate image of a company as findings of the study by Wolf (2014) suggest that companies benefit from the adoptions of sustainable supply management strategies and those are positively related to perceptions of companies as sustainable ones. Sustainable supply initiatives, such as supplier environmental collaboration, can play an important role in achieving the triple bottom line sustainability benefits in a company (Govindan, Khodaverdi & Jafarian 2013).

2.2 Sustainability practices in supply processes

In this chapter, sustainability and ways to implement it are discussed from a perspective of different supply processes. Tendering and contract management, category management and supplier management have been identified as relevant processes in procurement in which sustainability could be considered from a perspective of a single tender, supply category and a single supplier.

2.2.1 Sustainability practices in tendering and contract management

As already stated, tendering is a process which includes acts of planning, selecting, evaluating and buying of products and services. The supplier selection is one of the most critical issues that buyers face to maintain their company's strategically competitive position (Govindan et al. 2013). This chapter focuses especially on applicable environmental criteria for different tenders and obligatory contract clauses based on those are examined. In the end of this chapter green public procurement, public procurement law and the influence of it to tendering and contracts is discussed as it is relevant in the case company's procurement.

Traditional criteria used in supplier selection and supplier performance evaluation, such as price, quality and flexibility, are extensively researched while those considering sustainability issues are less studied (Govindan et al. 2013) and within only the last decade has supplier selection process started to integrate several environmental dimensions (Govindan, Rajendran, Sarkis and Murugesan 2015). Traditional supplier selection criteria focus on economic efficiency of a supplier and ignores the ecological efficiency. As environmental norms and compliance standards are more and more enforced into practice, companies focusing only on traditional supplier selection criteria to cut supply chain costs are most likely to face challenges related to environmental performance as there is no guarantee that suppliers would conform to these norms and compliance standards. (Kumar, Jain & Kumar 2014) Nieminen (2016) states that all aspects of sustainability should be considered especially in supplier selection and evaluation. From an environmental perspective, most important stages in procurement according to Nissinen (2004) are a formulation and a comparison of tenders, nevertheless a fulfilment of sustainability should be supported also in every other stages and processes of procurement. As contract form the basis for relationship management and communication between buyers and suppliers, it has become crucial to engage with suppliers to ensure sustainable exchange relationships through contracts (Dubey, Chavas & Veeramani 2018).

Because of the mentioned reasons, considering sustainability in tendering is a crucial step in the process of supply management as it determines the baseline and sets conditions for example to how sustainability can be paid attention to in supplier management and how easy or challenging it is for both the buyer / individual responsible for the actual procurement and the supplier. Challenges though exist also in a tendering process as decisions of supplier selection are already complicated as various criteria has to be considered in the decision-making process (Govindan et al. 2013) and incorporating environmental criteria in the supplier selection makes the decision-making of purchasers even more complicated (Igarashi, de Boer & Michelsen 2015).

Igarashi et al. (2017) identified four approaches which purchasers could use to simplify the green supplier selection problem: ignore, incorporate, insist and integrate. Incorporating environmental performance under existing supplier criteria and requirements such as quality

or services can be seen as making minor as decision-making process remains almost the same with a little additional effort and as environmental aspects are included in other criteria, value of it is not made explicit. In an “insist” approach environmental criterion are used as a mandatory requirement in the specification and/or qualification stage. It avoids trade-offs with other criteria such as price and quality but is more profound than incorporate approach. In a “trading” approach environmental criterion is applied in the award stage and traded off for other criteria and it could be given either low weight (5 % to 10 %) or higher weight (15 % to 20 %) which potentially sends a positive signal to the markets. Integrate approach were noticed to be less common than ignore, incorporate and insist approaches.

A selection of environmental criteria is massive as the types of products and services which could be procured vary significantly and also requirements and expectations of a buying company for the product or service are usually discussed and created case-by-case. In the literature most common environmental criteria have been examined. Zimmer, Fröhling and Schultmann (2016) divide environmental criteria into two categories: environmental practices and environmental performance. Environmental practices include environmental commitment, environmental management and environmental capabilities. Environmental performance includes things such as material, energy, emissions, water, waste and environmental product performance. Igarashi et al. (2015) classify environmental criteria into organization (e.g. environmental policy, environmental program, environmental management systems, environmental training and knowledge, waste, energy and water data of a company), product (e.g. energy use, energy saving, emissions to air and water, material choice, chemical content, ecolabel or -criteria, long lifetime) and packaging (e.g. packaging recycling, reuse systems, recyclable packaging) specific categories. It could be noticed that generally environmental criteria could be divided to criteria which applies to environmental performance of a company and criteria which is specific to the product or service which is being procured.

According to Zimmer’s et al. literature review (2016) ten most common environmental criteria taken into account in sustainable supplier management publications (in a frequency order) are environmental management system, resource consumption, ecodesign, recycling,

controlling of ecological impacts, waste water, energy consumption, reuse, air emissions and environmental code of conduct. Green supplier selection criteria examples collected by Govindan et al. (2013) include pollution production (waste water, average volume of air emission pollutant, solid wastes and harmful materials releases per day during measurement period), resource consumption (in terms of raw material, energy and water during measurement period), eco-design (design of products for consumption of material and/or energy, design of products for reuse, recycle, recovery of material, design of products to avoid or reduce use of hazardous materials) and environmental management system (environmental certifications such as ISO 14000, environmental policies, planning of environmental objectives, checking and control of environmental activities). In this context it is beneficial to clear that waste water refers to total water consumption and specific critical water wastes (e.g. COD, total nitrogen and phosphorous), air emissions to supplier's emissions of critical substances (e.g. SO₂, NH₃, CO, NH_x, HCl and organic gas) and solid wastes to the total volume of wastes of a supplier for example each year (Noci 1997). Govindan et al. (2015) list as environmental criteria green image, environmental performance, environmental competencies, design for environment, green competencies, corporate and social responsibilities, environmental efficiency, environmental authentication, environmental improvement cost, green logistic dimension, green organization activities, environmental certification, suppliers' green image, use of environmentally friendly material, use of environmentally friendly technology, waste management, reuse, re-cycle, green process innovation, green product, green purchasing, green project partnership and green design. Environmental criteria in tenders according to Palmujoki, Parikka-Alhola and Ekroos's (2010) analysis included for example material choices, chemical content, energy use and environment policy or management systems. However, in the corresponding contracts they noticed environmental criteria to most often concern recycling and reuse of packaging, waste treatment and reporting and monitoring of environmental data.

According to Igarashi et al. (2017) environmental management systems were noticed to be dominant) in organization-related criteria. Also Govindan et al. (2015) noticed in their literature review that environmental management systems were the most common criterion taken into account in green supplier selection and evaluation. Regarding that they state that

environmental management systems are usually considered as a main criterion and are supported with sub criteria like environmental policies and planning and ISO 14001 certification. In product-related criteria energy saving and recycling/reuse systems were most frequently used environmental criteria (Igarashi et al. 2017)

As ensuring sustainable exchange relationships through contracts has become essential (Dubey et al. 2018), the opportunities to incorporate environmental aspect into contracts and contract clauses are important to observe to ensure that environmental criteria included in tender documents are fulfilled by suppliers also during the contract period (Palmujoki et al. 2010). Contract clauses are seen as a way to include applicable additional environmental conditions to the contract and these environmental contract clauses can involve the level and execution of environmental protection in the products' or services' performance phase (Palmujoki et al. 2010). Additional costs to a supplier related to the compliance with environmental criteria might increase the temptation to disregard the criteria. Therefore, it is important to reserve the right to monitor and inspect the compliance with the agreed environmental criteria along with possible predetermined sanctions in the contract. Consequently, it is effectively ensured that environmental criteria is being honored. (Palmujoki et al. 2010)

Contract clauses can be more general and related for example to environmental performance of a company or more service and/or product specific. Examples of general contract clauses are for example a requirement that environmental management system is in place within two years of contract commencement, there is an environmental policy at the commencement of the contract or experiences on how to advance sustainability issues of the products and/or services related to the contract are shared annually. Other examples are clauses like the supplier takes care of transportation and proper handling of waste, environmental management system ISO 14001 or similar is either available or under completion, the supplier shall comply with the appropriate environmental and safety requirements that are pursuant to international conventions, EU law and national regulations.

Product and services related environmental contract clauses vary a lot but for example in cleaning services a supplier could be required to report every six months the name and quantity of used cleaning products and send a proof of compliance for any products used which are not mentioned in the initial bid. Contract clauses can also be related for example to the use of renewable materials, Euro emission standard requirements, the use of recyclable packaging and avoidance of multi-materials, disclosures of shares of renewable energy of total energy consumption of a contracting partner, active work to reduce the service's negative environmental impact and limitation of the consumption of the material to what is unavoidably necessary. (Palmujoki et al. 2010)

Act on Public Procurement and Concession Contracts is applied in procurement when expenses exceed EU or national thresholds (Ministry of Justice 2017). According to Act on Public Procurement and Concession Contracts (1397/2016 1:2 §) “contracting entities shall endeavour to arrange their procurement operations so that procurements can be implemented with optimal economy, quality and orderliness, taking advantage of existing competitive conditions and allowing for environmental and social aspects”. Green Public Procurement can be defined as taking environmental aspects into account in supply processes of products and services (Alhola 2012) and its core is especially in integration of environmental aspect in processes and procedures of public procurement (Majerník, Daneshjo, Chovancová and Sančiová 2017). Ministry of Justice (2017) also states that environmental aspects can usually be related to all stages of public procurement process.

In public procurement environmental requirements should be related to the subject matter of the contract and it should not give purchasers unrestricted freedom to choose supplier (Palmujoki et al. 2010). The amendment of the Act on Public Contracts in 2017 enabled the utilization of public procurement in a strategical way to meet sustainability and business policy goals (Alhola & Kaljonen, 2017) and EU's public procurement directives allow public purchaser to combine price, environmental aspects and other award criteria in supplier decision making but directives do not determine environmental criteria and provide more special guidance how those should be built which leaves a lot of space for interpretations of a purchaser in formulating the most economically advantageous tender (Parikka-Alhola & Nissinen 2012).

According to Alhola (2012) public procurement has a lot of unexploited potential for environmental development and possibilities to create markets for sustainable products and services but this potential has not been utilized widely. The use of environmental criteria has however generalized, and it has been influenced also by directives and amendments. With green purchasing companies are pursuing to meet goals related to energy efficiency and use of renewable energy sources. (Alhola 2012) Also Majerník et al. (2017) recognize that implementation of Green Public Procurement has a lot of potential benefits which can be divided in to four categories: environmental, social and health, economic and political benefits. Environmental benefits consist of increased efficiency of energy consumption, optimization of energy consumption, deduction of water consumption, waste water treatment and recycling, reduced use of non-renewable resources, elimination of pollution of air, water and soil, reduced production of packaging waste and increased environmental quality of life. Improved air quality and healthier working environment are examples of social and health benefits. Financial savings can be obtained through recycling and waste recovery, extended life of products, environmental accounting and environmental taxes along with increased competitiveness. Political benefits of Green Public Procurement implementation could be achievement of environmental objectives of a company, achievement of local and/or global environmental objectives and improvement of image. (Majerník et al. 2017)

Integration of green criteria into the most economically advantageous tender is not straightforward in practice: obtaining high quality purchases at a low cost and compliance with the European Community legal principles (especially free movement of goods, non-discrimination of the bidders and overall limits of procurement directives) do make the process more complex (Alhola 2012). Act on Public Procurement and Concession Contracts (1397/2016 10:94 §, 1:3 §) sets conditions on how sustainability can be taken into account in tendering. Comparison criteria related to sustainability must be linked to the subject of procurement and must follow principles of an equitable and non-discriminatory treatment of participants, transparent acting and proportionality.

Environmental criteria can be used as award criteria in public procurement and a relative weighting is given to environmental criteria just as to all other award criteria. (Palmujoki et al. 2010) Most often used environmental award criteria according to Majerník et al. (2017)

include environmental policy, environmental management systems, chemical content, choice of material, guarantee, recycling and reuse system. Environmental award criteria are more often presented in categories such as transportation services, vehicles, paper products, cleaning services, construction works, office machines and furniture and chemical products. Education and consultancy services, health and social services and IT-related services were noticed to include a lower number of environmental criteria as there have not been obvious existing environmental criteria for such product groups. (Alhola 2012)

Environmental award criteria are not the only way to determine whether the purchase is considered “green”. Environmental criteria may for example be written into the description of the contract, technical specification, contracts clauses or selection criteria. (Alhola 2012) According to Palmujoki et al. (2010) environmental criteria can also be used as a prequalification of bidders, mandatory requirements for the contract or contractual terms which specify the execution of environmental considerations. In public procurement environmental contract clauses must follow the proportionality principle; disproportionate sanctions of a possible environmental breach compared to the contract size and the environmental benefits that would have been achieved if the breach would have not happened are forbidden. It should be noted that from a perspective of contract law creating general terms related to environment could lead to a situation in which the enforceability is unclear as the practical meaning is indefinite and vague. It may be difficult to interpret breaches related to environmental aspects if terms related to them are written in a general way. (Palmujoki et al. 2010)

Ministry of Justice (2017) has given some examples on how environmental aspects could be used as requirements in public procurement. In products these environmental requirements could be for example production with renewable natural resources instead of non-renewable, reduction of use of energy and water in production, banning certain hazardous chemicals, possibility to recycle or reuse products after their life cycle, length of guarantee period, optimization of transportation, reduction of CO₂-emissions, reduction of packaging materials and increasement of recyclability. European Commission also provides Green Public Procurement criteria for certain sectors that can be utilized in tendering. European Commission (EC Europa a) defines that in Green Public Procurement there is a clear,

verifiable, justifiable and ambitious environmental criteria for different products and services. Environmental criteria are based on life-cycle approaches and scientific evidence. European Commission have developed GPP criteria for different sectors and they propose two kinds of criteria for each sector: the core criteria (address key environmental impacts, minimum additional verification effort or cost increases) and the comprehensive criteria (may require additional verification effort or slight cost increases). (EC Europa a)

In the Act on Public Procurement and Concession Contracts some guidance for considering environment in public procurement is provided. A buyer may ask a candidate to report on environmental impact management measures when performing a service. A buyer must refer to the European Union eco-management and audit scheme (EMAS) or recognized environmental management standards or to European or other environmental management standards, when it requires certificates issued by independent bodies attesting that a candidate satisfies the requirements of environmental management standards. (Act on Public Procurement and Concession Contracts 1397/2016 10:90 §) A buyer can require environmental labels in the description of a procurement, in the criteria or in terms and conditions for implementing the agreement with certain conditions: label requirements are based on objectively verifiable and non-discriminatory criteria and are set by a third party, labels are accessible to all interested parties and label criteria concern only criteria that are linked to the subject-matter of the procurement agreement (Act on Public Procurement and Concession Contracts 1397/2016 9:72 §).

