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Integration of sustainable management in retail

A case study of The Lobby - AMF Fastigheter

Torun Axelius
Josefine Hellström

ABSTRACT

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Torun Axelius, Josefine Hellström

The increasing environmental problems have today become global and changes are drastically needed in all levels of society. Customers' buying behaviour can play a big part and it is possible to both contribute to a more sustainable world and add economic value to a business, but new sustainable business models are needed. In this research project The Lobby, a new innovative marketplace owned by AMF Fastigheter, has been used as a case study to find the key areas in retail business where change is most important. Furthermore, a life cycle assessment has been conducted to see where in a T-shirt's life cycle the most CO_2 equivalents are released and what the difference between a T-shirt bought at a physical store and e-commerce is. This research project has found that the most important area to focus on if sustainability is to be integrated successfully in a retail business is the company management. The commitment and attitude the company management mediates to their employees is crucial for success. For The Lobby it is also important to evaluate which retailers they choose to approve due to the fact that its indirectly affecting their sustainability. The Lobby should also try to be more transparent and informative. By promoting their sustainability actions they can attract both customers and future retailers. But the research and knowledge in the field of influencing and changing customers' behaviour is still limited and more research is needed.

Key words: Corporate social responsibility, environmental management system, e-commerce

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REFERAT

Integration av hållbar management i detaljhandeln

Fallstudie på The Lobby - AMF Fastigheter

Torun Axelius, Josefine Hellström

De ökade miljöproblemen har blivit globala och drastiska förändringar måste ske på alla nivåer i samhället. Konsumenters köpbeteende kan ha stor inverkan och det är möjlig att både bidra till en mer hållbar värd och öka företagets ekonomiska tillväxt. Men nya företagsmodeller behövs. I detta examensarbete har The Lobby, en ny innovativ handelsplats som ägs av AMF Fastigheter, använts i en fallstudie för att hitta de områden där hållbarhet kan integreras. En livscykelanalys har även blivit utförd där en T-shirts CO_2 ekvivalenter blev beräknade för att se skillnader om T-shirten köps via e-handel eller i en butik. Examensarbetet har hittat att de viktigaste områdena att fokusera på för en lyckad integration av hållbarhet är företagets ledningsgrupp. Engagemanget och inställning som ledningen förmedlar till sina anställda är den viktigaste faktorn för att lyckas. För The Lobby är det även viktigt att utvärdera de företag de väljer att exponera i The Lobby då det indirekt påverkar deras hållbarhet. The Lobby borde även bli mer transparenta och ge mer information. Genom att förmedla vilka hållbara val de gör kan de attrahera både nya konsumenter och företag. Men kunskapen om hur man bäst influerar och påverkar kunders beteende är begränsad och mer forskning inom området behövs.

Nyckelord: Företags samhällsansvar, miljöledningssystem, livscykelanalys, e-handel

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PREFACE

This Master's thesis of 30 ECTS completes our studies in the Master Programme in Environmental and Water Engineering at Uppsala University. The Master's thesis was made on commission from AMF Fastigheter and our supervisor was Michael Eskils, head of sustainability at AMF Fastigheter. Our subject reviewer was Cecilia Mark-Herbet, senior lecture at Swedish University of Agricultural Sciences. During these past weeks have we equally distributed and together written and worked with all chapters in this Master's thesis.

Firstly we would like to express our deep gratitude to our subject reviewer, Cecilia Mark-Herbert, who has guided us through the whole process. Her insightful comments and encouragements have been invaluable to this research project. We would also like to thank Michael Eskils and Kenneth Allberg at AMF Fastigheter for their support and their warmth and caring attitude. A big thanks to the employees at AMF Fastigheter for their contribution in form of interviews and that we had the opportunity to use AMF Fastigheter's facilities during these past months.

Finally we would like to thank all persons in our surroundings that have helped us and always believed in us.

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POPULÄRVETENSKAPLING SAMMANFATTNING

Klimatförändringar är något som nu sker på global nivå på grund av den förhöjda växthuseffekten. I Sverige är växthusgasutsläppen generellt låga i jämförelse med andra länder. Det som bidrar till att utläppen är låga är att mycket av det som konsumeras i Sverige produceras i andra länder vilket gör att utsläppen sker utanför Sveriges gränser. Enkelheten med att köpa varor som produceras i andra länder som geografiskt ligger långt från Sverige har ökat i samband med e-handelns intåg.

AMF Fastigheter är en av Sveriges största kommersiella fastighetsägare och äger flera olika gallerior runt om i Stockholmområdet. De öppnade för sex månader sedan en handelsplats där e-handel och fysisk butik möts, The Lobby. Något de har haft problem med sedan start är att få in hållbarhet i konceptet utan att det endast uppfattas bara vara för syns skull. Därför har en av examensarbetets forskningsfrågor formulerats till: *Vilka huvudområden bör The Lobby fokusera på för att integrera hållbarhet?* varav The Lobby har använts som en fallstudie.

Grundpelarna i The Lobby sammanfattas med korta samarbetsavtal, innovation, service, socialt samt evenemang och exponering. För att integrera hållbarhet och minska påverkan av växthusgasutsläpp från The Lobby har detta examensarbete kommit fram till att det är företagsledningen som är den viktigaste pusselbiten. Just nu har The Lobby enbart ett ekonomiskt krav från företagsledningen, vilket leder till att hållbarhet inte prioriteras. AMF Fastigheter har sedan 2009 ett miljöledningssystem som dock inte är integrerat i alla delar av företaget. Om miljöledningssystemet integreras inom företaget kan tydligare mål kunna sättas upp och hållbarhetsfrågor kan genomsyra hela verksamheten.

Ett företags utsläpp kan delas in i direkta och indirekta utsläpp. De direkta utsläppen har företaget direkt kontroll över som till exempel val av elleverantör och byggnadsmaterial. Indirekta utsläpp rör alla de utsläpp som företaget inte har direkt kontroll och val över. För AMF Fastigheter kan det röra sig om utsläppen som deras detaljhandlare avger eller hur deras kunder väljer att återvinna produkterna köpta i en av AMF Fastigheters gallerior. Genom att välja vilka företag som finns i The Lobby och hur information förmedlas till kunder kan The Lobby ta ett ansvar.

För att ta reda på var i leverantörskedjan de största växthusgasutsläppen sker för ett av de vanligaste plaggen i garderoben, en T-shirt, utfördes en livscykelanalys och även forskningsfråga två formulerades: *Hur kan livscykelanalys vara med i beslutstagande på produktnivå*. Växthusgasutsläppen beräknades för varje process i en T-shirts livscykel, från vagga till grav. Det utfördes två varianter av livscykelanalysen, en där en

T-shirt köptes via e-handel och en i en vanlig fysisk butik. Från resultaten upptäcktes det att den process med högst andel utsläpp var tillverkningsfasen, vilket var samma för både e-handel och fysisk butik. Den process som gav näst största växthusgasutsläppen var transporten som kunden gjorde när kunden körde till och från butiken för att handla en T-shirt eller hämtade den på postkontoret.

För att minska The Lobbys direkta utsläpp har redan flera åtgärder gjorts som att använda el från förnyelsebara källor, miljövänliga material och byggprodukter samt återanvändning av inredning när en handlare bytts ut. Om The Lobby skulle beskriva sina direkta åtgärder bättre på hemsidan eller inuti The Lobby skulle hållbara företag lockas till The Lobby. Men ifall The Lobby vill påverka sina indirekta utsläpp bör de välja hållbara detaljhandlare. Eftersom det är produktionsfasen som ger de högsta utsläppen är det dessa utsläpp som The Lobby bör ställa krav på hos deras detaljhandlare. Eftersom transporten också ger utsläpp är det viktigt att även där förmedla konsekvenserna av att ta bil jämfört med kollektivtrafik till The Lobby.

Det finns tre viktiga huvudområden The Lobby bör fokusera på för att integrera hållbarhet. Först måste ledningen visa vägen och börja skapa mer krav angående hållbarhet och vilka företag som ska representeras på AMF Fastigheter. Finns det inga klara mål eller mätningar för hållbarhet kommer det sluta med att allt fokus ligger på det ekonomiska. Det andra huvudområdet är val av företag som finns i The Lobby. Genom att välja hållbara företag med ett mer cirkulärt än linjärt flöde i leverantörskedjan kan utsläppen som sker både innanför och utanför Sveriges gränser att minska. Det tredje området är information och transparensen, det är viktigt för kunder idag att veta varifrån och hur en produkt är gjord. Det är därför viktigt att The Lobby förmedlar denna kunskap både på hemsidan och i The Lobby. Det är också viktigt att förmedla hur The Lobby jobbar med hållbarhet för att stärka sitt varumärke både mot kunder och förtag som förmedlar sina produkter i The Lobby.