Because of the uniqueness of characteristics of environmental and general sustainability dimensions, inputs from different stakeholders like environmental consultants may be required to help address more sensitive issues facing environmental performance and criteria of suppliers. (Govindan et al. 2015). This applies also and especially in public procurement in which law complicates the criteria formation, possibilities to take sustainability into account and the process of environmental sustainability improvements.

2.2.2 Sustainability practices in category management

Logical categorization of suppliers is the basis of modern supply management and strategy development. Aim of the segmentation is to help companies to manage and control their supply better. It helps to differentiate procedures, allocate resources, time and know-how and identify areas which can be influenced and invested on from those that are hard or unprofitable to invest in. (Iloranta & Pajunen-Muhonen 2015) Category management is a relatively new practice but is constantly becoming more important especially for large companies which have a wide portfolio of purchased products and services (Johnsen et al. 2014). Hesping and Schiele (2015) classify category management as a concept which has been developed for practical application and academia has contributed to it only little so far.

In 1997 Noci stated that there is no need for procurement managers to implement green supplier evaluation to all supplier but to categories that depend upon a company's sustainability strategy. He states that from a general point of view a supplier's environmental performance is not significant for suppliers with whom relationships are occasional or deliver for example components to the end product which have a secondary importance in relation to the functionality and environmental impact of them. Today, in some cases his statement may still be valid in some cases but when companies' strategies are more and more constructed strongly around sustainability, it might be essential to consider or at least try to consider environmental issues in all supply categories. This applies especially if a company has set some sort of sustainability targets for the whole supply base. If again sustainability targets are set for some spend share of a company, these secondary suppliers are usually the ones not facing such strict requirements related to environmental improvements.

Sustainability practices in category management differ in nature from other supply processes' practices. In category management sustainability practices are more oriented to analyzing what are the most relevant aspects of environmental sustainability in each supply category. An analysis can be related for example to questions like what the biggest environmental risks of category are and why, are environmental risks similar in the industry/product group or are those more likely to occur only with some suppliers in the

industry/product group, which environmental aspects are relevant in the category and what are the most effective ways to manage a category to contribute to environmental improvements. Generic assessments of sustainability in a category or sub-category levels ease the analysis process for example when planning the tender as some guidelines to consider sustainability already exist. Thus, sustainability considerations in a category management support other supply processes which anyway and eventually is the purpose of category management as purchases are divided to groups which are easier to manage. It is sometimes confusing that category management is usually implemented through tenders, supplier selections and contracts (O'Brien 2015) and that applies also to sustainability practices.

In category management, several analysis tools and activities can be exploited in analyzing the category (Cordell & Thompson 2018). None of those listed by Cardell and Thompson (2018) however are not sustainability focused tools or activities but some of them can be applied to consider environmental issues. For example, they present a macroenvironmental analysis (STEEPLE: sociocultural technological, economic, ecological, political, legislative and ethical environment) in which environmental sustainability is in some level linked to ecological environment analysis in which the influence of natural world, the use of energy and disposal of waste for example are covered. O'Brien (2015) explains category management as a process of initiation, insight, innovation, implementation and improvement stages. In the insight stage, PESTLE (political, economic, sociological, technological, legal and environmental) analysis can be utilized to analyze which environmental forces and drivers are relevant for the category.

In analyzing sustainability of current supply categories, previous research can be utilized. Supply categories could be assessed from a perspective of different impact categories and that way understand the outlines of the state of sustainability and problems better. Souza, Rosenhead, Salhofer, Valle and Lins (2015) propose that life cycle sustainability assessments are the most promising tool for sustainability assessments which include impact categories such as damage to ecosystem diversity, natural resource scarcity and climate change. In a sustainability analysis, also green public criteria reports by European Commission can be utilized. In some reports key environmental hotspots of the sector are

introduced and those help buyers to classify and analyze categories better from a perspective of sustainability and to implement those aspects to tendering and supplier management. (EC Europa b) Supplier assessments (discussed in the chapter 2.2.3 above) can also be utilized in a category analysis. If results of supplier assessments can be composed to category levels, it is possible to compare sustainability rates between different categories and to observe if there is similarities or differences between sub-categories and if there is some category which differentiates as a poorly performing in sustainability matters.

Dabhilkar, Bengtsson and Lakemond (2016) state that sustainable supply management must vary across supply categories as they are defined different power and dependence situations. Varying supply management practices between different supply categories help in pursuing the triple bottom line along the supply chain. They observed that sustainable supply management practices have a positive impact on a supplier's compliance in all categories of Kralijic's matrix but bottleneck items. In bottleneck items suppliers rule the markets and as a buyer is already dependent on the supplier, it is most likely not able to pressure supplier to implement more sustainable activities. In noncritical components they noticed that there is significant trade-offs between lower costs and higher environmental compliance of supplier. In the markets of noncritical components profit impacts are low, neither suppliers or buyers are dependent on each other and there is possibly a very small number of suppliers which are able to comply with environmental requirements of a single buyer. They notice that sustainable sourcing programs and sustainable supply practices are most likely efficient in buyer-dominant categories, such as leverage items. (Dabhilkar et al. 2016)

Miyamoto, Yajima, Tsukahara and Arimura (2020) have investigated advancement of green public purchasing by categories. They noticed that products and services which are purchased less frequently usually are not prioritized in sustainability considerations. They state that it might be beneficial to start implementing sustainability into categories which are purchased more frequently as through repetition sustainability performance and improvements can be increased. This applies also to products purchased in bulk. The more tailored the product is, the harder it is to consider sustainability aspects and take green practices into account. They note that there is a lot of problems related to identifying greener products. In some categories different eco labels and criteria exist which help companies to

identify these greener options which makes the implementation of sustainability easier. But in some cases, they noticed even though energy efficiency information is easily available, price differences between “normal” products and energy efficient products might be quite large and therefore those supply categories do not stand out as green in public procurement.

After the supply category has been analyzed from a perspective of sustainability, measures for implementing sustainability practices in other supply processes should be formed. According to Dupre and Gruen (2004) if there is no measures for verifying whether the category has succeeded or not in the implementation process, the likelihood of implementation of category plan is decreased. In sustainable category management it is important to re-examine categories every now and then. Iloranta and Pajunen-Muhonen (2015) point out that it should be noted that there is not a segmentation criterion able to cover all points of view and therefore flexibility and ability to modify segmentations if needed with several segmentation criteria are relevant for efficient supply management (Iloranta & Pajunen-Muhonen 2015).

2.2.3 Sustainability practices in supplier management

Supplier management defines the ways how relationships with suppliers are developed and maintained (Lambert & Schwieterman 2012) and it is ultimately about motivating suppliers to behave in desirable ways to meet the buyer’s needs (Schuh, Strohmer, Easton, Hales & Triplat 2014) The term supplier management is used interchangeably with supplier relationship management and in this study the shorter version will be used. The concept of supplier management in which environmental sustainability is considered can be called environmentally sustainable supplier management or green supplier management and both of these are commonly used in the literature. Out of all three supply processes in the focus of this study, supplier management is most tightly related to sustainable supply management practices that were examined under the chapter 2.1.2

Hughes (2008) define supplier management by three characteristics: a systematic process in which suppliers’ assets and capabilities are evaluated according to the company’s business

strategy, a determination in which activities to engage with single suppliers and specific planning and implementation of relations with all suppliers which aim to maximize the value gained through these relations. Lamber and Schwietermann (2012) add that supplier management is a way to find value for both parties of a buyer-supplier relationship.

Before deepening into sustainable supplier management, it is beneficial to understand some supplier management practices, its process and a framework which can be utilized also in sustainability matters of supplier management. Trent (2005) have recognized several actions which buyers should implement to manage supplier relationships and make these relationships stronger. These actions are presented in the Table 1 below.

Table 1. Supplier management actions (Trent 2005)

Supplier management actions
Assign individual to manage relationships, including executive managers assigned to manage the most critical relationships
Provide timely and complete supplier performance feedback
Formally assess the supplier's perception of the buyer as a customer
Invite suppliers to be part of an executive buyer-supplier council
Emphasize trust building activities and actions
Practice cooperative cost management approaches
Provide resources to develop supplier performance capabilities
Solicit supplier improvement suggestions with joint sharing of saving
Involve suppliers early during product planning and development
Implement supplier relationships management (SRM) information systems
Meet with suppliers to understand supplier relationship expectations
Invite suppliers to participate in joint improvement workshops
Develop long-term contract agreement that create mutual value

Listed supplier management actions outline well how diverse the actions which can be utilized in supplier management are and in how many contexts sustainability could also be taken into account either as a main issue of supplier management action or as a smaller nuance.

Agreeing with Hughes (2008), Glock, Grosse and Ries (2017) define supplier management as an ongoing and rotating process starting with an identification of suppliers, followed by a systematic supplier evaluation and selection and a supplier development or replacement according to their performance. Lambert and Schwieterman (2012) also state that supplier management is increasingly understood as a process oriented along with strategical, cross-functional and value creating issue. An integrated supplier relationship management framework (Figure 5) which supports the process approach was introduced by Park, Shin, Chang and Park in 2010. In their framework, supplier relationship management process includes shaping of purchasing strategies, supplier selection, supplier collaborations and supplier assessment and development. The process is continuously improved by feedback and with the information gained from the process, managers are able to increase performance of suppliers and relationships. Same framework can be utilized in sustainable supplier management; sustainability perspectives are considered in purchasing strategies (see chapter 2.2.2), suppliers are selected using environmental criteria (see chapter 2.2.1), suppliers collaborate with buyers for example to reach sustainability targets and sustainability of suppliers is assessed and developed based on the results.

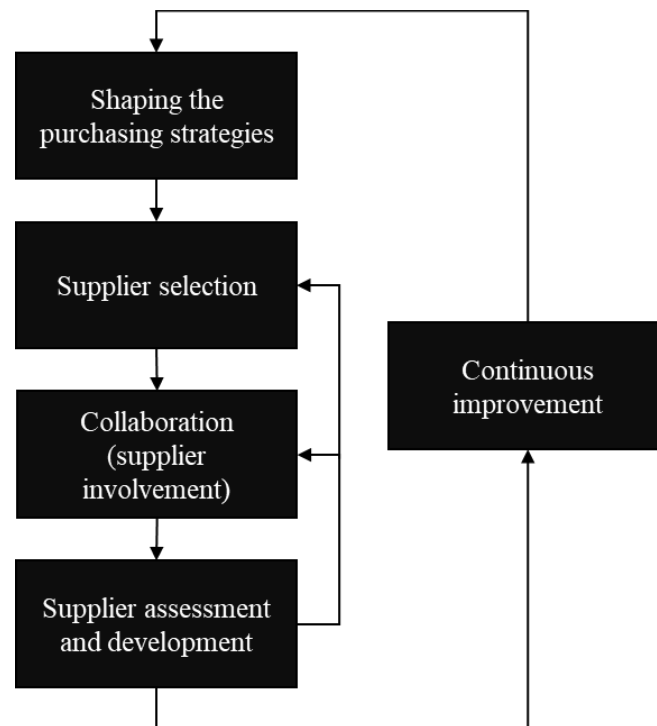


Figure 5. Supplier relationship management framework (Park et al. 2010)

Lu, Wu & Kuo (2007) state that buyer-supplier relationships are in a critical role when addressing environmental issues. Dubey et al. (2018) agree with that by noting that sustainability principles are relevant in relationships between buyers and suppliers as they establish the long-term success of supply network. As main goals for sustainable supply management, Lu et al. (2007) note that it is important for buyers to promote sustainable environmental behaviour among the suppliers in supply chains and help them to recognize how important it is to resolve environmental issues and support them to install their own initiatives for sustainability improvement.

Tate et al. (2012) recognized a lot of green supplier management practices in their research: supplier code of conduct, software to monitor and measure environmental performance, supplier site visits/inspection, supplier audit, supplier involvement in improving efficiency/reduction of commodity use/design/EHS risk and impact reduction/corporate environmental improvement/recycling/reduction, supplier complete annual self-assessment, supplier provides environmental performance reporting, environmental training, collaboratively integrate supplier environmental criteria, work with suppliers to develop

appropriate environmental criteria, formal corrective action plans, special recognition to suppliers who meet or exceed corporate environmental goals and information sharing. Grosvold et al. (2014) list third party certification, code of conduct, training, rewards/sanctions and collaboration as sustainable management practices. Measures for sustainable supply chain are according to them for example auditing, monitoring, questionnaires, risk assessments and progress assessments.