ABBREVITIONS

CSR	Corporate social responsibility
GHG	Greenhouse gas
GSCM	Green supply chain management
LCA	Life cycle assessment
PPM	Project portfolio management
SCM	Supply chain management
SDG	Sustainable development goals
TBL	Triple bottom line

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1 INTRODUCTION

The globalisation of earth has increased and scientists' are claiming that the humans now are the dominate geological force on the planet. Consumption and international trade have made the environmental problems global, which can lead to catastrophic outcomes all over the world (Nykvist *et al.*, 2013). To be able to solve the environmental problems in the world and leave the planet to the next generation were the main environmental problems are solved, the Generational goal has been adopted by the Swedish Parliament. The Government of Sweden defines the Generational goal as: *"The overall goal of Swedish environmental policy is to hand over to the next generation a society in which the major environmental problems in Sweden have been solved, without increasing environmental and health problems outside Sweden's borders"* (The Government of Sweden, 2010, p. 21).

The Generational goal is divided into seven different sections to enlighten all areas and levels in society that is important to focus on to fulfil the goal. The goal strictly focuses on the ecological dimension, while the United Nations (**UN**) Agenda 2030 focuses on three dimension: social, economical and ecological. Agenda 2030 includes 17 sustainable development goals (**SDG**) and was adopted by the Swedish Parliament in 2015. The Generational goal can make Sweden fulfil the ecological part in the Agenda 2030 and also the Agenda 2030 can give better conditions for Sweden to reach the Generational goal (Swedish Environmental Protection Agency, 2018). SDG 12 is about consumption, and is defined as *"Ensure sustainable consumption and production patterns"* (United Nations, 2015, p. 22) and are followed by eleven targets. According to The Government of Sweden (2017), for Sweden to reach SDG 12 it is important to collaborate with businesses and therefore, new rules about sustainability reporting were introduced for Swedish businesses in 2016. This corresponds to the Agenda 2030 target 12.6 *"Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle"*(United Nations, 2015, p. 22). It is also important to take into account which countries Sweden import from and their contribution to a negative impact on the environment (The Government of Sweden, 2017). According to Nykvist *et al.* (2013) a great deal of the Swedish consumption is made elsewhere, outside Swedish borders. Globalisation, economic integration and digitisation have made it easier to buy products from other countries and in 2017, six percent of Sweden's total household consumption was made overseas or via non Swedish businesses (Arnberg *et al.*, 2018, p. 14). Therefore, the right perspective on reality is not given if strictly territorial emissions are used as a indicator, emission needs to be seen as global (Nykvist *et al.*, 2013). Other targets from SDG 12 in Agenda 2030 are targets 12.2 *"By 2030, achieve the sustainable management and efficient use of natural resources"*(United Nations, 2015, p. 22) and

target 12.4 *"By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle"* (United Nations, 2015, p. 22). When producing new material the dangerous substances need to decrease and resources need to be used carefully. Customers' need to buy products that are produced by material that is resource-effective.

The retail market today is contributing to a society where products are consumed and thrown away. All new products are contributing to greenhouse gas emissions (**GHG**) land-, resource- and water use. According to Swedish Environmental Protection Agency (**SEPA**), the GHG emissions provided by consumption in Sweden per person and year is eleven tonnes CO_2 equivalent (**eq**)[1] (Internet, Allerup, 2017). The number needs to decrease to one or two tonnes CO_2eq if Sweden's long term environmental goals are to be reached (Internet, Allerup, 2017). One of Sweden's long term environmental goals implies that the emission caused by Sweden should not effect the environment by 2045, and according to Swedish Environmental Protection Agency (2017) this goal is reachable but action needs to be taken. The waste management in Sweden stands for approximately eight percent of the total GHG emissions in Sweden. The number has decreased due to recycling, but waste still plays a big part (Swedish Environmental Protection Agency, 2012a, p. 30). Furthermore, it is important to focus on how resources are used in the production stage, to maximise the possibilities to recycle and to understand how retail and sustainability can interact with each other. Customers' necessity to buy products will not disappear, which means that sustainability and environmental thinking has to get more attention in the discussion of retail business. Sustainability is something that all customers, retailers, producers and property owners need to prioritise (Uggla, 2017).

It is possible to both contribute to a more sustainable world and benefit the business by prioritising the customer at a local level and connecting their needs with the environments needs. This will create both short- and long-term value for the stakeholders. Furthermore, retail businesses have an strong position to influence their customers (The Coca-Cola Retailing Research Council, 2014). Retail businesses have an opportunity to switch the market demand and produce more environmentally friendly product that emits less CO_2eq (McKinnon, 2010). Many customers, also those who are relatively environmentally aware, expects retail businesses to take responsibility in the matter (Brito *et al.*, 2008). Retail businesses have the great advantage to both be able to influence the supply side (production) and steer the customers consumption (Jones *et al.*, 2005).

[1] Green house gases are multiplied with their global warming potential (**GWP**) that represent their impact on the climate and translated into CO_2eq. This gives the summarised contribution to the global warming (Allerup, 2017).

McKinnon (2010) gives a suggestion that retail businesses might affect their customers by labelling their products with the total amount of CO_2eq emitted from cradle to grave. This might give transparency to the supply chain and may increase the demand for a more environmentally friendly manufacturing process.

Retail business is faced with a big change where governments, customers and stakeholders put pressure on how retail businesses integrate sustainability with their daily work and products (Wiese *et al.*, 2012), and expect them to take action (Brito *et al.*, 2008). Together with the enormous increase of e-commerce the last decades (Nikolaeva, 2006), retail business now has a great opportunity to take advantage of this change and improve their business for the future. The opening for new business to become thought leaders in retail is vacant and AMF Fastigheter, one of Sweden's largest commercial real estate business, are seizing the occasion. They have been chosen to be the case study for this research project because of their new marketplace, The Lobby. The Lobby is a new retail concept where physical store and e-commerce is merged. The idea behind the retail concept is to create a place where new innovations and ideas can be tested and The Lobby is further described in chapter 5.2 (Ehlin, 2018). This gives an opportunity to investigate the research gap in how sustainability is integrated in retail businesses, when adapting to a digitised world.

1.1 AIM AND FRAMING OF QUESTIONS

The aim of this research project is to explain how sustainability can be integrated in retail business and how life cycle assessment (**LCA**) can lay the foundation for decision making. A case study has been performed on The Lobby to find possibilities and suggestions for how integration of sustainability can play a natural part in The Lobby's daily work.

The following research questions will be answered in the report:

1. Which are the key areas for The Lobby in their integration of sustainability?
2. How can life cycle assessment be a part of decision making at product level?

1.2 DEFINITION

In this research project the terms sustainability, corporate social responsibility (**CSR**) and retail, all of which having a wide range of definitions. The definitions used in this research project are explained in this section.

One of the most used attempts to operationalise sustainability was developed by John Elkington in what he refers to as the Triple bottom line (**TBL**), explaind in chapter 2 (Wiese *et al.*, 2012). Definitions of sustainability and sustainable development differentiate and in table 1 some of the definitions are stated to show the variety.

Table 1: Definitions of sustainability and sustainable development

Author and publishing year	**Definition**
World Commission on Environment and Development, 1987	*"[...] development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (Brundtland Commission, 1987, 8).
Dernbach J. C, 1998	*"effective governance require a nation to consider and protect the environment and natural resources on which its current and future development depend. Any other approach is self-defeating. The connections between the environment and development thus provide a powerful rationale for environmental protection: enlightened self-interest"*(Dernbach, 1998, p. 20).
Ehrenfeld J.R, 2005	*"I define sustainability as the possibility that all forms of life will flourish forever. For human beings, flourishing comprises not only survival and maintenance of the species but also a sense of dignity and authenticity. [...] Ultimately, sustainability requires responsible, ethical choices everywhere in daily life"* (Ehrenfeld, 2005, p. 24-25).
United Nations General Assembly, 2005	*"[...]sustainable development in its economic, social and environmental aspects constitutes a key element of the overarching framework of United Nations activities"*(United Nations General Assembly, 2005, p. 2).
Lozano R, 2007	*"[...]us to achieve societal sustainability we must use holistic, continuous and interrelated phenomena amongst economic, environmental, and social aspects, and that each of our decisions has implications for all of the aspects today and in the future"* (Lozano, 2007, p. 8).

The first definition in table 1, made by Brundtland Commission (1987), is similar to the Swedish Generational goal and gives a wide description to sustainable development. Dernbach (1998) gives economics a role in the definition (Carroll, 1999), while Ehrenfeld (2005) focuses on sustainable future and that all humans, not only governments and businesses, are a part of the future. The United Nations General Assembly (2005) definition makes a statement that the UN works with the three aspects: social, economics and environmental. Lozano (2007) has made his definition from Elkington's TBL model and because of that factor it will be the definition that this research project uses.