As already stated, supplier code of conducts were developed for protection against social non-compliance (Johnsen et al, 2014) and more recently environmental concerns such as waste treatment, toxic chemicals and pollution have been included in those (Brockhaus, Fawcett, Hobbs & Schwarze 2019. According to Fraser, Schwarzkopf & Müller (2020, 8235) “a code of conduct potlines a company’s expectation of its suppliers’ sustainability compliance. A review of codes of conduct by Emmelhainz and Adams (1999,51) indicates that “there is only limited uniformity across codes, the codes lack substantial detail, and the codes are particularly lax in the area of monitoring and enforcement”. A more recent findings by Brockhaus et al. (2019) indicate that there have been a significant harmonization and standardization of supplier codes of conduct, but changes are still aligned to the lower end of acceptable norms. Companies have not used supplier code of conducts to differentiate themselves or to raise the bar for environmental performance. Based on the findings, it could be stated that supplier codes of conduct are not the most efficient ways to direct sustainability improvement of suppliers and are mainly used as a mandatory minimum sustainability requirements document.

To investigate if suppliers are complying with requirements of supplier codes of conducts, law and regulations, supplier assessment and monitoring are needed in companies and according to Grimm et al. (2016) those are good practices for that purpose. Gimez et al. (2012) state that companies implement monitoring programmes to minimize the opportunism of having suppliers which act unethically or illegally in terms of environmental (or social) issues. According to Gavronski, Klassen, Vachon and do Nascimento (2011) a supplier’s environmental monitoring assesses its environmental practices and outcome. Practices refer to resources and capabilities and outcome to environmental performance. Supplier information needed for monitoring can be gathered for example from supplier

questionnaires (Min & Galle 2001). Tate et al. (2012) suggest yearly self-assessment for suppliers concerning sustainability matters. Structured sustainability assessments are needed as without them effective supplier sustainability management might be achieved only randomly and then there is a potential for negative effects on corporate image (Foerstl, Reuter, Hartmann & Blome 2010). Regular scans of suppliers for social and economic issues along with environmental ones, are also key measures for successful sustainability risk management (Hofmann, Busse, Bode & Henke 2014). Additionally, also Foerstl et al. (2010, 124) support the view that supplier sustainability assessments are important in supplier risks analyses as they propose that “supplier sustainability risk assessment enables an effective sustainability risk mitigation process”. However, there is always a risk that suppliers do not report completely truthfully about their sustainability. Gimenez et al. (2012) point out that supply chain assessments without effective follow-ups and engagement are like ineffective and have no impact on the triple bottom line. In case of a non-compliance or concerns of potentially inaccurate or corrupted sustainability reporting, supplier audits and supplier development may turn out to be necessary supplier management activities. Of course, supplier assessments are not useful only in cases of non-compliance but also in identifying the potential for sustainability improvement of a single supplier and helping to understand the bigger frame of areas and directions for development actions in the supply base.

Concerns about the risk of supplier non-compliance with environment have increased in recent years (Chen & Lee 2017) and as companies are increasingly required to monitor sustainability risks and activities of their supply chains, supplier sustainability audit activity has increased (Fraser et al. 2020). Fraser et al. (2020) see supplier sustainability audits as a continuum for easily implementable supplier codes of conduct and supplier self-assessments. Supplier audits are used to find out whether suppliers are complying with the code of conducts and to verify they meet the requirements of standards and regulations. Without supplier audits, buyers have to rely on reporting suppliers provide themselves of the sustainability issues and tolerate risks of non-reported issues and inaccurate reporting. Auditing usually requires a lot of resources and therefore companies need to find a comprise between the investment and the risks. (Johnsen et al. 2014) Leppelt et al. (2013) note that is highly important for companies to create processes in case of supplier non-compliance and also follow ups for suppliers. Plambeck and Taylor (2016) examined that in some conditions

increasing auditing and for example penalizing suppliers for harm and non-compliance might decrease the responsibility effort of a supplier. Based on these notices, it could be stated that audits alone as sustainable supplier management practices are not really efficient to implement and improve sustainability issues of suppliers rather always require some additional actions from buyer.

Along with sustainability's importance in supplier selection and supplier evaluation, Nieminen (2016) highlights its importance also in supplier collaboration. Gimenez et al. (2012) found out in their study that supply chain collaboration contributes to improve all three dimensions of sustainability. Hamner (2006) states that cooperation and collaboration have the highest positive impact on supplier behavior of different green purchasing strategies. Krause, Scannel and Calantone (2000) propose different options for a buyer in case suppliers are not able to meet sustainability requirements. One distinct option is to simply replace the supplier with a more sustainable one but there is also an option to collaborate with the supplier and support and develop it so it might be able to meet the sustainability requirements of a company. Kumar et al. (2014) notify also Krause's et al. (2000) options to either replace supplier or develop it as they state that the buyer should be prepared to make extreme actions and threaten to de-select its suppliers that do not pay attention to buyer's requirements. This element of risk should be considered already in supplier selection process. (Kumar et al. 2014) Gavronski et al. (2011, 879) note that supplier collaboration requires "requires development of the most sophisticated capabilities and the deeper relationship with suppliers" which makes it more elaborate among different sustainable supply management practices. When companies are aiming for example to spread carbon awareness among its suppliers along with providing them incentives to become more environment-friendly, a collaborative approach is required. Supplier collaboration in environmental issues requires considerable number of resources and capabilities and therefore Gavronski et al. (2011) recommend environmental supplier collaboration when some sort of advanced stages in environmentally sustainable supplier relationships have already been reached.

When a company is planning to develop supplier's sustainability performance, it conflicts to the same consideration of how much resources it is going to require and what is the optimal

balance of resources and possible improvements it may create. In that discussion supplier development stages by Sánchez-Rodríguez, Hemsworth, and Martínez-Lorente (2005) might be beneficial to consider. They defined three supplier development constructs in their study: basic, moderate and advanced supplier development. These sets of practices were grouped according to the level of company involvement and implementation complexity (skill, time and resources required). Following practices can be included in each development stage:

- Basic supplier development
 - Supplier performance evaluation
 - Feedback
 - Sourcing from a limited number of suppliers
 - Qualifications
- Moderate supplier development
 - Supplier visits
 - Rewards
 - Recognition of suppliers' performance improvements
 - Collaboration
- Advanced supplier development
 - Supplier trainings
 - Supplier's involvement in the design process
 - Intensive information exchange (accounting and financial information, cost and quality information)

With a help of this categorization of development practices it might be easier for a company to assess which development level concerning sustainability issues would best fit the situation and supplier. Supplier development programmes can be created for broader supplier segments with similar characteristics and challenges, but suppliers are usually developed individually in a relationship between buyer and supplier (Rezaei, Wang & Tavasszy 2015).

In the literature, there is only a little research of sustainable supplier development practices even though in the most sustainability reports of global companies those practices are mentioned (Liu, Zhang, Hendry, Bu & Wang 2018). In the literature review by Bai and Sarkis (2011) they identified several supplier development activities. Their study was not

focused on sustainability but examples of identified practices in which sustainability could be considered are training suppliers in buyer expectations, training suppliers in cost control, conducting training and education programs for supplier personnel, reducing supplier costs, supplier rewards and incentives, supplier evaluation and feedback, developing supplier assessment programme, providing performance feedback, auditing suppliers, setting improvement targets, sharing information, regular joint meetings, an ongoing communication, a cross-functional supply chain team, building top management commitment, formal long-term plans for supplier performance improvement and a criteria established about when to enter into supplier development. Liu et al. (2018) support this idea of including sustainability matters into supplier development activities. According to them suppliers with high sustainability performance can be given recognition and rewarded, supplier costs can be reduced by promoting recycling practices, environmental metrics can be implemented, contractual requirement and code of conducts can be created to role out suppliers with poor sustainability performance, supplier's top management support for sustainability improvement can be build and training programs about sustainability can be provided either at individual or organizational level.

Performance measures of supplier development can be either short- or long- term focused (Glock et al. 2017) but in sustainability matters it is highly justifiable to try to seek only long-term sustainability improvements and development. To conclude sustainable supplier management practices, Foerstl et al. (2010) state that supplier assessments, supplier decisions and supplier development projects should be tightly interconnected for a company to effectively manage possible exposures for sustainability risks originated from single suppliers or the whole supply base. A company should carefully observe its supply categories and suppliers and suitable sustainability practices for implementing sustainability to its supply base as efficiently as possible.

3 RESEARCH METHODOLOGY

This chapter includes descriptions of research methodology, data collection and data analysis which were used to carry out the empirical part of this study. Reliability and validity of the study are also reviewed, and the case company is briefly introduced at the end of this chapter.

3.1 Methodology

The study is conducted by using qualitative research methodology because of the nature of it. The intention of this study is to achieve in-depth perception of the tools and models used in supply processes to engage suppliers to environmental sustainability and corporate sustainability targets. Therefore, qualitative research methodology is suitable for this research, as it focuses on practices instead of logical concepts as in a quantitative research methodology (Koskinen, Alasuutari & Peltonen 2005). In qualitative research methodology, hypotheses are formed as research proceeds and data is collected and analyzed (Koskinen et al. 2005).

More specific methodology used in this research is a case study. According to Yin (2003) case studies are used to answer to questions “how” which for its part support the phrasing of the main research question. Case study is the most commonly used qualitative research method in business economic research, and it might be able to strongly commit itself to company’s practices (Koskinen et al. 2005) and results are often utilized in practice (Metsämuuronen 2008).

Semi-structured interviews were used as a data collection method. In semi-structured interview there is predefined themes and possibly some key questions which are covered in the interviews while also allowing flexibility and contextual adaption (Farquhar 2012). The use of key questions may vary; the order of them may can be different and they can be omitted depending on the organizational context encountered in relation to the research topic. Also, additional questions can be discussed in the interview to explore the topic more

deeply. (Saunders, Lewis & Thornhill 2015) Semi-structured interviews are suitable data collection method for this study as they enable contextual flexibility; in some interviews there will be more detailed questions related to company's procurement processes whereas in some interviews interviewees are not professionals in the field of procurement but in other topics, such as environmental sustainability, related to this study. In different interviews the importance and validity of environmental sustainability might also vary and a need for additional, more detailed, questions may arise. Because of differing backgrounds of interviewees, total of three different interview questions sets were formulated. Interview questions set 1 and 3 include procurement related questions and those are divided according to three different supply processes. Interview questions sets 1 and 3 were used in the interviews with procurement professionals. Interview questions set 2 was used in the interview with environmental manager and it did exclude specific questions related to procurement functions. During the interview process, some questions of interview questions set 1 and 3 were noticed to be not relevant and therefore were not covered in all interviews.

3.2 Data collection and data analysis

The data for this study was collected through ten semi-structured interviews which represent the empirical part of this study. Most of the interviewees work in procurement related tasks and some of them are more specialized in sustainable procurement. Varying backgrounds of procurement professionals related to sustainability allow to observe how it affects to the implementation of sustainability practices. One environmental manager was chosen to interview based on her expertise and relevance to the environment and sustainability. When planning interviews, it was preferred that at least two companies or organizations would operate under a public procurement legislation to include that perspective especially in the tendering process as public law includes some exceptions and specifications which must be taken into account.

The list of positions of interviewees and industries is presented in the Table 2 below. To improve the reliability of study, interviewees will be presented anonymously as it helps discussions to be more open and in-depth at the time of the interviews. Interviews were held

in Finnish to prevent possible misunderstandings and enhance more open communication without language barriers which for their part will increase the reliability of the study.

Table 2. List of interviewees

Interviewee	The position of interviewee	Industry
A	Senior Advisor, Sustainability	Public administration
B	Senior Vice President, Sustainable Sourcing and Logistics	Forest industry
C	Environmental Manager	Transportation
D	Sourcing Manager	Transportation
E	Sourcing Manager	Transportation
F	Sourcing Manager	Transportation
G	Sourcing Manager	Transportation
H	Sourcing Manager	Transportation
I	Sourcing Manager	Transportation
J	Sourcing Manager	Transportation

All interviews were held online via Teams in March and April 2021. An average duration of an interview was 60 minutes. All interviews were recorded with the permissions of the interviewees. After that interviews were transcribed to help to process the data and analyze it.

3.3 Reliability and validity

Establishing the quality of research is a critical part in formulating research methodology (Saunders et al. 2015). Quality of a research can be evaluated by reliability and validity meters. Reliability of the research refers to replication and consistency: is it possible to repeat the study with exactly same research methods and conclude with same results and findings (Saunders et al. 2015; Lee & Lings 2008). Validity of the research evaluates the ability of

the research to measure what it was intended to measure and indicates how well the collected data is reflected in the conclusions and how justifiable and generalizable the conclusions are. (Saunders et al. 2015; Lee & Lings 2008).

To increase the reliability and validity of the study, detailed and transparent description of the research process, for example research methodology and data collection, is presented which allows readers to judge for themselves and replicate the study if wished. However, the role of reliability and validity in a quality assessment of qualitative research is contested (Saunders et al. 2015) and it is not likely that semi-structured interviews could be repeated in the exact same form again. According to Metsämuuronen (2008) one of the case study's advantages is that it allows generalizations. However, the amount on interviewed companies will be limited and therefore finding cannot directly be generalized to other companies, procurement categories and industries.

Reliability of the study will also be ensured by interviewing several people that are professionals in the main concepts of this study which ensures versatile information and aspects to the topic. Positions of interviewees will be presented for the same reason to readers to judge themselves how widely the research topic is addressed in the interviews. In the interview process reliability is increased by executing them in Finnish, a native language of interviewees', which allows more in-depth discussions and prevents more probably possible misunderstandings. However, in the transcribing process interview audios will be partially translated into English which may have an effect to the reliability of the study. It must be also noted that researcher's interpretativeness should be considered in the assessment of the reliability of the study.