Modern CSR started to develop in 1950 until today and is still changing (Carroll, 1999). In table 2 are some of the definitions of CSR shown.

Table 2: Definitions of Corporate Social Responsibility

Author and publishing year	**Definition**
McGuire J.W. 1963	*"The idea of social responsibilities supposes that the corporation has not only economic and legal obligations but also certain responsibilities to society which extend beyond these obligations"* (McGuire, 1963, p. 144).
Johnson H.L. 1971	*"A socially responsible firm is one whose managerial staff balances a multiplicity of interests. Instead of striving only for larger profits for its stockholders, a responsible enterprise also takes into account employees, suppliers, dealers, local communities, and the nation"* (Johnson, 1971, p. 50).
Jones T. M. 1980	*"Corporate social responsibility is the notion that corporations have an obligation to constituent groups in society other than stockholders and beyond that prescribed by law and union contract. Two facets of this definition are critical. First, the obligation must be voluntarily adopted; behaviour influenced by the coercive forces of law or union contract is not voluntary. Second, the obligation is a broad one, extending beyond the traditional duty to shareholders to other societal groups such as customers, employees, suppliers, and neighbouring communities"*(Jones, 1980, p. 59-60).
Vaaland T.I, Heide M and Grønhaug K 2007	*"Corporate social responsibility is management of stakeholder concern for responsible and irresponsible acts related to environmental, and social phenomena in a way that creates corporate benefit"*(Grønhaug *et al.*, 2007, p. 931).

In table 2 it is shown that three of the definitions from between 1960s to 1980, do not include environmental responsibility. Today it is more common that CSR includes not only social responsibility, but all of the three aspects: economical, ecological and social. From table 2 it can be seen that the word stakeholder is a part of Grønhaug *et al.* (2007) definition of CSR. The stakeholder concept developed during the 80s and became big during the 90s and are further explained in chapter 2 (Carroll, 1999). Carroll (1999) argues for the fact that no unique definition of CSR came up during the 90s, hence none of the definitions i table 2 are from that decade. During the 90s CSR was instead a building block for other concepts related to CSR, for example stakeholder theory (Carroll, 1999). In this research project the definition of CSR will be the one from Grønhaug *et al.* (2007), because it includes economical, environmental and social aspects.

The definition of retail in this research project is the Swedish word *"detaljhandel"*[2] which includes fast moving consumer goods (**FMCG**) and durable goods. FMCG are products bought on a daily base such as food and toiletries. Durable goods are bought less often than FMCGs, for example clothes, home decoration and cars (HUI Research, 2018).

[2]Detaljhandel är en sammanslagning av de två begreppen dagligvaruhandel och sällanköpsvaruhandel (HUI Research, 2018)

2 METHOD

This chapter starts with an explanation of the method that has been used in this research project, the reason for choosing the method and how data has been analysed. The research design and data collection is explained and the ethical perspective and delimitation been discussed. The chapter ends with an explanation of the method LCA and the steps of this research project LCA for a chosen product.

2.1 RESEARCH APPROACH AND UNIT OF ANALYSIS

In this research project an inductive research approach has been used. In an inductive approach the theory is based on the observation and findings in the research (Bryman, 2012). Inductive approach is an empirically motivated approach that benefited the researchers due to the theory has been chosen by the empirical findings (Bryman, 1997). Unit of analysis in this research project is qualitative which according to Bryman *et al.* (2011) is characterised by the social influence on history. It concerns in how individuals' feelings and doings influence the history. In this research project, concepts and theories have been changed, depending on data collected. The main problems with using a qualitative approach is according to Bryman (1997) the interpretation of the observation. It is hard to be objective when studying other peoples views. To minimise this problem the researchers have tried to be clear and transparent in their approach and practical research conducted. Despite this, even though the focus is clear, the personal and cultural values are hard to account for (Bryman, 1997).

In this research project two case studies have been conducted and according to Yin (2009, p. 4) *"the case study method allows investigators to retain the holistic and meaningful characteristics of real-life events-such as individual life cycles... [], organisational and managerial processes... [] and the maturation of industries"*. These two case studies have driven the literature and the research terms that have been used. The first case study was to integrate sustainability to AMF Fastigheter's retail project The Lobby. The empirical results from this case study was conducted by interviews, documents and observations which provided the researchers with concepts to review in the theory. The second case study included a LCA, where a T-shirt was studied from cradle to grave. By combining these two case studies relevant and new information has been found.

2.2 RESEARCH DESIGN AND DELIMITATION

The meaning of research design according to Robson (2011, p. 70) is *"design is concerned with turning research questions into projects."*. In this research project a commission has been given from AMF Fastigheter, which has an impact on the result. The

empirical result was conducted through interviews with employees and documents provided by the commissioner. This gave the employees at AMF Fastigheter the chance to steer the data that was given to the researchers and also certain expectation on the result may occur. There is a possibility that due to the fact that the interviewees knew that they were being interviewed, their answers may have been skewed (Bryman, 2012).

The difference between theory and empiricism is that theoretical study focus on observed regularities and phenomenons and the current situation of what is being studied (Robson, 2011; Bryman, 2012), contrary empiricism that is experiences and beliefs (Bryman, 2012). The theory in this research project is based on concepts and theories regarding sustainability and businesses. Terms explained in the theory were CSR, environmental management system, circular economy, TBL, stakeholder, portfolio selection, supply chain management and LCA. The empirical background and empirical findings made the frame for the theory. Empirical findings are based on experience (Bryman, 2012) and the empirical background includes information about SDG 12, the current development in the retail sector, consumers behaviour towards sustainable retail and a brief description of the commissioner AMF Fastigheter. The Lobby is a new concept in retail and it was not possible to find a similar case for comparison.

2.3 DATA COLLECTION

Collection of data in this research project was conducted by primary data collection, in forms of interviews with employees at AMF Fastigheter, and secondary data collection that can for example be a literature review Robson (2011). According to Saunders *et al.* (2009) literature sources can be divided into three different categories where primary literature is public sources that is the first occurrence of a work, tertiary literature is search tools that is designed to locate primary and secondary literature. Secondary literature is the most common literature to use and most available. Secondary literature is often books and journals, subsequent to primary literature. This research project has used secondary literature and qualitative information where information has been collected from websites, books and journals. Websites, for example Swedish Environmental Protection Agency, Government offices of Sweden and United Nations, were used to gather information about which legal obligations applies for sustainability in Sweden and for businesses. Books were used to gain knowledge in areas that do not change at a rapid pace, for example different research methods and life cycle assessment. For areas that does change and were new information is available, journals were the best choice for source collection. To find the right information some research terms were used, and the most commonly used research terms used by the researchers in this research project, separately or together, are presented in table 3 below.

Table 3: The main research terms used to find academic articles in journals

Research term	**Research term**	**Research term**
Sustainability	Retail	Corporate social responsibility
E-commerce	Supply chain	Sustainable development
Portfolio management	Stakeholders	Changes in retail

The terms in table 3 were used to search for articles in different journals available at *ScienceDirect* and *EmeraldInsight* which are leading online library for peer-reviewed scholarly literature. These were accessed by the researchers through their account at Uppsala University. As mentioned above, the terms were used both separately and together to find articles that was relevant to the subject. Both the field of retail and sustainability is shifting through time (different definitions in chapter 1.2), and therefore tried the researchers to use recently published articles. However there is a risk that some relevant articles were not found due to the limitations in selected research terms and time.

2.3.1 Interviews

In this research project, two types of interview techniques, unstructured and semi-structured, were used to interview employees at AMF Fastigheter. This provided knowledge about AMF Fastigheter that was only accessible for the researcher through direct contact with employees. To get an insight in how AMF Fastigheter works with sustainability Michael Eskils, Head of sustainability and AMF Fastigheter's Chief operating officer (**COO**) and Chief financial officer (**CFO**), Marie Barkman Hollaus, was interviewed. To understand the concept of The Lobby, interviews were carried out with Göran Swärdh, Business development manager and Annelie Gullström, Head of business development. See table 4 below for the interviews conducted in this research project.

Table 4: The interviews for this research project that were conducted with employees at AMF Fastigheter

Interviewee and position	**Interview date**	**Interview structure**	**Validation request**	**Validation received**
Göran Swärdh - *Business development manager*	31:st of May 2018	Unstructured live interview	19:th of October	23:rd of October 2018
Michael Eskils - *Head of sustainability*	11:th of October 2018	Semi-structured live interview	15:th of October 2018	16:th of October
Annelie Gullström - *Head of business development*	12:th of October 2018	Semi-structured live interview	16:th of October 2018	24:th of October 2018
Marie Barkman Hollaus - *COO and CFO*	17:th of October 2018	Semi-structured live interview	17:th of October 2018	19:th of October 2018

The first interview was made the 31:st of May 2018. This was an *unstructured* interview where the topic The Lobby was discussed widely (see appendix A). This kind of interview was used to get a bigger picture in the concept of The Lobby. This gave the researchers a broad perspective in what The Lobby is and a good start to receive fundamental knowledge about The Lobby (Dawson, 2009). The second interview with Annelie Gullström was carried out 12:th of October 2018 at AMF Fastigheter's office. This was a semi-structured interview and an interview guide was sent out in advance (see appendix B). This type of interview was chosen because there was some pre-set questions that needed to be answered but it also gave the possibility for new information to be conducted (Dawson, 2009). The two other interviews with Michael Eskils, 11:th of October, and Marie Barkman Hollaus, 17:th of October, were also semi-structured interviews with a pre-sent interview guide (see appendix C and D), so the researchers were sure that all questions that needed to be answered were asked. The interviews were carried out at AMF Fastigheter's office. All semi-structured interviews were recorded and afterwards they were concluded into a shorter version where the most important facts were written down and sent to the interviewer to receive validation to use the information.

2.3.2 Ethical perspectives

When doing a research project, it is important to consider ethical issues during the whole process (Bryman, 2012). Moreover, Bryman (2012) explains that it is also important to have informed consent, therefore a interview guide was sent to the interviewees a couple of days before the occasion. The interviewees were informed that it was no constraint to answer all questions and that the interviews were only recorded with their approval. During the interviews the interviewee could stop the recording and talk "off the record". Furthermore were the interviews summarised and sent to the interviewee for validation before presented in this research project. Also, before publishing this research project, the interviewees had a chance to read the research project and see that the researchers had put their word in the right context, to prevent deception (Bryman, 2012).

2.4 LIFE CYCLE ASSESSMENT

Life cycle assessment, LCA, is a method to describe the life cycle of a product effects on the environment. In LCA the definition of a product refers both to material products and services (Baumann & Tillman, 2008). The ISO 14044:2006: *Environmental management – Life cycle assessment – Principles and framework* describes the four main steps in a LCA, which are presented in figure 1 (International Organization for Standardization, 2006). The boxes are processes and the arrows shows in which order the steps are made, the arrows with dots are possible iterations.

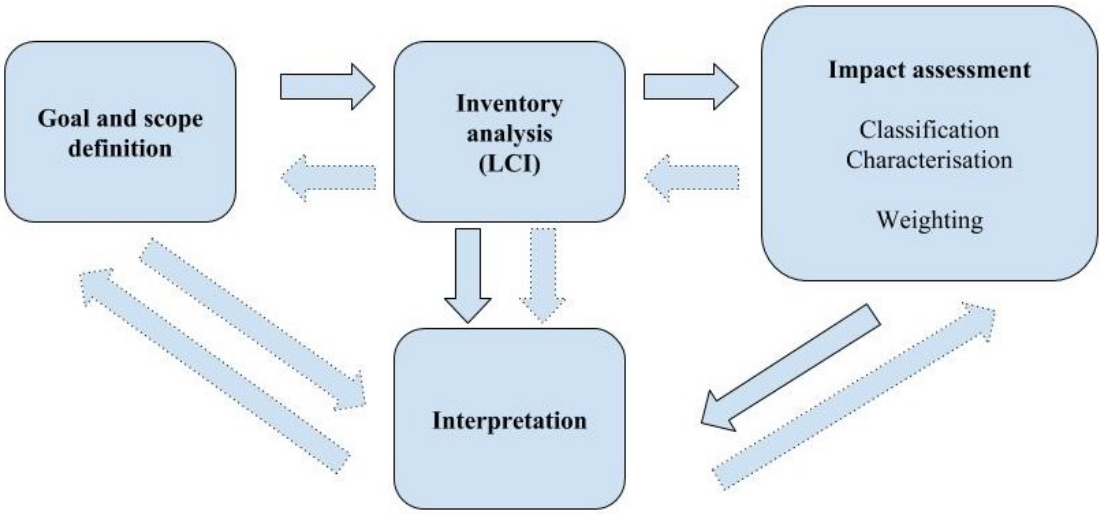

Figure 1: *The LCA procedure, self-made with inspiration from Baumann & Tillman (2008, 20).*

The LCA starts by defining the goal and scope which gives an introduction to the product, the objectives with the LCA and which environmental impact is considered. It is also important to define the system boundaries for the LCA, which includes time horizon, geographical boundaries, defining capital goods and set the boundaries in relation to the natural system. This step will define the result of the LCA. The set of the system boundaries are decided by the performer of the LCA. If the performer do not have a transparent and motivated system boundaries the trustworthiness of the LCA might be uncertain. When studying LCA it is important to be aware of the delimitation the performer have had during the research (Baumann & Tillman, 2008). The next step is inventory analysis where data is collected. The data can later on be translated into impact assessment and the chosen environmental consequence. The last step of the LCA is interpretation, this step simplifies the data so it can easy be presented and understood (for a more detailed explanation of the steps in LCA, see Appendix E) (Baumann & Tillman, 2008).

2.4.1 Goal and scope definition

This research project includes a LCA where the GHG emission, measured in CO_2eq, has been calculated for a T-shirt life stages. From resource depletion to when the product is thrown away. The LCA has answered the research question number two: *How can life cycle assessment be a part of decision making at product level?*. The reason for choosing a T-shirt as this research project's product is that many other LCA studies have used a T-shirt. A T-shirt is an apparel that is common in every closet, both for

females and males and this have facilitated the validation of this research project's LCA (Hyllegard *et al.*, 2014; Hustvedt & Bernard, 2008). The result has been presented for AMF Fastigheter so they have the opportunity to use the result to develop retail in a more sustainable way. The result provided knowledge that can be useful for a business internal and external decisions.

The first system boundary to been decided was when the LCA goes from nature to human control. To get a complete LCA the emissions were chosen to be counted from the day the farmer puts the seed in the ground. Geographical boundaries includes the resource depletion which is set to be in China while the manufacturing process is an average between all of the countries in the world. Because of the resource depletion is set in China the transportation was chosen to be between Shanghai, China, and Gothenburg, Sweden. The T-shirt's customer's home is located somewhere in Sweden and also the waste will be taken cared of in Sweden. Time horizon for the LCA is that a T-shirt is worn 22 times before disposal and washed after every second use (Granello *et al.*, 2015, p. 31).

2.4.2 Inventory analysis

In the LCA's system boundaries, some delimitation have been made and all stages are not included. The system stages chosen to be included were defined as the stages of an apparel that have the largest impact on the climate and the highest GHG emissions (Roos, 2016). The chosen stages are also stages that will provide information to AMF Fastigheter that can be used in decision making. The identified stages are shown below in figure 2.