3.4 Case company

The case company is a service company operating in transportation industry mainly in Finland. Responsibility and sustainability are central in the case company's strategy and vision. Responsibility is the unifying theme of the case company's operations and growth

areas and that created a collection of shared values which guide all operations of the company.

The case company complies with the specific process created to ensure sustainability and responsibly on procurement. The process includes guidelines related to the compulsory use of Supplier Code of Conduct on all new requests for invitation, requests for proposal, purchase agreements and purchase orders, risk country assessments and audits of suppliers and their subcontractors operating in a risk country classified by Amfori BSCI, supplier self-assessment questionnaires and ensuring legal obligations of suppliers which are applicable to the Act on the Contractor's Obligations and Liability when Work is Contracted Out.

4 EMPIRICAL FINDINGS

This chapter is going to present empirical findings from the interviews. First the perceptions of environmental sustainability as a part of supply management, drivers and motivation behind it, related challenges and future trends of environmental sustainability will be discussed. After that sustainability practices in the three supply processes are presented in the same order as in theory chapters.

4.1 Sustainability in procurement

Attitudes towards sustainability and knowledge related to it differ a lot between interviewees. According to interviewee C, environmental sustainability is based on that a company is responsible for its own environmental effects. Environmental sustainability is stated to be the most important dimension of sustainability in companies at the moment by some interviewees. Environmental sustainability from a corporate perspective mean according to interviewees for example identifying all environmental effects of a company, minimizing environmental risks of a company, not harming environment with own operations, complying with laws and regulations and continuous improvement related to sustainability not only in own operations but also in suppliers' operations. For example

interviewees A and C note that environmental sustainability is more and more being extended to supply chains and life cycles of products and services. Interviewees B and H mention also that their personal thoughts and concerns about sustainability effect how and why they consider sustainability at work: a desire for continuous improvement, a willingness to do something for the unsustainable situation in the world and an ability to “sleep well through nights” are some of the mentioned examples. Aspects related to environmental sustainability are identified widely in the interviews: use of water, use of energy, chemicals, waste management, emissions and biodiversity. Almost all of the interviewees though note that relevant environmental aspects are highly dependent on the industry and the type of product or service. As a general notice, interviewees that are more connected to sustainability issues through their positions, have presumably wider and deeper understanding of sustainability. Especially some sourcing managers’ sustainability knowledge is quite limited to sustainability of their own supply categories, and they estimate their sustainability knowledge to be in a basic level. Many of the interviewees recognize the important role of procurement in a company’s sustainability.

A variety of main drivers and motivations behind sustainability are identified in the interviews. Regulation related to environment is, supposedly, seen as an important motivation to consider sustainability in procurement. Brand image and reputation are the most often mentioned as a motivation to act sustainably and take it into account in procurement. Interviewee E mentions only brand image when asked about sustainability drivers. Along with brand image, company reputation, strategy and values are determined to be important. Some interviewees, for example D and B state that sustainability is strongly considered in a company’s strategy and therefore guides all actions inside a company. They stress that when sustainability is in the core of company’s strategy, it should be seriously considered also in a decision making. Related to that, interviewee J sees some sort of contradictions between brand image, strategy, decision making and sustainability. In practice sustainability might not be highlighted in an operational level and in a daily decision making. Also, a company’s vision to be “environmentally positive” and its aims to search better and more sustainable options in its industry is seen as an important motivation to act sustainably also in procurement. Own sustainability goals of a company also guide sustainable procurement actions as interviewee I states:

” We have to take care that our suppliers take actions towards the same direction to which we as company want to go.”

Expectations of different stakeholders are noted as a main motivation to act more sustainably. Interviewee A notes that currently stakeholder expectations of sustainability, especially in public procurement, are really high and in a reality, those are not even met yet. Customers’ requirements related to sustainability are listed as important drivers for improving company’s own operations. Interviewee C sees sustainability as a snowball effect: customers require sustainability from a company, a company requires sustainability from their suppliers and suppliers require same things from their sub-suppliers and so on. In that chain, the role of procurement function is highly essential. Generally increased knowledge of sustainability issues and trends are also named as drivers for sustainable procurement. Societal responsibility of a company is also mentioned in this context by interviewee A.

A little bit unexpectedly to the researcher, only one of the interviewees (C) notes cost efficiency as an important motivation to consider sustainability in procurement as in many cases environmentally friendly or energy efficient products or services do have a positive effect on costs. Considering sustainability as a risk management tool is also highlighted only by interviewee H. She states that sustainability problems in supply chains might cause severe disadvantages for a company and sustainability has a role also in a continuity of a company.

Identified sustainability challenges in procurement are quite similar in all interviews. As interviewee B states, monitoring is traditionally the biggest challenge in procurement and that applies especially to sustainability matters. Challenges related to sustainability emerge especially when supply chains are long and extend around the world. Companies operating in Finland are easier to monitor but companies in Europe, let alone Asia, are according to some interviewees, for example A, G and E, extremely hard to monitor and they feel like they do not have enough tools or knowledge for monitoring those. This and challenges related to transparency of supply chains are noted in many interviews as big challenges.

A management of life cycle is also seen as a challenge by interviewees D and I, especially from a perspective of end users. It is an identified challenge to assess the life cycle of product or service before it is procured but there are also challenges in the other end of life cycle. If the service or product's end users in a company do not act according to instructions created, individuals responsible for the actual procurement may feel that the work and efforts they have made for the sustainability in the planning stage are partially pointless. As interviewee D says:

“Sometimes reality slaps you in the face. No matter how much sweat, blood and tears are poured to create some sort of process chart, it just is not put into practice.”

One challenge in sustainable procurement is also to identify all the possibilities how sustainability could be considered in procurement. If the link between product or service and environment is clear, interviewees assume that taking it into account for example in tendering would be relatively easy. But when the link is indefinite or even missing, challenges begin to emerge. Challenges are related to things such as what kind of environmental aspects and criteria could be considered and what is the right level for considering sustainability that in the markets there still remains good and cost-effective suppliers and products / services. Interviewee F notes that it might be easy to assess and compare numeric, quantitative sustainability criteria. But when sustainability criteria and requirements are more qualitative in nature, it is hard as there simply is not enough knowledge. Some of the interviewees estimate that their market knowledge is not good enough so that they would be able to screen markets from a sustainability perspective and compare the actual sustainability actions of suppliers. On top of the challenge of identifying sustainability possibilities, public procurement law sets extra challenges especially into tendering process and every interviewee who must consider public procurement law in their work do mention that.

Lack of resources is also mentioned almost in every interview as a thing that hinders the process of taking sustainability into account more efficiently. Time is restricted and sustainability cannot be paid attention in an extent which would be ideal and desirable. This

answer does not differ whether the interviewee was specialized in sustainability issues or not. There is not enough time for orientating to analyze how much time would be beneficial to use for searching sustainability possibilities in procurement compared to the benefits those might possibly create when fulfilled. Interviewee C notes that a lack of time leads also to challenges to keep up with relevant sustainability issues and maintain the role of sustainability pioneer in the markets.

Some solutions for the presented challenges are suggested by interviewees. Many interviewees say that they would like to see that sustainability is more often considered in a decision making and that it would be valued more than it currently is. Interviewees I and J experience that a company is not willing to pay more for more sustainable options in some purchases. They estimate that if sustainability matters would be valued along with costs in procurement, it might motivate them to actually invest more into sustainability aspects at their work. The importance of top management support is hereby proved to be important in sustainability matters. Interviewees D, I and J suggest that it would be nice to see that the strategy and values of a company really affect the everyday work and sustainability issues are put into practice in all company levels. Interviewee D says that she sees that the world and people are developing to a more sustainable direction, but the process is slow and therefore companies should highlight the importance of sustainability even more.

A few interviewees D, H and J suggest that it would be beneficial to approach sustainability matters and possibilities from a supply category perspective. Concrete top-level examples of what are the possibilities for considering sustainability and which sustainability aspects are especially important for a company are seen as good ways to help to start the conversation related to sustainable procurement for example with different business units and operations. Mechanisms and controls related to sustainability in a process level are also desired. Different trainings are also seen as beneficial ways to improve the level of sustainability knowledge. Exploiting own connections and public sources are also mentioned as beneficial ways to tackle sustainability issues, especially in public procurement. As interviewee F noted:

“When we talk about public procurement, all documents are primarily public and nobody can keep them private, on themselves. Quite well you can exploit the work somebody else has done instead of reinventing the wheel.”

Interviewee E hopes that somebody in the procurement function would take the ownership of sustainability. In that case, there would be a specific person responsible for planning the sustainability frameworks, internal guidelines and sustainability criteria and it would be relatively easy for individuals responsible for the actual procurement to take sustainability into account and evaluate its relevance for the specific procurement case.

Some of the interviewees which are more familiar with sustainability were asked about their thoughts of the future and trends of environmental sustainability. Professional thoughts of which environmental sustainability aspects will be highlighted in the future help companies not only to respond to the current requirements but also to plan for possible future requirements or even prepare for tightening regulation related to environment. Climate and emissions, which are currently hot topics in sustainability discussions, will according to interviewees A, B and C continue to be one of the most important issues and increase their importance even more in a corporate world and supply chains. Measuring emissions is still difficult for many companies and there is a lot of challenges related to it. In (public) procurement it has been especially hard to set supplier criteria related to emissions. As companies are setting science based targets and targets for carbon neutrality or even carbon negativity, it sets challenges especially to measuring, weighing and comparing emission data. Water and effluents are also noted as important sustainability aspects in the future. Related to environmental sustainability, a search for more sustainable alternatives of products and services is also considered as an issue that will be highlighted in procurement in the future. That is already done in some extent, but not in a larger scale across industries. Interviewees A and C state that biodiversity will be highlighted in the future and will possibly become an equal concern with climate and emission and become even an ecological crisis. Researchers currently recognize biodiversity as a future concern, but it has not yet properly reached the attention of societies, companies and organizations. Practices related to biodiversity are in some ways similar to the ones used to manage climate effects and emissions but there are still remarkable differences which require continuing research.

Interviewee A notes that some sustainability practices related to the climate and emissions, such as calculating CO₂ equivalents, are quite straightforward but a company's effects to biodiversity and vice versa are harder to evaluate and manage. When even large companies and organizations are struggling with the biodiversity issues, it could be assumed that challenges in supply chains will be exponentially harder. Important aspects of environmental sustainability in the future are noted by interviewee B to be highly dependent on the industry and the aspects company itself emphasizes in its operations.

4.2 Implementation of sustainability to supply processes

More detailed practices related to environmental sustainability in different supply processes vary. In the following chapters empirical findings related to these sustainability practices, ways to implement those, possible challenges and many other observations from interviews are presented.

4.2.1 Implementation of sustainability practices to tendering and contract management

Based on the interviews, manners of an approach to sustainability issues in tendering and contract management processes differ especially when it comes to practices which aim to exceed the level of legal requirements for environmental sustainability. In some cases, the approach is much more systematic and there are certain sustainability requirements which are followed and taken into account in all tenders. In some other cases, sustainability is only in the responsibility of individuals responsible for the procurement or the project team. This does not mean that sustainability is not considered at all but that actions for achieving sustainability improvements through tendering and contracts may lack. For example, in the case company, supplier code of conduct is a compulsory part of all new requests for proposal and in tendering legal obligations are ensured if suppliers are applicable to the Act on the Contractor's Obligations and Liability when Work is Contracted Out.

Interviewee B states that their company has a pre-qualification process which potential suppliers have to pass in order to become a company's supplier. Pre-qualification process is used to ensure that sustainability requirements of the company are met. In the pre-qualification process suppliers sign a Supplier Code of Conduct and complete a mandatory online safety training. In addition to the fact that potential suppliers are already screened to meet sustainability requirements of the company, in all requests for proposal emissions intensity information of a product or service is requested. Emissions intensity is sufficiently sweeping to be valid for all suppliers as supply chains are wide and there is a lot of different suppliers from different industries. She states that nowadays very few companies can state that emissions are not relevant for them in any way. Biodiversity, water and effluents, waste management and chemicals are not as valid for all companies as emissions. Interviewee B gives also an example that:

“Even though you have a really small consultancy company with a one room office, it would still be desirable to change for example to a led lamp.”

However, she states that comparisons of emissions intensities of different suppliers have been difficult as those have been more like evaluations instead of exact calculations of emissions. Nevertheless, interviewee B sees that they are doing the right things for sustainability improvements and these small steps are required to make the information reliable and to tie it more tightly to the decision making.

Interviewee A does not see the use of some general sustainability criteria in all requests for proposal as a suitable method. She addresses that for example a requirement of a certified environmental management system is not relevant in all cases as supplier may have their own environmental management systems which are much more beneficial for them compared to for example some ISO certified management system. Also sizes of suppliers set some challenges for what can be required in terms of sustainability. She notes that as in public procurement the criteria have to be unambiguous and measurable, there is challenges related to carbon footprints as there is not yet a national, uniform way to measure those.

Most of the interviewees say that sustainability is mentioned in the requests for proposal in a very general level. Interviewee A tells that they have a special procedure in the beginning of a tendering process. An evaluation group, which consists of procurement professionals, lawyers and people responsible for sustainability, uses a comprehensive, check list type of a tool for evaluating all dimensions of sustainability and determining which are the relevant aspects for that exact purchase. Climate impacts, chemicals, emissions to the ground, water and air and biodiversity are checked point by point. The evaluation group is seen as beneficial as in many cases different and more extensive issues stand out compared to what only one person alone could have come up with.