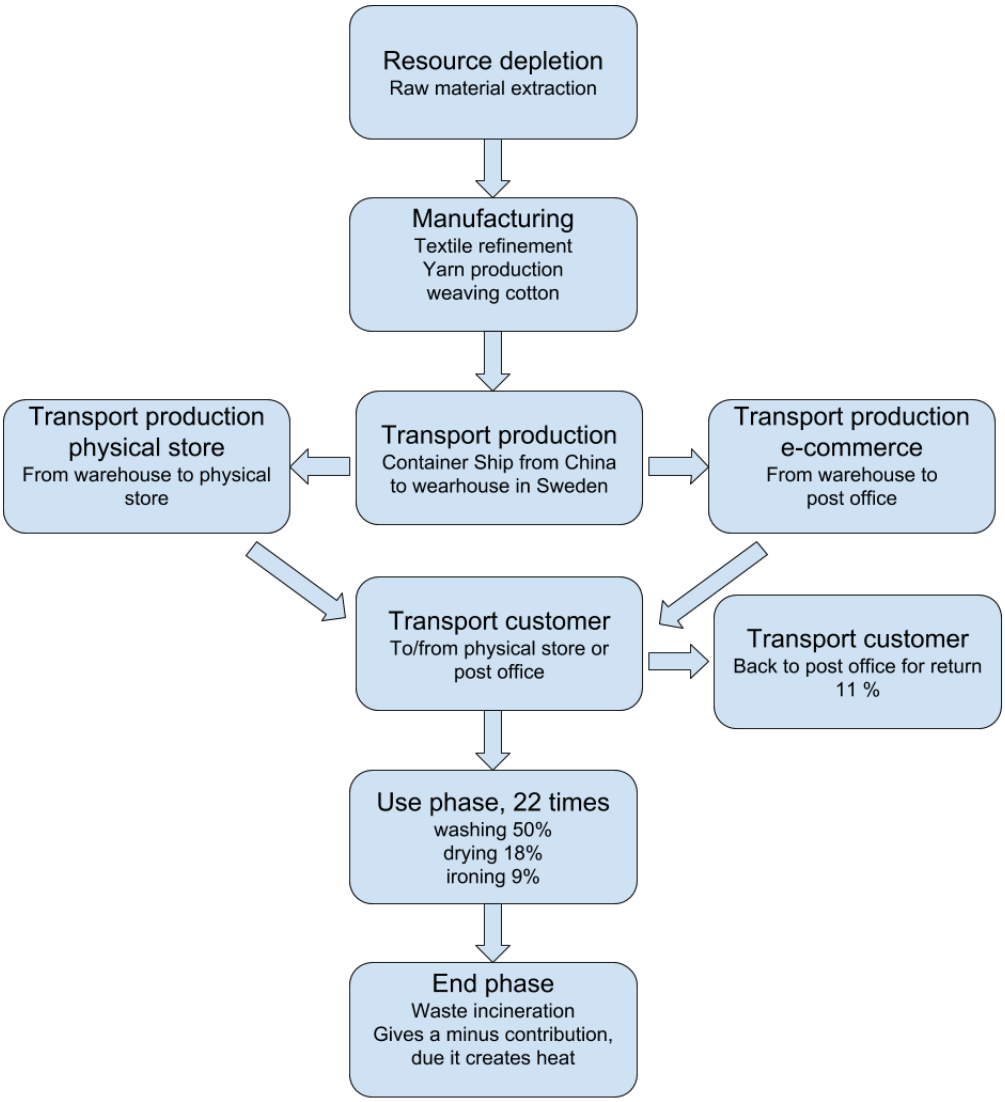

Figure 2: *The systems boundaries for the LCA. Covering the stages from the resource depletion to disposal of T-shirt.*

Figure 2 shows that the first process in a T-shirt life chain is *raw material extraction* and the process is located in China. An assumption has been made that there were no transport between farm and factory even though the *resource depletion* was in China and *manufacturing* was calculated from a global average. A more detailed description of what is included in the two first systems and their processes are shown in table 5. These processes have been calculated with data from ecoinvent V2.2 (ecoinvent, n.d.) and are the main processes of the first two systems: *resource depletion* and *manufacturing*.

Table 5: Description of the processes from the system boundaries that have used data from ecoinvent V2.2 (ecoinvent, n.d.)

System	**Processes**	**Description**
Resource depletion	Raw material extraction	*"Included steps are soil cultivation, pesticides fertilisation (mineral fertiliser), harvest, loading for transport and extraction of the fibres in a gin plant."*
Manufacturing	Textile refinement	*"The inventories include energy consumption and material need for the refinement of lint cotton, yarn or textiles including estimations about required infrastructure and waster water treatment."*
Manufacturing	Yarn production	*"The inventories include energy consumption, transport and infrastructure related to the processing of lint cotton to yarn (cleaning, cardening, spinning)."*
Manufacturing	Weaving cotton	*"The inventories include energy consumption, for the weeving of cotton yarn into a textile".*

Table 5 shows a description of what is included in the different systems and processes to gain knowledge in the first two system boundaries in this research project. The third and fourth system in the LCA's system boundaries are the transportation. The transportation is divided into *transport production* and *transport customer*. The transport production is connected to the producer and retailer and includes the transport from China to Sweden and the transport from the warehouse to either physical store or post office. In total there are three transportation's connected to the production: to warehouse storage in Sweden from China, to physical store and to post office. The second category, transport customer, is the transport the customer performs when transporting to and from the the store when buying the T-shirt or picking it up at a post office after ordering it from e-commerce. There are two transportation's connected to the customers: From customer's home to store or post office and back and back to post office for return. All processes, except for the transportation to post office, have used NTMCalc Basic 4.0 as calculation tool (NTMCalc Basic 4.0, n.d.). Transportation to post office has used Postnord's own calculation tool (PostNord, n.d.). A description of the processes and what is included can be seen in table 6.

Table 6: Description of the system different transport processes. Data have been used from NTMCalc Basic 4.0 (NTMCalc Basic 4.0, n.d.) or Postnord's environmental calculator (PostNord, n.d.)

Destination	**Distance and vehicle type**	**Description**
Warehouse storage	20662 km with Container ship	Container ship is the most common conveyances to import refined goods according to Kommerskollegium (2012)and Berntsson & Ado (2016). The manufacturing location and port in China was chosen to be Shanghai due to it is birthplace for textile industry (Irun, 2017). Largest port in Sweden is Gothenburg (Berntsson & Ado, 2016) and many large retail businesses have their warehouse storage within 50 km from the harbour (Claesson, 2013; Lonnroth, 2016; Kappahl, n.d.)
Physical store	470 km with Rigid truck less than 7.5 tonnes	From 2012 it is not allowed to drive trucks over twelve meters in Stockholm (Alm & Löf, 2012). Therefore a rigid truck less than 7.5 tonnes was the chosen conveyance for transport from Gothenburg to Stockholm city centre.
Post office	See description	Postnord's environmental calculator has been used where 100 packages less than 1kg per packages was chosen. This provided an average emission per package that is calculated from Postnord's annual Sustainability Report (PostNord, n.d.).
From/to customers home	27 km with car	According to Holmstrom (2017, Table 1) most journeys where the destinations and service and shopping is made with car and the distance travelled per journey is 27 km (Holmstrom, 2017, Table 3).
Back to post office	13.5 km with Car	The distance back to the post office (one way) will only be half the distance from above (Holmstrom, 2017, Table 1 and 3).

The main difference from physical store and e-commerce in table 6 is the process where the customer returns the T-shirt when bought at e-commerce. According to McKinnon *et al.* (2015) previous research shows that it is more common for a e-commerce than a physical store to get returns and eleven percent has made a return of one or more prod-

ucts they bought on e-commerce in the last month (PostNord, 2018, 17). This LCA has therefore taking into account if the person who buys the T-shirt in a e-commerce decide to return the T-shirt. This will lead to another transport where the customer returns the T-shirt to the store or post office and thus more GHG emission. For a more detailed description of table 6 and the calculations see Appendix F.

When the T-shirt is bought it will be used by the customer. The use phase of the T-shirt includes washing, drying and ironing and is explained in table 7 below. All of the steps in the use phase were calculated from the electricity, low voltage, production in Sweden, at grid which correspondents to 0.051 CO_2eq per kWh (conducted from data at ecoinvent).

Table 7: Description of the system boundaries processes during the use phase (ecoinvent, n.d.)

Processes	**Times**	**Description**
Uses	22	According to the report *Consumer behaving on washing* made by Granello *et al.* (2015) is the average use of T-shirt 200 days during one year for a Swede and nine T-shirts are the standard number of T-shirts to own. 200 divided by nine makes 22 uses for a year.
Washing	11	A T-shirt is normally used two times before it goes in the washing machine (Granello *et al.*, 2015). The most common temperature to wash garments in is 40 degrees (Gwozdz *et al.*, 2013).
Drying	4	Drying can be made with or without heat and out of eleven washing times, four times the drying is made in a tumble dryer (Granello *et al.*, 2015).
Ironing	2	The times a T-shirt is ironed after a wash is taken from (Granello *et al.*, 2015) and it is two times. It takes three minutes per T-shirt to iron, with a power of 0,027 kWh/min (Beton *et al.*, 2012).

Table 7 explains how the T-shirt is being used and taken cared of before entering the last system. The last process in the LCA is the end phase and according to Östlund *et al.* (2015) and Granello *et al.* (2015) the most common way to discharge a T-shirt is to put it in the household garbage. There are no large-scale textile recycling that occurs within Swedish borders (Östlund *et al.*, 2015) and because of that this research project's LCA has only looked at waste incineration as a option for the T-shirt's end phase. Waste incineration gives a heat contribution, the alternative way to create such heat is with energy. Therefore is the heat contribution translated into energy and in the LCA the

energy from the incineration gives a minus contribution. The minus contribution are based on how much CO_2eq electricity is releasing.

2.4.3 Impact assessment

The impact category, characterisation method, unit for characterisation factor and functional unit were chosen to be able to answer research question number two and can be seen in table 8 below.

Table 8: The impact category with the corresponding characterisation method that uses data from Althaus *et al.* (2010) and the unit of the characterisation factor and the functional unit

Impact category	**Characterisation method**	**Unit for characterisation factor**	**Functional unit**
Climate change	GWP_{100}(Althaus *et al.*, 2010)	kg CO_2eq	100 T-shirts, 200 gram, from cotton seed to disposal

Impact category climate change was chosen because by using the characterisation method GWP_{100} the total GHG emission have been calculated which gives the impact on the climate a T-shirt will contribute with. The goal with this LCA is to see where the largest GHG emission is released in a T-shirt's life chain. By calculating the total CO_2eq for every stage, hot spots might be found and AMF Fastigheter can use the result to see where in the supply chain a change can make the greatest impact for reducing CO_2eq. This is useful knowledge that can be used in decision making, both for internal and external strategies.