Any of the interviewees have not yet formulated very detailed category or industry specific sustainability criteria. Requests for proposal are usually made based on the specifications of operations or business units and if there are enough resources, more specific and suitable sustainability criteria are considered in the process. This tendering specific approach for sustainability considerations is most extensively recognized among interviewees. Most of the interviewees from D to J state that taking sustainability into account is in a responsibility of themselves and there is not a specific group created for it. A problem with that is when operations or business units to which a product or service is procured for is not interested or self-imposed in sustainability issues, sustainability is often ignored in the criteria formulation. A lack of sustainability interest of operations or business units is a widely recognized issue, and it is seen as a thing that hinders the process of taking sustainability more deeply into account in tendering.

Many of the interviewees, for example D, E, H and J, see that some sort of sustainability templates / tools and sustainability criteria banks are or would be beneficial to utilize when considering relevant sustainability aspects in each purchase. Especially when there is a lot of different ongoing tendering processes and resources are tight, these kinds of mechanisms to implement sustainability are seen as quite effective. Inside a smaller core group, these kinds of things might help to consider if there are any case-specific relevant sustainability issues and whether it is possible to add some sustainability aspects to minimum requirements or to awarding criteria. Of course, if there is uncertainty related to sustainability or in cases in which sustainability is highly essential, a help and expertise of sustainability and

environment professionals should be utilized. It is beneficial to also view previous tenders and consider if it would be possible to raise the level for sustainability requirements based on the experiences from previous contract periods. Interviewee A mentions that collaboration with other buyers is beneficial in implementing sustainability to supply chains. When large operators in the industry decide together for example to tighten emission limits of vehicles in all requests for proposals, it do have an effect to the markets.

In public procurement, however the use of sustainability criteria is more complicated. Most of the interviewees note that sustainability criteria are used only as minimum criteria, a gatekeeper for applicability. Interviewee A explains that whether the sustainability criterion is used as minimum requirement or as awarding criterion in public procurement, it is highly dependent on how heterogenous or homogenous the market is. If the product or service's market is homogenous, it is easier to set sustainability as a minimum requirement and it is also "safer" from a perspective of The Market Court. She notes as a downside that in these cases outsiders often criticize the procurement unit for tendering only based on costs even if in a reality, minimum requirements for sustainability have been very tight. If the market is more heterogenous in nature and it is known that there are some sustainability pioneers, but the overall sustainability level of the market is a little unclear and there is a will to allow a large group of different kind of companies to participate, sustainability as awarding criteria is usually used. Sustainability is used also as awarding criteria in cases where there is not enough resources to execute wide market studies or market dialogues. In the cases of sustainability awarding criteria, suppliers are rewarded for sustainability pioneering and sustainability investments, but the competition is made possible also to others. Most of the interviewees however state that if sustainability is considered in public procurement, it is mainly used as a minimum requirement. Interviewee F notes that it is easier to include some kind of "on/off" sustainability criteria in awarding criteria as then there is a smaller risk for deficiencies of evaluation.

According to interviewee A, the use of sustainability as a suitability requirement have apparently been little problematic again from a perspective of The Market Court. A challenge in taking sustainability into account in public procurement is that usually there is not enough knowledge related to markets and how the requirements would influence to the

number of applicable tenderers. Public procurement law then sets challenges also for creating some sweeping sustainability criteria which could be utilized in all requests for proposal. Public procurement law also creates problems when you do not have enough knowledge about setting environmental criteria and interviewee J notes that:

” There is a risk that if you require some sustainability criteria in public procurement, but you do not weigh it or it does not have an influence and as an outcome these issues are not well managed (by the selected supplier), you will right away end up in the media as that is a public information. We should consider that beforehand as afterwards there is very little you can do and then a lot of problems will show up.”

Interviewee A also points out that legislation on public procurement should be amended in order to address sustainability issues and problems better in procurement. Now court decisions can be very detrimental to public actors in matters of sustainability. She notes that efforts should be made to raise awareness and inform the Ministry of Justice so that, through development work, more tools can be given to public actors to monitor and influence sustainability issues.

In public procurement the law allows, for example, the use of certificates and eco-labels in tendering and according to interviewee A, they are useful ways to solve control and monitoring problems. Then a certification organization is responsible for taking care that supplier's is acting according to the requirements of certificate and investigating possible misconducts. Several interviewees also highlight the use of Hansel's services (central purchasing body for central and local governments in Finland) in procurement whenever it is possible. Hansel has a lot of resources and know-how, as well as people familiar with the subject working on tenders. In many cases, sustainability has also been taken into account, according to interviewee F, to the extent that is relevant and even possible from the point of view of the law. With Hansel, the tendering process is usually cost-effective and straightforward. Especially in large purchases, a specification planning takes a lot of time, and in matters of sustainability, many interviewees feel that company's own resources would probably not lead to a better result than Hansel's.

Some of the interviewees were also asked about their thoughts on which cases it would be easier, more relevant or more likely to use some sustainability criteria in relation to the subject of the procurement. Interviewee H believes that sustainability is more likely to be highlighted in purchases that are more visible to the company's customers and thus it is important that they are in line with the company's strategy. These include for example electricity and vehicles, and it is believed that operations and business units also recognize the importance of sustainability in tendering. It is noteworthy that many of the interviewees point out that environmental sustainability is not so important in their own area of responsibility but consider the responsibilities of others to be relevant from this sustainability point of view. Objects of tendering in which sustainability might be a more essential issue to include according to interviewees are waste management, cleaning services, data protection destruction, hosting, transportation services, vehicles and products manufactured in Asia. There are slightly different views on vehicles. According to some interviews, the transport sector is advanced in, for example, emissions accounting and general environmental information, and there are existing emission standards, but this also has a clear impact on pricing. Interviewee G states that price is kind of a barrier for taking sustainability into account, while interviewee B points out that in transportation emissions and minimizing them are definitely weighted above costs.

Also, supplier code of conducts were touched in the context of tendering and contract management. As already mentioned, most of the interviewees state that they use codes of conduct in all requests for proposals as minimum requirements for sustainability and in many cases that is the only way sustainability issues are covered. Interviewee A points out that they do not extensively use supplier codes of conduct, but similar general sustainability requirements as in supplier code of conducts are written to the contracts. According to interviewees, the requirements of codes of conduct are not deepened in contracts and more specific sustainability requirements and essentials are always considered on a case-by-case basis at the tendering process and are highly dependent on the subject of the procurement. Attitudes towards supplier code of conducts also differ slightly. Interviewee B states that they have created a new supplier code of conduct with the future in mind and thereby communicate for example the needs for life cycle accounting and emission data for their suppliers and give suppliers notices in advance of what is expected from them and where the

company is heading to regarding sustainability issues. Interviewee A states that in corporate sustainability, resources should not be used too much on creating a supplier code of conduct. According to her, at some sustainability related meeting a representative of Fair Trade had stated that supplier codes of conduct do not really work; public statements about how a company operates sustainably and what it demands for example from suppliers are not truly effective.

Challenges that supplier code of conducts are usually written in a too general level can also be observed from interviews. Several interviewees from D to J state that the codes of conduct do not need to be discussed or negotiated with suppliers and are accepted as they are. One exception to this is when a supplier, usually larger than the buying company, requires in the contract stage that their company's code of conduct should be followed instead of the buyer's and do not listen to what exactly the buyer would require in its code of conduct. However, interviewee E states that this is hardly a problem, as in larger companies the content of code of conduct possibly is at a more precise and advanced level compared to the buyer's. In other words, it can be concluded that supplier codes of conduct represent quite a bit the minimum level set by legislation to which all suppliers promise to commit to. Supplier code of conduct usually forms a part of the contract and the right to audit or otherwise verify compliance is reserved in it. Interviewee B states that in breach situations, the primary aim is to improve the supplier's performance, but the contract can also be terminated.

Almost all interviews reveal that sustainability issues are often not included in contracts as binding contractual clauses and bonus or sanction models related to sustainability are not used. However, there is some examples as energy consumption which can be included in the performance criteria of a service contract. With textiles, the contract may stipulate that they are not allowed to end up as energy waste. In some contracts, clauses related to ISO certificates or similar are added. Even when sustainability is included in the contract as contractual clauses, monitoring of sustainability and the conditions related to it are challenging. Interviewees state that in many cases, even if sustainability is considered in the tendering process, it is not taken into account in other stages of a product or service's life cycle or monitored during the contract period. Of course, already mentioned right to audit allows traceability but it is also a resource issue. Interviewee A points out that random checks

related to sustainability can be carried out at the same time as general quality controls are done, for example at the supplier's premises. Interviewee B raises the fact that in terms of traceability, it is important to ask too sensitively rather than not to ask at all if something raises a doubt. Reactivity is therefore required from the side of a buyer. Some examples of monitoring enablers are textile tracking codes and reports from transport companies of their emissions and driver trainings. Related to sanctions, interviewees D and I note that it does not make sense to include sustainability sanctions in some contracts, because if the company's end users do not follow the instructions given, the company cannot sanction the supplier alone for the consequences.

4.2.2 Implementation of sustainability practices to category management

In the theory part of this study, it is noticeable that sustainable category management has received significantly less scientific research compared to tendering and supplier management. This same shortcoming is also observed in the interviews, as the number of thoughts, ideas and practices of sustainable category management is significantly lower than in other areas of the interviews. Most of the companies and organizations interviewed and their procurement units are managed with category management models. Interviewee B states that in their type of business, category strategies and category purchasing are extremely important areas to be managed. The risks and opportunities of the categories need to be known and balanced. Interviewee A states that they do not have a traditional category management model, but of course certain product groups are observable and in the responsibility of certain individuals.

Category management in general is very similar in the interviewed companies and organizations. Interviewee B describes that category work essentially involves knowing the market, knowing your own market share and being able to play a “business game”, which, however, also takes sustainability into account. Interviewee H describes in a category work as essentials identifying categories, identifying which business units use the category, knowing which and what kind of suppliers there is in the category, knowing whether the product / service is easily or hardly available in the markets, identifying what external factors

affect the category, knowing how category costs can be affected and identifying what procedure changes could be related to the category. Interviewee B says that they have carried out sustainability risk assessments on the basis of their current categories and subcategories. They have considered which sustainability issues are relevant in that particular category. She notes that there is no one-size-fits-all model for sustainability, rather sustainability assessments are carried out in working groups together with category teams and both sustainability risks and opportunities are considered. Many of the interviewees state that categories do not have clear established policies or strategies, especially with regard to sustainability. The guiding principles for categories are not necessarily written down, especially in categories that are owned by the procurement, not by business units. Some categories are also very business-oriented and subject to change, so the strategy is not very much in the hands of procurement. Interviewee B states that the category team is constantly advancing the sustainability work and sustainability, including all sustainability dimensions, is part of the category work templates. However, most of the interviewees state that sustainability has not been the focus of category work, and in many cases the goals of the object to be purchased are set from the procurement's and business unit's side only when the tendering becomes relevant.

When categories are set to work on sustainability, the issue will be approached on the basis of the existing categories for the reasons mentioned above. For example, interviewee B does not perceive the division into labor- or resource-intensive categories as a sensible or facilitative way to assess sustainability. Based on the interviews, the one size fits all model does not work in the category sustainability work because different value chains must be understood and the work is largely based on discussions. Almost all interviewees also think that the relevant sustainability issues vary very much both between and within categories and sub-categories. Interviewees D and I point out that there is a variation in sustainability issues especially in indirect procurement and in the categories where there is no direct influence on the actions of the end-users of the category. Interviewee B states that when the range of things to be procured in a company is very wide, the differences in sustainability and environmental issues are, of course, very different. She gives an example that in a company operating in the electronics industry, supply chains can be just as complex, but the

things they buy are more similar to each other compared to, for example, chemicals, logistics, maintenance, machines, devices and so on.

In the interviews as practices of sustainable category management, category teams working on the sustainability topic in different working groups are mentioned. As a result of the group work, a category strategy is formed which is approved by the company's management team and according to which purchases of the category are taken forward. Interviewee B states that they have also done research on sustainability and procurement. This research includes information related to for example what could be bought differently at the theoretical level, what kind of alternative materials exist and what (sustainability) issues should be addressed. This research should then also be implemented in a category work and results of the research should be presented as suggestions for suppliers as well. When implementing these category management practices, one cannot think too black and white, even at the subcategory level. The differences in matters of sustainability can differ a lot. As an example, interviewee B mentions the chemicals category. Chemicals can be, for example, oil-based, mineral-based from the mining industry and bio-based from agriculture. In all of these, supply chains are very different in lengths and environmental issues differ a lot. She states that the workshops carried out in the sustainability work have been productive and illustrate well how important it is to understand the whole picture and that the sustainability issues are straightforward.

Some of the interviewees were also asked which environmental issues are relevant in which categories and whether in some categories it is relatively more challenging or easier to consider sustainability issues. Some of the observations from interviews are listed next. Naturally, there are environmental risks associated with chemicals, as they are often hazardous waste. Emissions are highlighted in vehicles, but those often are already reported for example by transportation suppliers. Point source pollution and energy consumption are emphasized in the machines. In addition to energy consumption, conflict minerals are also becoming more critical in computers. However, these are underpinned by legislation and sustainability issues are being discussed with suppliers. Products generally emphasize materials as an important environmental issue to address. This may involve, for example, the biodegradability of the products. In material purchases the challenge is also related to recyclability. In some purchases, contract periods can last for several decades and in those

cases the final recyclability can be difficult to monitor. Regarding different product categories, it is generally seen in the interviews that the challenges of environmental issues are dependent on where the products are manufactured. Mainly products produced in Europe, and in particular within the European Union, are perceived as the most reliable and secure to purchase as mutual legislation is at least to some extent familiar or can be easily find out. In the case of products made in Asia, much higher risks are identified, as sustainability issues cannot be completely confirmed due to the difficulty of monitoring.

Consideration of environmental sustainability and practices related to it are generally perceived as more challenging in service categories. Based on the interviews, safety and emissions are emphasized in logistics. In rail logistics noise is mentioned also as an issue affecting the environment. However, the travel industry, and business travel in particular, is somewhat progressive in terms of sustainability, as business travel is perceived as unnecessary and consuming. However, according to interviewee D there is a self-criticism in the industry and a desire to improve and develop sustainability issues, and there are for example many ready-made emission calculations for various travel services. The challenge of taking the environment into account occurs especially in various consultant and professional services. Waste management is regulated from an environmental point of view, as environmental risks are somewhat emphasized there. In waste management the consideration of sustainability focuses, for example, on how the recovery rate could be increased and what benefits waste sophistication at a waste treatment plant could bring instead of sorting at the place of origin. In cleaning services, environmental issues can be taken into account through chemical safety. Interviewee A states that is for example required that cleaning products do not pollute the environment and safety cards are required for more dangerous chemicals. However, interviewee I points out that the cleaning companies they use are so large that they are already well informed about these environmental issues. Textiles and laundry services emphasize washing waters: how much washing water is used, how the washing water is cleaned, where the washing water goes, whether it goes to the sewer, for example. IT services are not perceived to have major sustainability risks related to the environment. Essential environmental aspects in IT are energy consumption, materials and to some extent waste. However, interviewee J points out that, for example, the electricity consumption of computers is very marginal to the electricity consumption of their whole

company, which reduces its importance. It is quite easy to consider sustainability in the procurement of electricity itself, but of course, due to its scale, its importance and criticality is emphasized. Indirect purchases are also challenging, as there may not be a direct influence on the end user's activities and thus on how, for example, the sustainability of the service can ultimately be implemented by the supplier.

Based on the interviews, the differences and opportunities of sustainable category management compared to, for example, sustainable supplier management are somewhat difficult to identify or even separate. Interviewee B points out that they have discussed about the model of sustainable category management, but there is not a clear or finished model for it yet. In this context, she highlights two important discussions which should be raised: what we buy and from who we buy. What a company buys can be influenced for example by looking for alternatives to materials. When it comes to who to buy from, one should strive to use its purchasing power for a positive drive and development. However, she notes that a good and functional model has not yet been invented in this regard. That what a company buys is developed through category work, but there should be a good balance with who you as a company buy from. The interviews also show that it is important to consider suppliers' companies as a whole in the sustainability work of different procurement processes. Buyer should not be misled into just buying something from the supplier's green line business and thinking that it is producing great environmental progress and improvements. Equally important is the desire to influence the whole company to change into a more environmentally friendly direction. It also emerges from the interviews that the differences in the sustainability practices of category management and supplier management overlap slightly. Specifically, one of the interviewees points out that in a practical level the category's guided goals are reached through individual suppliers by sustainable supplier management practices.

As a result of environmental sustainability practices in category management, it can be seen that the topic is very challenging, and companies have not yet tackled it very deeply or have not been able to tackle it nearly at all. Even though sustainability work has been advanced, identifying sustainability practices can be challenging. Especially as category work usually

require different working groups (and cross-functional teams), same problems of the lack and optimization of resources arise as in the tendering process.

4.2.3 Implementation of sustainability practices to supplier management

Environmental sustainability is taken into account in supplier management in very different ways and to different extents, depending on the subject of the procurement and the supplier. Most of the interviewees say they utilize for example pre-qualification processes, which ensure basic requirements related to sustainability with supplier codes of conduct, self-assessment questionnaires and / or supplier portals for collecting and maintaining supplier information. However, many also point out that, in general, supplier management practices and support are somewhat “weak”. Supplier management is generally very much based on an individual’s decisions and actions and the basic idea is that everyone is a professional and is able to manage their own supplier relationships. In some cases, the responsibility of supplier management may be entirely on the business unit and the procurement unit only serves as a support function. Interviewee J points out that there are so many high spend suppliers in certain categories that it is challenging to even have regular discussions with everyone. He also thinks that the situation with a supplier related to supplier management practices has to be considered well: if a multi-level supplier management model is set on a supplier which does not have many development projects or ideas, the interest to cooperate can end very quickly from the supplier's side. Interviewee E finds a supplier portfolio model useful: certain minimum requirements, such as sustainability, must be met before accessing a company’s so-called shortlist. This is very much in line with the specific supplier pre-qualification stage presented by interviewee B. Based on the interviews, more regularities in supplier management would be needed in general.

Interviewees were asked about sustainable supplier management practices they use and as examples supplier audits, codes of conducts, communication, feedback, regular meetings, sharing sustainability information, supplier visits, collaboration and bonuses and sanctions were named. Several interviewees identify all these practices of sustainable supplier management as essential. According to interviewee A, it depends on the supplier whether

more emphasis is placed on supervision and auditing or collaboration in the supplier management. It is also highly dependent on the supplier's own willingness and motivation. As a common sustainability practice, the use of supplier code of conducts stands out in the interviews.

Interviewee D states that she would emphasize regular meetings and discussions in which sustainability is raised for the agenda. Interviewee B supports this and notes that sustainable supplier management practices are mostly focused on business review meetings and relationship actions and that sustainability is mainly monitored in those. Dialogue in general, especially with large suppliers, is emphasized in interviews. Steering groups and committees are highlighted as regular and functional supplier management practices with some suppliers. Interviewee J states that if a company would make some more specific policy or a clearer perspective related to environmental sustainability, it would certainly be brought more strongly on the agenda in all of these.

Suppliers involved in the development activities are also invited to participate in market discussions and dialogues according to interviewee A. Interviewee B states that CEO-level meetings with large suppliers usually generate a lot of innovation and development projects and are good opportunities to start discussing major changes and needs for changes related to sustainability. Interviewee A says that in addition to collaboration and communication, they share scientific articles and other good examples of sustainability and its impacts to suppliers. They recognize the fact that suppliers may not be self-imposed in sustainability issues or do not have the resources to do so.

Interviewee A points out that one of the suppliers had wanted to organize an innovation workshop to discuss about sustainability issues together. She also says that, together with other large purchasing organizations, they have held a webinar / workshop about certain services in which they discussed about operational bottlenecks, how to address them and how to be able to offer more sustainable options to consumers. Interviewee B says that they have also held supplier webinars and have received good feedback on information sharing. Workshops, webinars and various supplier days are perceived as quite useful and interviewee

A that often after such suppliers have contacted them about their own sustainability initiatives and talked about their own development projects.

Interviewee A says that a lot of information is shared in meetings and discussions with suppliers, but she does not remember from her history in the organization that there have been separate sustainability trainings for suppliers. According to interviewee B, in their company's website there is a practical guide for suppliers which is aimed to transform into a more modular databank and training channel. They also have some eLearning trainings. Although they may not be the most effective, they are useful in reaching a large number of suppliers and in the future for example emissions-related trainings will certainly be relevant.

Bonus and sanction models are very rarely used as sustainability practices according to interviews. However according to interviewee I, it is possible to utilize bonus models in the development of cooperation, for example in waste management by increasing the recycling rate. Bonus models are perhaps a little easier to use in development projects where there is a relation to the company's own environmental goals, as interviewee I states:

“In waste management there are opportunities as we have our own goals and if we get the supplier to run to the same direction with us and to support those goals, we would be willing to pay for that.”

Interviewee B says that they utilize compliance surveys that are targeted according to categories and have very detailed checklists. Interviewee H tells that currently the most effective way to monitor sustainability and identify risk suppliers is conducting supplier self-assessment questionnaires. Of course, those represent a retrospective monitoring instead of a proactive screening, but of the current sustainability practices those are the most systematic ways to monitor sustainability even at some level.

Supplier audits are also recognized as sustainable supplier management practices. Whether the audits are carried out by a third party or by the buyer itself, it is important, according to

interviewee B, to actively intervene and investigate the supplier's activities if there is any suspicion of violations. Interviewee A says that she does not remember that they have used third-party audits, but they do carry audits out themselves when there are enough resources. In this connection, she states:

” Small resources in my opinion are not a reason (for not requiring sustainability from suppliers). Some think that as they have no resources to monitor, they cannot require it. That perhaps is not a good guideline as there is a lot of organizations with very small resources which still should aim for sustainability. If there is even a little deterrent that there is a chance for random checks for sustainability compliance, it will motivate at least some suppliers to act more sustainably.”

Related to sustainable supplier management practices, interviewee B says that there are some deficiencies and remarkably more practices are needed. None of the sustainable supplier management practices alone stand out as more effective than others. Different sets and combinations of practices are always needed in sustainable supplier management.

Monitoring the sustainability of suppliers in supplier management stands out as difficult in interviews. Interviewee H states that resources limit monitoring and evaluation, but of course there are some suppliers to which it is easier to set sustainability goals and monitor those. Interviewee B states that monitoring in general should definitely be developed and they do not have any large-scale way to carry out supplier monitoring. They do not use supplier self-assessment questionnaires often in their company because they do not find them sufficiently reliable or relevant. A few other interviewees consider supplier self-assessment questionnaires to be a valid follow-up method. Those are developed all the time and as the understanding grows, they will certainly become more useful and in-depth. Many interviewees also rely on various eco-labels and certifications in monitoring as then a third party, such as a certification body, is responsible for monitoring supplier related to requirements of that eco-label or certification.

Supplier monitoring is quite much in the responsibility of individuals and in general the tendering process is emphasized in the sustainability process. In the tendering process, many interviewees see that a model in which also suppliers that are less advanced in environmental matters are eligible to participate and during the contract period different sustainability goals which are set for them are then jointly pursued through cooperation might be beneficial. According to interviewee A, this model supports the idea of continuous improvement in sustainability. Interviewee G also points out that in the tendering process, it can be difficult to justify a business unit to choose a supplier that is more environmentally friendly but 20 percent more expensive than the others. He says that it might be easier to develop the selected supplier and identify for example practices which can easily be changed to more environmentally sustainable ones with cooperation.

According to interviewee B, encouraging and committing suppliers to environmental sustainability is done very much through the supplier code of conduct and communication. Their company keeps sustainability issues on the agenda and continuously emphasize renewable materials and low emissions. Interviewee A states that supplier engagement to sustainability varies a lot. In some contracts, it is possible to engage suppliers with a monetary reward. Sometimes, on the other hand, commitment to environmental sustainability arises through cooperation and development. In a cooperation, supplier acquires more know-how and can carry out for example communication and advertising campaigns of sustainability improvements, which improve its reputation. Sometimes suppliers do not initially see the benefits of a company's sustainability requirements. After they have been forced to make some investments or other development projects in order to remain as a supplier of the company, they find out that those investment or development project are beneficial to them also in the other markets and improve their competitiveness.

To some extent, suppliers themselves come up with ideas to improve sustainability. Based on the interviews, some suppliers are very proactive. Interviewee B says that in several categories there are a few very environmentally positive suppliers, many "middle level" suppliers and a few suppliers which are slightly behind in environmental sustainability. Interviewee A points out that these kinds of progressive suppliers sometimes ask for the requirements to be tightened, for example in the tendering process, as then they would be

able to stand out with their sustainability actions. However, in public procurement, criteria cannot be set according to a couple of market pioneers. Many interviewees also find that suppliers bring out sustainability for marketing purposes and they cannot be quite sure what it means in reality and in practice. According to interviewee I, suppliers often understand the importance of sustainability very well, stating that:

“They are very understanding. Service providers kind of understand that this is beneficial to everybody. These are common things, societal things. After all, we don't want the world to collapse in the next few years.”

In general, however, according to for example interviewee B, it is not possible to predict whether a supplier reacts to environmental sustainability positively or negatively based on its size or industry. She notes that, of course, smaller companies have less resources, so they need to be more strongly helped to get started on sustainability issues.

According to interviews biggest challenges in sustainable supplier management are the lengths of supply chains, different industries and the huge amount of essential expertise required to be able to ask the right questions and promote the right things. It is also challenging to motivate suppliers. Some industries are also inherently slower to change. According to interviewee A, it is important for a company to tighten its sustainability requirements effectively but in a way that the market keeps up with the development. It is also important to communicate in advance the company's future goals to suppliers. Interviewee B describes that:

“We see that market dialogue is a very good way of communicating that this is what we are doing, this is our goal and currently you can get along with small investments but if you want to be involved in the competition in 5 years then you really need to invest to this. And then when we work with others (buyers), it is also possible to change the way the market works.”

Many other interviewees also emphasize this importance of collaboration between buying companies and organizations in matters of sustainability. As interviewee D concludes:

“These are difficult things but luckily they are being discussed. The more customers demand them, the more suppliers will offer them.”

5 DISCUSSION AND CONCLUSIONS

In this chapter, theoretical and empirical findings of the topic of this study are brought together and conclusions are presented. First by utilizing the sub-questions of this study different sustainability practices and mechanisms to implement those are discussed while also answering these questions. After that by answering to the main research question, the findings of this study are summarized. Finally, limitations and suggestions for future research are presented.