2.5 VALIDATION

When validating the research project it is important to use triangulation, which is that more than one source of data is used (Bryman, 2012). This has been tried to be done throughout the research project with extra focus on the statements that have been key facts in this research project. The interviews with employees at AMF Fastigheter was all conducted at the office of AMF Fastigheter, and the semi-structured interviews were recorded. As mention before, a written summary of the interviews were made short after the interviews and sent to the interviewees for validation. The interviewees had the possibility to add notes and change things that was not correctly understood by the researcher. The unstructured interview with Göran Swärdh was not summarised, instead parts of the interview was written down directly into the research project and later on validated by Göran Swärdh.

The LCA for a T-shirt has been validated against Granello *et al.* (2015) result. The report by Granello *et al.* (2015) is written by Mistra Future Fashion which is financed by Mistra, Foundation for Environmental Strategic Research, and is coordinated by RISE, Research Institutes of Sweden, a state-owned research institute. Some differences did exist on process level because it is almost impossible to find a project that have used the same data. Geographical-, time- and system boundaries will all affect the result and therefore is the result in this research project not exactly the same as for Granello *et al.* (2015). However, the total CO_2eq for both of the results were similar and therefore were Granello *et al.* (2015) used as validation and also to collect information. A large amount of data were taken from ecoinvent (n.d.), which is the database most commonly used for inventory analysis in LCA. Granello *et al.* (2015) is using ecoinvent for data collection and the database is also commonly used for academic purpose in universities, and therefore a valid source for data collection.

3 THEORETICAL PERSPECTIVES

This chapter includes theories, concepts and definitions to help to understand the empirical background, result and analysis. First there will be an explanation of corporate social responsibility, followed by the concepts of environmental management system, circular economy and Triple bottom line. Stakeholders, portfolio section, project portfolio management and supply chain management are also explained to give a better understanding of why and how businesses operate. Lastly, life cycle assessment and its role in decision making will be described.

3.1 CORPORATE SOCIAL RESPONSIBILITY

Niall Fitzgerald, former Chief executive officer and Chairman at Unilever once said: *"We believe that the leading global companies of 2020 will be those that provide goods and services and reach new customers in ways that address the world's major challenges—including poverty, climate change, resource depletion, globalisation, and demographic shifts"* (Hohnen, 2007, p. 2). To address the world's major challenges, CSR can play a big part in a business. CSR does not have a universal definition and can be called by many names, but the key factors are the same, regardless of where the business is situated or the name of the method. CSR is about integration of economical, social and environmental values and development, in order to create wealth and improve society (Hohnen, 2007).

According to Hohnen (2007), there are two kinds of motivation that will make businesses integrate CSR into their work: external and internal. External motivation is when large businesses have an outside pressure and expectations from government and society, the stakeholders, to have positive contribution to society. Inside motivation means businesses want to improve their own brand value et cetera, make their business look good from the outside by improving their work (Hohnen, 2007).

In 1984 Freeman wrote the book *Strategic Management: A stakeholders approach*, where he summarised different researchers approaches to stakeholder theory (Freeman *et al.*, 2008). The definition of a stakeholder, according to Freeman (1984) is the following: *"stakeholder in an organisation is (by definition) any group or individual who can affect or is affected by the achievement of the organisation's objectives"* (Freeman, 1984, p. 40). The stakeholders and the business constitute the frameworks of the sustainability work within the business (Grafström *et al.*, 2015). Since 1984, when Freeman's book was written, the concept stakeholder has been studied and explored a great deal, both in the academic world and in the business world. One of the things that has been discussed during recent years is the stakeholders' role towards a more environmentally friendly

business. Important stakeholders for environmental change in a business can be governments, non governmental organisations (**NGOs**), idea generators, opinion leaders, customers, communities, investors and risk assessors (Grafström *et al.*, 2015). Businesses who do not care about the environment can make their public relations strained, lower the value of a business and destroy upcoming markets (Esty & Winston, 2009).

Furthermore, Hohnen (2007) explains the different factors contributing in rising interest for CSR in the last couple of years. Because of globalisation, businesses have offices in different countries and multinational enterprises are common. The concerns related to human resource management and environmental protection, all included in CSR, have increased when businesses have offices spread all over the world with different cultures and economical standards. Another factor is the work of UN that have made people more aware of the importance's of sustainable development with the requirements that need to be addressed in the SDGs. CSR is an entry point for businesses to understand how to address social, economical and environmental issues and there are some concepts, for example, environmental management system, circular economy and Triple bottom line that can be implemented in the business strategy to help on the way (Hohnen, 2007).

In the mid-1990s John Elkington created a new framework to help measure sustainability goals in businesses (Elkington, 1998). A framework that did not exist when the old traditional measures where profits, return on investment and shareholder value. The new measurement did also include environmentally and socially dimensions, and were named Triple bottom line. Figure 3 shows when sustainability is reached according to TBL.

Figure 3: *The Concept of Triple bottom line, self-made with inspiration from Elkington (1998).*

From figure 3 it is seen that TBL includes the consideration of the environment, social responsibility and economical goals, that together build a tool to manage sustainability goals. Sustainability is reached when all of the three aspects are considered in the same amount. The unit of TBL is not general because the three different performances are not the same. There is no universal standard measurement for calculating TBL (Hall & Slaper, 2011), but on the positive side, this contributes that the measurement can be determined to fit the subject matter and available data at its best (*ibid*). When businesses are deciding the measurement for TBL, they need to decide if their measurement should be focused on social-, environmental- or economic performance. To reach suitability in a business the importance comes in maintaining the balance between the social, economical and environmentally elements. This is a challenging aspect of sustainability but also essential (Aras & Crowther, 2015). Aras & Crowther (2015) argues that a business have to consider the effects of their decisions for the present and the future. From table 1 Lozano (2007) also describes the importance of the future in the decision making progress. By implementing circular economy, for example, the business economical growth can increase, it can help raise the employment and reduce environmental impacts (SB Insight, 2018).

3.1.1 Circular ecomomy

Circular economy is about eliminate waste, throughout all of the steps in a product or service life cycle (Zils, 2014). But it is not solely about resources utilised in several stages, it can also include energy, for example residual- or renewable energy and if a product's life cycle is extended after being used (Hedman, 2017). In figure 4 the concept of circular economy is described in a cycle.

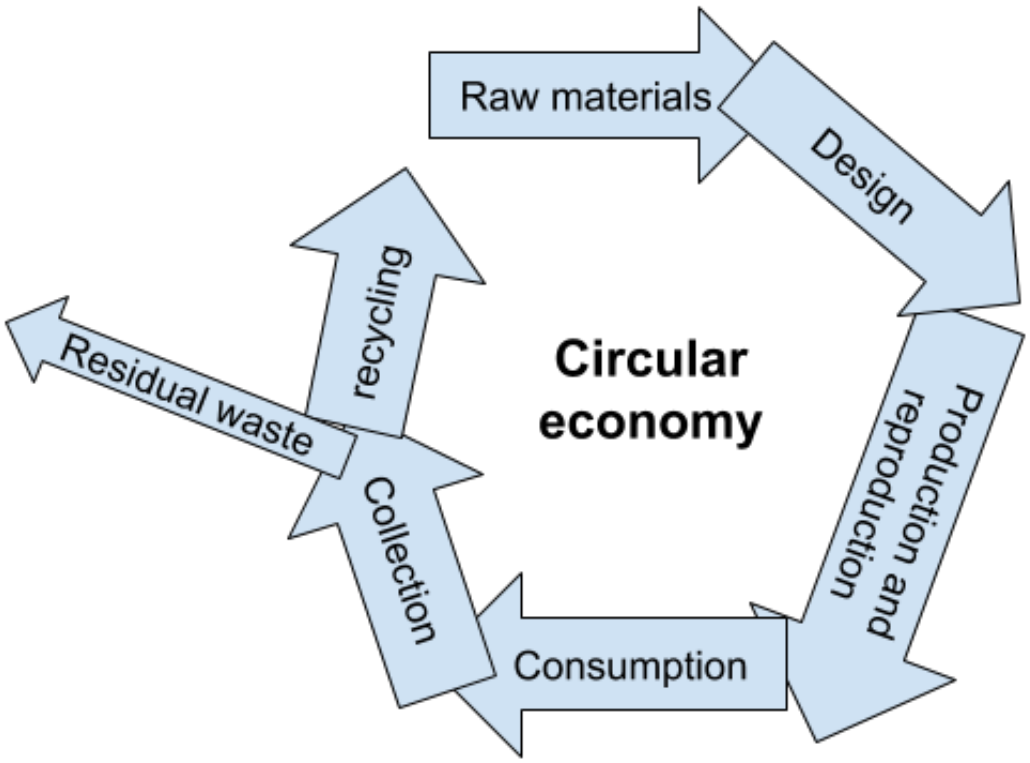

Figure 4: *The circular economy cycle, self-made with inspiration from Hedman (Internet, 2017).*

Figure 4 shows that raw material is designed to be consumed, then the products are collected and only a small part go to waste, while the rest is recycled. Then the cycle goes around with the recycled material being used for new designs and products (Hedman, 2017). Circular economy does also include products that have jointly ownership and where several persons uses the same product. By creating a value for shared products or services, businesses can develop a more sustainable business model. To switch from individual ownership of a product may create more efficient usage of pooled assets, and the environmental load can decrease (Piscicelli *et al.*, 2014). To make circular economy

more functional in practice there is need for more knowledge and routines about which resources the product includes. This will help to optimise how the product should be recycled or reused. It is required that dangerous substances have to decrease in products and that environment is taking into consideration when producing new products, to minimise the waste (Hedman, 2017).