5.1 Discussion of the research questions

The first sub-question of this study was *“What are the sustainability practices in supply management?”* In the theoretical part of this study, several ways and practices to consider environmental responsibility were identified in tendering and contract management processes. In the tendering process, the use of different environmental requirements and criteria are identified as suitable sustainability practices. The environment should be increasingly taken into account in tendering. According to Markmann and Krause’s statement (2016), also the results of the empirical part support the view that sustainability practices should be implemented primarily through the environmental dimension, as it is currently perceived as the most essential dimension of sustainability for companies. Environmental issues are becoming more and more important in companies’ strategies and this should also be taken into account in supply management. In line with the thoughts of Nieminen (2016) and Nissinen (2004), empirical evidence also recognizes that the tendering phase is a very important and essential step in managing sustainability in general but also

for managing sustainability in other supply processes as it highly influences for example supplier management process and its sustainability practices. The content of the various environmental requirements and criteria were identified widely in the theoretical part. Those may relate either to the supplier's company or, more specifically, to the specific product or service being purchased. In the theoretical part some examples of the criteria identified were environmental management systems, materials, energy consumption, emissions, packaging, recyclability, waste water, chemical content and reuse. Environmental management systems are dominating as a criterion which applies to the supplier's company and its operations as a whole. Environmental management systems came up in the interviews, but on the other hand they were not seen as suitable for every tender and for every supplier. Generally in the empirical part as many different sustainability criteria to be used were not listed as in theoretical part, but it is simply based on the fact that the criteria on a larger scale are always very context-specific and are considered on a case-by-case basis and therefore all different criteria cannot be covered in these kind of interviews. However, the use of eco-labels and certificates was recommended as criteria whenever possible as they provide a wide range of benefits. Emissions also often came up in the criteria discussions. According to one of the interviewees, emissions are essential for everyone today and can therefore be utilized in tendering of all types of products and services. However, one interviewee also noted a problem related to that with the measurability in public procurement. As a sustainability practice, so-called pre-qualification processes and supplier portfolios can also be used as part of the tendering process. Those help to ensure that potential suppliers are committed to certain requirements of a company before the actual tendering process.

In contract management, the theoretical part introduced the practices of using the supplier codes of conduct as part of the contract and the use of various binding contractual clauses. The code of conduct was also perceived empirically as an essential way to take sustainability into account in contracts. However, the use of code of conducts faces different attitudes both in the theoretical and empirical parts of this study. In both parts, codes of conduct are often mentioned as exploitable and relevant issues to be included in contracts. However, the findings of Emmelhainz and Adams (1995) and Brockhaus et al. (2019) indicate that codes of conduct do not raise the bar for environmental performance and are not the most efficient ways to monitor or improve sustainability. This same idea came up in the interviews as well;

there is a chance that those are used only as public statements which in reality do not have an effect on the development of sustainability of suppliers.

The use of binding contractual clauses as a practice of sustainability in contract management was recommended in the theoretical part. In the empirical part interviewees also saw their exploitation as an opportunity. Theoretically, the use of sustainability contractual clauses is highly desirable as it ensures a level and execution of environmental protection in the product or services' performance phase and possible sanctions in relation to them will better ensure that the environmental requirements of the tendering processes are better respected.

In category management, currently identified sustainability practices are much more limited compared to tendering and contract management practices. However, it would be important for an effective category management that sustainability is taken into account somehow at a category level in companies. Category management practices are more like broad guidelines compared to, for example, supplier management sustainability practices which are more practical in nature.

As a sustainability practices in category management other general category management practices can be utilized in which the environmental impact has been taken into account in some way. In the theoretical part of this study STEEPLE and PESTLE analyzes were noted as these kinds of practices. In the empirical part, these methods were not directly mentioned, but of course they may have been part of the category analysis. In the empirical part, the only actual sustainability practice mentioned was a standard category analysis, in which the strategy group addresses also sustainability as part of the creation of a category strategy. An important observation here is that this practice involves an assessment of both sustainability risks and opportunities from the perspective of a specific category. Empirical results support this importance of identifying also sustainability opportunities, as it supports the idea of continuous improvement rather than just identifying how potential environmental damages can be anticipated and prevented from occurring. This kind of category practice should be done at least at some level on a category-by-category basis. Even in companies where this

kind of practice does not yet exist, it was perceived as a potentially good and beneficial practice.

Sustainable supplier management practices are important in a company's sustainability work and as Lambert and Schwitermann (2012) have noticed, also empirical evidence of this study supports the view that supplier management is a way to find value for both parties of a relationship. Responsibility practices in supplier management are very important as they contribute to the long-term success of supply chains. In the theoretical part supplier codes of conduct, supplier assessments, supplier visits, supplier audits, trainings, rewards and sanctions, collaboration, information sharing and supplier development were presented as sustainability practices.

Supplier codes of conducts are used as a sustainable supplier management practice, but according to the theory, also empirical findings show that codes of conduct may not be the most effective ways to modify and develop supplier operations into a more sustainable direction. As a way of communication those thus are quite functional practices. However according to the empirical part, the use of them as supplier management practices is not recognized and those are mainly utilized only in the contract phase.

Practices related to supplier assessments and monitoring include different compliance surveys and supplier self-assessments questionnaires that suppliers are asked to answer, preferably periodically. These practices provide useful data of suppliers to the buyer for further evaluation. As a practice of more practical monitoring and confirming supplier responses, sustainability audits can be utilized in supplier relationships. As stated in theoretical part of this study, audits are an essential continuum of supplier code of conducts and different supplier assessments.

Discussions with suppliers and regular meetings are perhaps the most useful practices of sustainable supplier management, at least according to the empirical evidence of this study. Cooperation, joint projects and other development projects are also highlighted as good practices for improving environmental issues. Cooperation as a sustainability practice can

sometimes, according to the empirical findings, be an easier practice to promote sustainability improvements in supply chains than trying to include it strongly into the tendering process as it may have a higher impact in costs when representatives of business units and operations may react negatively to sustainability considerations. However, cooperation always consumes a lot of resources and capabilities, but in the empirical part more detailed observation were nor made regarding no more detailed the kind of supplier relationships in which cooperation should be specifically invested in.

Bonus and sanction models as sustainability practices in supplier management did not receive a widespread support in the empirical part and it might be concluded that they are more linked to the contract phase and assessed in that context. An important observation is that all these identified sustainable supplier management practices are all mainly external sustainable supply management practices instead of internal practices. This division into external and internal practices was discussed in the chapter 2.1.2.

The second sub-question was “*What are the mechanisms to implement those practices?*”. In tendering processes, sustainability requirements and criteria can be implemented in several different ways based on theoretical and empirical evidence of this study. Of the “ignore”, “incorporate”, “insist” and “integrate” approaches presented by Igarashi (2017), the least used approach based on the empirical part of this study is “integrate”. An integrated approach means that sustainability is included as awarding criteria, but empirical evidence shows that this is actually done quite rarely. Especially in public procurement, awarding criteria involve quite a lot of challenges and therefore sustainability is often considered as a minimum requirement. The “ignore” approach also seems to be unfortunately a common due to a lack of resources and knowledge. Of course, in many cases the supplier code of conduct ensures some minimum requirements of sustainability, but more progressively sustainability is not required.

One mechanism to incorporate sustainability into the tendering process is to create some sort of supplier portal that can be utilized as a qualification stage or as a space for the supplier portfolio. The supplier portal is able to provide information that suppliers have answered to

commit to various corporate sustainability requirements of a company. As a part of that, suppliers can also undertake some generic online trainings related to sustainability and sign the supplier code of conduct, which makes them applicable to participate in the tendering processes.

Mechanisms for implementing sustainability criteria to the requests for quotation are including them either to minimum requirements or awarding criteria. The use of minimum requirements is the most common mechanism to implement sustainability into requests for quotation according to the empirical part. The theoretical part of this study did not take a position in which cases the use of minimum criteria in terms of sustainability would be particularly useful compared to the use of awarding criteria. However, based on the empirical part, it possibly makes sense to use this mechanism in situations where procurers know the market and know that the minimum requirement used will not exclude too much potential suppliers too, as that can be problematic from a perspective of public procurement law.

A less used mechanism based on the empirical part is to include the sustainability as awarding criteria to requests for quotation. In particular, with regard to public procurement, the interviews reveal the same challenge as Parikka-Alhola and Nissinen (2012) have noticed that although the EU's public procurement directives allow public purchasers to combine price, environmental aspects and other award criteria in supplier decision-making, precise environmental criteria have not been defined or how that should be put into practice. This, combined with The Market Court's decisions related to the use of sustainability criteria makes public contracting authorities even more cautious in using awarding criteria. Most often used environmental award criteria according to Majerník et al. (2017) include environmental policy, environmental management systems, chemical content, choice of material, guarantee, recycling and reuse system. For example, by utilizing these environmental aspects sustainability improvements could be included in the tendering while advanced suppliers could be rewarded for their sustainability investments. The use of awarding criteria as a mechanism is also useful when sustainability is wanted to be included in the tendering, but there is no certainty what the level of sustainability in the markets is and there is no time to find it out.

One mechanism that also helps to implement sustainability criteria is the creation of different templates and some type of evaluation group work. In the early stages of tendering, an evaluation group consisting for example of representatives of business units / operations, representatives of procurement and sustainability professionals can be useful in mapping the relevant aspects of sustainability in that specific product or service. The input of lawyers can also be useful for public procurement law considerations. In some cases, this kind of, a variety of people involving, mechanism does not make sense in terms of resource use, and in those cases the issue sustainability can be considered with some ready-made tools, checklists and so on. In general, however, open discussion and exchange of ideas are important in this mechanism.

As a mechanism to facilitate the use of environmental criteria in tendering, various sources of information can be used. It is also beneficial to use Hansel's services whenever possible when it comes to sustainability issues. The European Commission's green public purchasing criteria, review of the Ministry of Finance's guidelines and criteria of previous public requests for quotation, and the use of Motiva and other experts in the field, for example, are good mechanisms to consider and include the use of environmental criteria in tendering. In public sector companies and organization should utilize benchmarking and share knowledge and learn from others' sustainability practices because they all operate under the same procurement law which aims to control the use of public resources as efficiently and transparently as possible.

One consideration which could be highlighted in considering whether an appropriate mechanism to include an environmental criterion as a minimum criterion or as an awarding criterion is emissions. In the empirical part, one interviewee said that emissions are relevant for all types of companies and therefore they require emission intensity data from all suppliers. The interviewee working in a public organization, on the other hand, said emissions may not be a good criterion as their measurability is still unclear. This highlights how the evaluation and selection of practices and mechanisms differs between the private and public companies, organization etc. For example, Mattinen and Nissinen (2011) do not recommend using a carbon footprint of products as a technical specification as there is not enough knowledge of range of carbon footprint values for different products so that

acceptable value limits could be set. They propose to use carbon footprint as an award criterion instead. Problems such as missing carbon footprint information or an essential piece of data is left out, should not lead to a rejection of the tenderer but the bid must be given zero points for the carbon footprint criteria.

The mechanism for including codes of conduct in tendering and contract management processes is simply to include them in all requests for information, requests for quotations and contracts, as it is guided already in the case company's sustainability process guidelines. It is, of course, a useful mechanism to ensure that sustainability is taken into account at least at some level, but it does not have any greater, sustainability improving effects. It can be concluded that it may not be profitable for companies to invest only in the supplier code of conduct but also to invest in more extensive monitoring and follow-ups. Of course, supplier codes of conduct have a place in the communication to suppliers about the company's requirements and possible future goals and are thus also an important part of sustainable supplier management practices.

With regard to binding contractual clauses, the theoretical part does not identify specific mechanisms on how those should be included in contracts as the consideration and use of them is very context-dependent. In the empirical part, it was found, somewhat surprisingly, that quite rarely sustainability is implemented at all as contractual clauses because of varying reasons. When contractual clauses were used, those were mostly related to things such as the mention of energy consumption, the listing of certain permitted detergents, the requirement for recyclability or the existence of a certain certificate. It is often thought that the right to audit mentioned in the contract or code of conduct ensures that things that are required, for example at the tendering stage, are also complied during the contract period. In the theoretical part it was found that too general contract terms can make it challenging to hold a supplier accountable for breaches. For this reason, it would be a good idea to follow the rule that contract clauses are specifically used when those are easily measurable and can be easily monitored during the contract period.

Category analysis as a practice of sustainable category management can be implemented by forming a category team consisting of relevant business units and personnel of a company. The analysis should preferably be carried out according to the company's existing categories and sub-categories. As noticed in the empirical part of this study, there are no clear similarities or regularities in terms of sustainability between or within different categories, and that is why it is not worthwhile to spend time reconstructing and dividing categories according to some other possibly sustainability related factors. Of course, as category work progresses and sustainability included category strategies emerge, it will be easier to analyze the remaining categories when the sustainability risks and opportunities identified in connection with other categories can be utilized. The category team as a mechanism is thus quite similar to the evaluation group presented as a practice in the tendering process.

In category analysis, environmental sustainability can be examined through various impact categories such as damage to ecosystem diversity, natural resource scarcity and climate change. Also, relevant environmental aspects, influencing environmental factors, the future of relevant environmental aspects, the overall sustainability performance of suppliers of the category and environmental opportunities can be considered. In this context, it is important to also set some kind of sustainability goal for the category, because as stated in the theoretical part, the probability that the strategy will be put into practice will then increase.

As noted in the theoretical part, the empirical results also support the confusion associated with the practical implementation of category management principles through supplier selection and supplier management, other two supply processes and related practices studied in this study. As one interviewee stated, the category management practices, and related mechanisms have been difficult to identify. Further research on the topic is needed because, as Hespig and Schiele (2015) state, academic research has not made much contribution to category management, but the relevance of it and sustainability implementation will increase in the future.

The mechanisms and implementation of sustainable supplier management practices in general are, based on the empirical part, on the responsibility of the individual responsible

for the procurement or even completely on the responsibility of a business unit. This study has found out that some regularities, processes, mechanisms and systematics would be needed to support actions at supplier management levels so that companies could have a more coherent approach for sustainability practices which ensures that sustainability is promoted more equally between different suppliers and supply categories.