Stahel (2016) writes in a article that there are many challenges with the transition from the current linear structure of economy to circular economy. The linear structure of economy implies that producers uses natural resources to make products that they will sell, but it is later on the customer's responsibility how the product will be taking care of, and which waste management used. A change in behaviour and habits are required at all levels, both by the business and customers. Innovation is needed to be able to transform old products to new products that is as good as new ones, and to be able to recycle atoms. Through research and outside pressure on governments and businesses Stahel (2016) think it is possible to reform to circular economy all over the world. The concept has gained increased attention the last decade from businesses, NGOs and researchers due to fact of the need to use resources more efficient (Reikea *et al.*, 2018; European Commission, 2017). One way to implement circular economy into a business can be with the use of environmental management system (**EMS**) (European Commission, 2017).

3.1.2 Environmental management system

According to United States Environmental Protection Agency (Internet, n.d.), environmental management system is: *"[...] a set of processes and practices that enable an organisation to reduce its environmental impacts and increase its operating efficiency"*. By evaluate and review a business performance, opportunities that will facilitate environmental implementation can be found. Most EMS models are based on a *Plan, Do, Check, Act* approach called PDCA-cycle or Deming cycle, see figure 5 below (Ammenberg, 2004; Deming & Edwards, 1986). For circular economy the version of PDCA-cycle have been made by the Ellen MacArthur Foundation to help businesses get started with circular economy were the *Plan, Do, Check and Act* in the cycle are swift to understand, define, make and release (Ellen MacArthur Foundation, 2017).

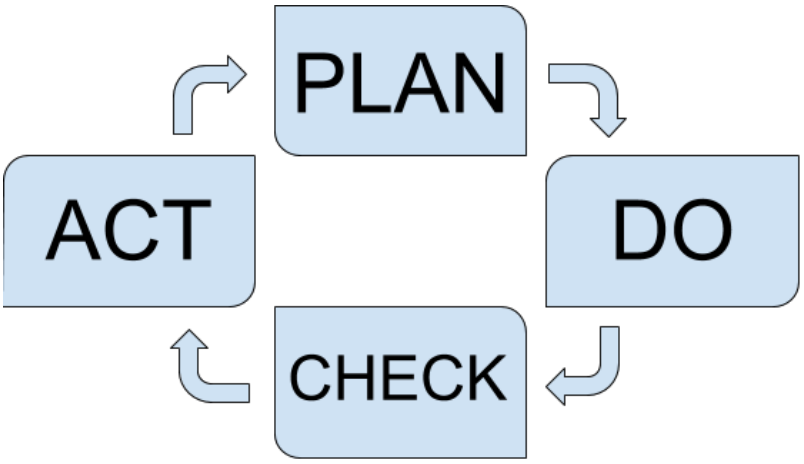

Figure 5: *EMS procedure, self-made with inspiration from Deming & Edwards (1986).*

First off a plan of the business goals and projects scopes, *Plan*, needs to be done, afterwards the environmental aspects will be considered with focus on objectives and targets (Stapleton *et al.*, 2001). In this step it is important to both create long- and short-term objectives that are external and internal, moreover it is important to take into account the stakeholders interests. Due to EMS have no specific numbers of goals the business can choose this but to many goals can be overwhelming, then it is better to add objectives ongoing (Searcy *et al.*, 2012). After this step an environmental management program shall be developed, *Do*. When doing the *Do*-step it is important to monitor and measure the program, *Check*, (Stapleton *et al.*, 2001). Scheduling the audit can be hard and it is best to have a flexible schedule that not occurs to often. If doing it multiplied times per year, the auditing gets less valuable and therefore it can be better to check EMS together with other organisational audits (Searcy *et al.*, 2012). The last step for EMS are *Act*, the *Act*-step includes a management review where improvements of the plan are to be found (Stapleton *et al.*, 2001).

In Europe the most common standardised EMS are ISO 14001 and Eco-Management and Audit Scheme (**EMAS**) which both are voluntary for businesses to implement. There are several reasons for implementing EMS, the financial reasons can be that the business hope that EMS will lead to cost reductions, competition to be as good or better then the business rival and environmental reasons to reduce climate impact (Ammenberg, 2004). But there are also several challenges with EMS. According to Searcy *et al.* (2012) one of the largest challenges is audit fatigue. The Check-step requires auditing that delivers valuable information and have high quality so the system can be improved. If the business in question do not have the support and environmental commitment from the management when implementing the EMS, it will probably never work (Ammen-

berg, 2004; Chin *et al.*, 1999).

When implementing EMS into a business, for example ISO 14001 or EMAS, it can simplify the procedure if the business environmental aspect are divided into direct and indirect (Swedish Environmental Protection Agency, n.d.). European union (**EU**) law defines direct environmental aspects as the activity, products and services the business have direct control over and that are managed by the business, contrary to indirect environmental aspect that result from interaction with third parties. These aspect does the business only have limited control over (European Parliament and Council, 2009). For example are indirect environmental aspects *"the environmental performance and practices of contractors, subcontractors and suppliers, choice and composition of services"*, and direct environmental aspects can be *"use of natural resources and raw materials (including energy)"* (European Parliament and Council, 2009, p 22-23). Bieser & Hilty (2018) adds that for information and communication technology, the indirect effects are also related to customers behaviour, patterns of consumption and production.

3.2 PROJECT PORTFOLIO MANAGEMENT

In 1952 Markowitz (1952) defined the term portfolio selection into two different stages, where the first stage is to sum up observation and experiences that will lead to beliefs in future performances. The second stage start at the end of the first stage and uses these beliefs about future performances to apply the choice of portfolio. Due to the globalisation of the world, businesses choice to invest and their risks have increased. Investment management, how business chose to invest, are crucial for all business models and to adopt a structured process with documentation can help measure goals more easily (Fabozzi, 2012). Since Markowitz defined portfolio selection the focus have been shifted from individual assets to a entire portfolio (Fabozzi, 2012). Businesses do often have to simultaneously manage many projects with different resource allocations and costs, then portfolio management can be used to help balance and delegate the requirement for each project and similarities can be found in project portfolio management (**PPM**) (Platje *et al.*, 1994). According to Levine (2005), PPM can be described as a structured working method to integrate projects tighter into a business other operations and create harmony between available resources. The earlier absence of PPM in businesses have disconnected project's functions with the operation of the business, and many projects are time consuming but are not relevant for the business (Levine, 2005). Therefore it is important to evaluate which projects that are carried out, and the similar approach that Markowitz uses can be used when choosing projects (Archer & Ghasemzadeh, 1999).

A great deal of effort have been made to develop and improve PPM but limited re-

search have been made to the issue of integration of sustainability in PPM. Brook & Pagnanelli (2014) explains that to be able to integrate sustainability (environmental, social and economical aspects) into new innovation projects some key issues needs to be addressed. Firstly the business needs to understand which innovation strategies will determine its competitive. Secondly, the business needs to address a new business model that integrate all three dimension of sustainability by creating innovation themes that is based on global trends. Example could be emission reduction, customers expectations and improving the competitiveness. Finally, new innovation investments need to be divided in between short-, medium and long-term objectives. Further more should the projects reflect on the innovation strategy that defines the business competitive approach. The conclusion in the article written by Brook & Pagnanelli (2014) was that it is considerable for businesses to focus on how to integrate business model and also the organisations design dimension in innovation PPM, not only technology, process and products dimensions that are usually considered.

3.3 SUPPLY CHAIN MANAGEMENT

Supply chain can be defined as the integrated processes in a number of various businesses that works together to extract raw material that is converted into a specific product and later on distributed to retailers. Often characterised as a forward flow of material and a backward flow of information (Beamon, 1998). Supply chain explains the steps that is needed to convert raw material into a complete product, ready for the customers. The digitisation and development of information and communication technology have reduced the virtual distance and made communication across the globe easier. This have contributed to subcontinents like China and India have entered the international supply chains (Harland *et al.*, 2013). The integration of countries like China into European supply chains can have both negative and positive effects. This has for example created a high speed shipping connection between China and Europe, where container ships are used. By transport products in containers, the individual packing can be minimised which have positive impacts on the environment. It can also affect the environment badly, EU:s standards and polices does not need to be taken into account and there are an absence of laws and regulation's for environmental standards, which makes the processes less environmental friendly (Arnberg *et al.*, 2018). For a long time the supply chain was studied individually for every step (Beamon, 1998) and environmental problems within the supply chain was managed by separate organisations that had scarce connections with the different processes (Srivastava, 2007). But the integration of supply chain management (**SCM**) and green supply chain management (**GSCM**) have increased the interest in investigate the supply chain as a whole (Beamon, 1998) and raised the awareness of the problems arising from depletion of raw material, pollution's and waste (Srivastava, 2007).