As a mechanism to implement sustainable supplier management practices, a rotating model, such as presented by Park et al. (2019) can be utilized. In this framework, supplier collaboration, supplier assessment and supplier development processes are rotating based on continuous feedback and continuous development, thus also contributing to the shaping of category strategies and supplier selection.

The mechanism to take advantage of the code of conduct in supplier relationships is to discuss about it with suppliers and, for example, to ask suppliers how they act according to that and what development ideas or actions they have in relation to the issues of supplier code of conduct. This is a useful way especially if in the tendering process or in the contract sustainability have not been taken into account excluding the mandatory supplier code of conduct.

Discussions and regular meetings are highlighted as the most useful practices to promote environmental sustainability. An easy mechanism in this context is to add sustainability to the agenda of existing regular supplier meetings. If, due to the nature of the supplier relationship, regular meetings are not used, there is also other mechanisms for communication and information exchange. For example the company can share information to supplier about its sustainability assessment and development ideas created based on that, create some brochures about its own views and thoughts about sustainability and future development plans, share scientific articles about relevant environmental issues, organize sustainability related supplier trainings, arrange sustainable supplier webinars together with other operators in the industry and organize supplier days with sustainability agenda. The empirical findings support these as useful mechanisms, and a few interviewees found that

these kinds of things support mutual activity in the relationships and, as a result, suppliers are more proactive in communicating their sustainability initiatives.

When companies are implementing different compliance surveys and supplier self-assessment, follow-ups are required because otherwise they may not have real improving effects to triple bottom line as Gimenez et al. (2012) stated in theoretical part of this study. A mechanism to implement supplier audits is to carry them out themselves if there is enough resources or with the assistance of a third party. Both mechanisms require effective follow-up methods and development plans in case of non-compliance to actually have an effect on supplier's sustainability improvement.

As a mechanism in sustainable supplier development, a three-level development model by Sánchez-Rodríguez et al. (2005) can be utilized. At the basic level suppliers are given information about their sustainability performance based on compliance surveys or supplier self-assessments and possible development is monitored at some level. At the moderate level, relationships are more collaborative and supplier visits and rewards for sustainability performance improvements are used. At the advanced level, different sustainability trainings are provided to suppliers and suppliers are more involved in discussions about sustainability issues and development ideas so that they are able to find solutions that are suitable for all both parties.

An important mechanism to implement sustainability in the supplier relationships is to involve the supplier's top management in the development of sustainability issues, for example by arranging CEO-level meetings with large or strategic suppliers. In several parts of this study, the importance of top management support in terms of sustainability has been emphasized, so it is important to try to take that into account also in supplier management.

It is important in sustainable supplier management that different sustainability practices and mechanisms are evaluated and utilized as a suitable combination for each supplier relationship. That way, the sustainability potential of a supplier is unleashed effectively, and it generates fair and equal value for both parties of the buyer-supplier-relationship.

The main research question of this study was “*How sustainability practices can be implemented to supply processes?*” and answers to that were addressed above with a help of sub- questions. To conclude the findings of this study, answers to the main research questions are briefly summarized next.

In tendering and contract management processes sustainability practices include different sustainability requirements and criteria, codes of conducts and contractual clauses. Those are implemented by using sustainability criteria in requests for quotations either as minimum requirements or awarding criteria, including supplier codes of conducts as compulsory in all requests for information, request for quotations and contracts, creating an evaluation group for a sustainability criteria formulation, including binding contractual clauses related to sustainability when it is possible to somehow measure and monitor that the supplier is complying with those and utilizing different sources of information especially in public procurement.

In a category management, a sustainability practice is a category analysis in which sustainability aspects are also considered. Sustainable category analysis is implemented by forming a category group that creates a category strategy and sets sustainability goals for it. Then sustainable category strategy is implemented through supplier selections and management of current supplier relationships.

Sustainability practices in supplier management are different compliance surveys and supplier self-assessment questionnaires, supplier collaboration and discussions and communication with suppliers. In practice these are implemented in various ways in supplier relationships: carrying out surveys and questionnaires periodically, executing supplier audits and creating development plans based on the audit results, adding sustainability on the agenda of regular supplier meetings, sharing information to suppliers for example with sustainability brochures, training, scientific articles and webinars and by committing the top management of a supplier to sustainability discussions and development projects.

An important observation of this study is that top management support and a sufficiency of resource are highly essential in ensuring that sustainability practices can be effectively implemented to supply processes. Because a procurement unit usually serves as a supporting function to other business units and operations in companies, it is important that company's strategy and values are communicated and put into practice in all levels of a company. This ensures that sustainability is considered more in the decision making and the procurement unit is able to fulfill its important role in achieving the company's sustainability goals.

5.2 Limitations and suggestions for future research

This study did manage to examine and collect different sustainability practices which can be utilized in supply processes to implement sustainability better to the company's supply base which in turn helps the company to meet its own sustainability goals. Despite that there are some limitations related to this study and that is why future research is needed.

This study focused only on the environmental dimension of sustainability. Morali and Searcy (2013) state that the research of integration of all three sustainability dimensions into supply chains is limited. Companies have to consider also other two dimensions of sustainability in addition to environmental dimension and therefore also socially and economically sustainable practices in supply processes should be researched in order for a company to meet all sustainability goals and operate holistically sustainable.

Amann et al. (2014) observe that in public procurement, companies can more effectively influence to socially sustainable goals than environmental goals but that in practice suppliers achieve greater progress in providing environmentally sustainable operations than socially sustainable ones. This is an interesting observation and this study did not comment on how effectively different implemented sustainability practices do achieve sustainability progress. The research should be continued in examining how presented environmentally sustainable practices affect to suppliers' sustainability goals and progress of operations. Same research should be done also to socially sustainable practices and possibly then some explanations for Amann's et al. (2014) observation could be found out.

This study aimed also to find out how legislation of public procurement affects to the implementation of sustainability practices to supply processes. It was observed at it affects mainly in the tendering and contract management process. However, it might be beneficial to research the topic of this study by interviewing more representatives of public organizations to examine more deeply how public procurement legislation impacts and restrains sustainability practices and initiatives and how those challenges could most effectively be overcome.

Both the theoretical and empirical parts of this study revealed that sustainability practices of category management are less research, known and implemented. The importance of both category management and sustainability management especially in large companies is increasing and therefore future research about combining these two is required. Sustainability as a topic is very wide and multidimensional and approaching it from a category perspective might be beneficial for procurement units. The research could be executed by investigating companies that manage their procurement through categories and have already implemented sustainability into category strategies. By observing similarities and differences between these companies, possibly stronger scientific evidence of sustainable category management practices and effectiveness of them could be revealed compared to considering sustainability on a level of single supplier.

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APPENDICES

Appendix 1. GRI 300 standard (Global Reporting Initiative 2020)

Disclosure	Content	Updated
301	Materials	2016
301-1	Materials used by weight or volume	
301-2	Recycled input materials used	
301-3	Reclaimed products and their packaging materials	
302	Energy	2016
302-1	Energy consumption within the organization	
302-2	Energy consumption outside the organization	
302-3	Energy intensity	
302-4	Reduction of energy consumption	
302-5	Reduction in energy requirements of products and services	
303	Water and effluents	2018
303-1	Interactions with water as a shared resource	
303-2	Management of water discharge-related impacts	
303-3	Water withdrawal	
303-4	Water discharge	
303-5	Water consumptions	
304	Biodiversity	2016
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	
304-2	Significant impacts of activities, products, and services on biodiversity	
304-3	Habitat protected or restored	
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	
305	Emissions	2016
305-1	Direct (Scope 1) GHG emissions	
305-2	Energy indirect (Scope 2) GHG emissions	
305-3	Other indirect (Scope 3) GHG emissions	

305-4	GHG emissions intensity	
305-5	Reduction of GHG emissions	
305-6	Emissions of ozone-depleting substances (ODS)	
305-7	Nitrogen oxides (NO _x), sulfur oxides (SO _x), and other significant air emissions	
306	Waste	2020
306-1	Waste generation and significant waste-related impacts	
306-2	Management of significant waste-related impacts	
306-3	Waste generated	
306-4	Waste diverted from disposal	
306-5	Waste directed to disposal	
307	Environmental compliance	2016
307-1	Non-compliance with environmental laws and regulations	
308	Supplier environmental assessment	2016
308-1	New suppliers that were screened using environmental criteria	
308-2	Negative environmental impacts in the supply chain and actions taken	

Appendix 2. Interview questions set 1

General

- How do you understand the term environmental sustainability and its link to procurement?
- What are the main drivers and reasons to consider environmental sustainability in procurement?
- Which environmental sustainability related aspects will be highlighted and increasing their significance and/or criticality in the future in your opinion?

Tendering and contract management

- How environmental sustainability is considered in tendering?
- How and what kind of environmental criteria are used in tendering?
- How are the requirements of Supplier Code of Conduct specified in tendering?

- How is environmental sustainability considered in the tendering taken into account in the contract?
- How do you follow that environmental aspects considered in the tendering are true and/or will be fulfilled during the contract period?
- What are the critical aspects of environmental sustainability to consider in tendering and contract management processes and what are the challenges related to them? What are the effects of Act on Public Procurement and Concession Contracts to the subject?*

Category management

- How environmental sustainability is considered in category management?
- How are supply categories determined and categorized from a perspective of environmental sustainability? In what are categorizations based on?
- What kind of category management practices do you have related to environmental sustainability? How much these practices differ between supply categories?
- Are environmental sustainability related issues (both positive and negative) similar inside a supply category in general? Is there a difference in challenges and practices between different sub-categories?
- What aspects of environmental sustainability are highlighted in a supply category level compared to management of a single supplier?

Supplier management

- How environmental sustainability is considered in supplier management?
- What environmental sustainability related supplier management practices do you have? (E.g. audits, supplier code of conduct, communication and feedback, development projects, participation in common projects, regular meetings with supplier in which sustainability is the topic of conversation, mutual sharing of information, supplier visits, bonuses and sanctions related to sustainability, cooperation toward targets)
- Which are observed as good ways to monitor suppliers' current state of sustainability and development of it?
- How do you encourage and support suppliers to engage in environmental sustainability?

- How do suppliers in general react to environmental sustainability and environmental targets / requirements targeted on them? Have you noticed any correlation on the subject regarding the size of a company or the industry for example?
- What are the challenges related to environmentally sustainable supplier management and how are these challenges managed?
- What are the biggest differences between category management and supplier management considering implementation of environmental sustainability?

Other

- Do you have anything to add?

* Relevant only for actors operating under public procurement legislation

Appendix 3. Interview questions set 2

- How do you understand the term environmental sustainability? How would you describe its link to procurement?
- What are the main drivers and reasons in companies to consider environmental sustainability in their operations?
- What are the most challenging issues of environmental sustainability to companies in your opinion?
- What kind of legislations there is related to environmental actions of companies?
- Which environmental sustainability related issues are nowadays well managed in companies either through legislation or voluntarism?
- Which environmental sustainability related issues are hardest for companies to manage?
- Is there a possibility to form some sort of relevancy/essentiality order of the sections of GRI 300 – standard?
- How do you see the role of procurement in executing environmental sustainability?
- How in your opinion procurement is able to fulfill environmental goals of a company?
- Which things and procedures you see as essentials in motivating companies to engage in environmental sustainability and exceed the requirements of law?
- How do you see the current state of environmental sustainability in procurement and what are the development targets of it?
- What procurement related issues should be involved in sustainability reporting?

- How are emissions of suppliers (Scope 3) currently calculated to the sustainability report?
- Do you have anything to add?

Appendix 4. Interview questions set 3

General

- How do you understand the term environmental sustainability as a part of procurement? How good you would estimate your knowledge to be?
- What are the main drivers and reasons to consider environmental sustainability in procurement?
- How actively you assess environmental sustainability through lifecycles of products and services?
- How challenging you experience the incorporating environmental sustainability into procurement to be? Which things especially are challenging related to environmental sustainability?
- In what your knowledge of environmental sustainability is based on?
- What kind of support you would need related to environmental sustainability in procurement?

Tendering and contract management

- How environmental sustainability is considered in tendering at the moment?
- How is the determination process of criteria currently executed especially in contracts exceeding EU thresholds?
- Which environmental criteria and/or requirements you have utilized in tendering?
- Are there any products on services in which environmental sustainability is more often highlighted as an important aspect to consider in tendering?
- Is the environmental sustainability considered in tendering taken into account in the contract?
- Do you have to discuss/negotiate about Supplier Code of Conduct in contract phases?

Category Management

- What kind of practices you are currently utilizing in category management? How much these practices differ between categories?
- How would you estimate the current state of environmental sustainability in your categories to be (in a category and sub-category level)?

- Are there any categories in which environmental sustainability is relatively easy to consider and manage compared to other categories?
- Are there any categories in which environmental sustainability is more challenging to consider and manage compared to other categories? What challenges and weaknesses are related to them?
- Are there any categories in which environmental sustainability risks are highlighted?
- Which themes and aspects of environmental sustainability you see as the most relevant in your categories?

Supplier Management

- What supplier management practices you utilize?
- Are there any environmental sustainability related practices in supplier management?
- Is it challenging to consider environmental sustainability in supplier management? If so, why?
- What in your opinion is the role of supplier self-assessment questionnaire in assessing the current state of environmental sustainability and identifying objects for improvement?
- How suppliers generally react to environmental issues and environmental requirements and/or targets faced toward them?
- Do suppliers themselves bring up sustainability issues and development ideas related to environmental sustainability?

Other

- Do you have anything to add?