The implementation of GSCM in supply chains implies that environmental thinking is integrated in all stages of a products life, from the stage where the product is design to the end-of-life management. In a manufacturing stage, this implementation can lead to a paradigm shift where the geological impact can be reduced as well as an increase of quality and profit (Srivastava, 2007). Closed loop supply chain (**CLSC**) can be addressed in GSCM to receive a more sustainable product. CLSC is a processes that maximises value throughout a product life cycle by also create a value in the reverse flow of supply chain. By knowledge in quality and purity of material the processes to separate material can be more resource effective which will contribute to more recycled materials. CLSC is highly related to circular economy, and these concepts have the potential to better understand and manage resource risk and create future value for businesses (Mishra *et al.*, 2018).

3.4 LIFE CYCLE ASSESSMENT IN BUSINESSES

According to United Nations (n.d.) the first step for businesses to make the net emission of GHG reduced to zero is to calculate the emissions recurrent and update the inventory annually to track performance over time. Characterising of GHG can be a useful way to convert GHG emission to CO_2eq, and reducing the measurements from several to one by adding them up. Other GHGs, for example methane, nitrous oxide and chlorofluorocarbons contribute to the climate change in different scales and therefore can the gas be translated to its global warming potential (**GWP**). GWP can be used as converter when doing a LCA for the impact category climate change (Baumann & Tillman, 2008). The LCA model has the ability to cover all areas of a product or function, which can decrease problem shifting where only one area or a short time period is studied (Guinée *et al.*, 2001). For example, LCA can be used to calculate the total amount of CO_2eq emitted across its supply chain. By businesses being transparent with the amount of CO_2eq their products emits, the customer gives the opportunity to change their buying behaviour (McKinnon, 2010). LCA can also be an primary step when new decisions about the supply chain is to be taken. LCA is able to calculate the different amount of natural resource that is consumed in the manufacturing stage contrary to production stage. This is crucial knowledge when looking into detailed impact of the a supply chain (Egilmez *et al.*, 2016). Therefore LCA is a useful tool which both can give insight of a specific step of a supply chain but also have the ability to give a holistic perspective on a product (Egilmez *et al.*, 2016). According to Ammenberg (2004) the environmental aspects have developed from being focused on big point sources for emissions to instead focus on a life cycle perspective on products or services. LCA is a useful way to identify key factors in a product's life that can be improved in a sustainability perspective. But the downside with LCA is that is only taking the environmental perspective into

account, not addressing the social or economic perspectives (International Organization for Standardization, 2006).

4 EMPIRICAL BACKGROUND

This chapter includes information that together with theory in chapter 3 will help to analyse the result from this research project. The development in retail business and what the future will hold are studied. Also the connection between e-commerce and sustainability is explored and how the customers behaviour and legalisation work towards a more sustainable consumption. Lastly, there are a brief presentation of AMF Fastigheter presented.

4.1 DEVELOPMENT IN RETAIL BUSINESSES

The retail have changed during the last years and to show where the changes have been happening table 9 presents statistics about retail and consumption patterns between 2011 and 2017.

Table 9: The changes in Swedish retail and consumption patterns between 2011 and 2017

Subject	**Period**	**Change**	**Total share of retail 2017**
Percent of e-commerce share in retail	2011-2017	+4.7 % (Rosenström, 2016, p. 4) (Arnberg *et al.*, 2018, p. 7)	9 % (Rosenström, 2016, p. 4) (Arnberg *et al.*, 2018, p. 7)
Percent consumption made abroad of a household total consumption	2011-2017	+2.2 % (Arnberg *et al.*, 2018, p. 14)	6 % (Arnberg *et al.*, 2018, p. 14)
Percent of swedes that have bought a product or service through their smart phones the last 3 months	2012-2017	+38 % (DIBS, 2017, p. 32)	54 % (DIBS, 2017, p. 32)

In year 2017, the e-commerce represented nine percent of Sweden's retail trade (Arnberg *et al.*, 2018, p. 7). This number has grown the last decade because of the digitisation that is happening in Sweden and all over the world. Digitisation means the change to a digital information society, where the analogue technique are replaced by digital tools. In 2011 Sweden implemented the EU digital agenda, the goal with the agenda is faster internet, a common European digital market and increased internet security (Nationalencyklopedin, n.d.). In 2002, 60 percent of the Swedish population over twelve years old had access to internet in their homes, in 2017 the same number was 95 percent. It is not only at home people have access to internet. The use of smart phones have increased, among the Swedish population over twelve years old the access have grown from 27 percent in 2011 to 85 percent in 2017. Furthermore, as result of the digital agenda, EU members now have free roaming throughout the EU (Thoresson & Davidsson, 2017, p. 10). As seen in table 9, over 50 percent have purchases things through their smart phones according to DIBS (2017, p. 32), and the most common

reason for shopping through a smart phone is that it is the most convenient way. This shift are changing the traditional retail from its roots (*ibid*).

4.1.1 The future of retail

The Swedish Trade Federation released the report *"The big retail change"* in May 2018 about the changes in retail that been happening the last couple of years and with predictions in how the retail will change to year 2025. The Swedish trade federation is a employer organisation for wholesale, retail and e-commerce employers and owners in Sweden (Swedish Trade Federation, n.d.). The report covers three areas that will be important for the change in retail the coming years, the demographic shift, technological change and change of business models. The population in Sweden over 65 years old that had used e-commerce was in 2017 46 percent, 78 percent of the population between 30-39 years old were users of e-commerce (Arnberg *et al.*, 2018, p. 23). This is the demographic gap that keeps a big part of the population outside the e-commerce. The gap will successively decrease as the digital natives, people born after 1990, grow older. By 2025 the digital natives will represent 44 percent of the Swedish population (Arnberg *et al.*, 2018, p. 23). The young customer group are more well-informed and demand more transparency from the retailers, they also have a bigger interest in sustainability than older generations (Arnberg *et al.*, 2018; SB Insight, 2018). From a survey conducted by SIFO for world wildlife fund (**WWF**) the climate change were the most important social issue in society for people between 16-25 years old, and over 65 percent of people between 26-34 have in the last twelve months bought a product that is eco-labelled (World Wildlife fund, 2017, p. 18). Due to the fact that more customers wants to be aware of their products supply chain, new organisations have started to grow. For example Fashion revolution, who measure the transparency from the 150 biggest fashion brands in the world (Fashion Revolution, n.d.).

The second area is the technological shift, according to Swedish Trade Federation (n.d.), it will be Amazon who sets the standard for what technology the customers expects in retail. Amazon is the largest e-commerce retail business in the world, but are not establish in Sweden. There are speculations that Amazon will enter the Swedish market on Black Friday 23:rd of November 2018[3] but the information is uncertain (Englund, 2018). Technology like big data, automated collection and analysis of large volumes of data (Manyika *et al.*, 2011), machine learning and artificial intelligence gives value to the customer and can give the retailer better understanding of their customers (Arnberg *et al.*, 2018). The demand for sustainable innovations, who create less environmental pollution and are resources efficient is also increasing. These innovations comes out in-

[3]This was written 17/10-18

forms of products, services and processes with a closed loop perspective (Rautera *et al.*, 2018).

The third area from the report *"The big retail change"* is the change in business models where Amazon also has an impact. Many multi-side platform solutions have become big in the retail scene and there are no sign of them loosing shares. In some countries where Amazon have entered the e-commerce share of the total retail have double (pers. com., Gullström, 2018). The retailers who are used to in-person shopping are having trouble to adapt to the change towards a more digital society and retail (Arnberg *et al.*, 2018)(Susman, 2018). Traditional retailers need to adopt new business models to stay in the game (Arnberg *et al.*, 2018).

In the traditional retail business model, the company and existing function are in the centre (Deloitte, 2017; Arnberg *et al.*, 2018). A traditional business model have a linear supply chain flow: manufacturer, retailer and customer. The connection between manufacturer and customer are non existing. In the new retail business models, the customers are in the centre instead of the company. The supply chain differentiate from the traditional and the interaction between manufacture and customer can be direct (Deloitte, 2017). In a letter to Alibaba's shareholders in 2006 Alibaba's Founder and Chairman Jack Ma explained the concept New Retail: *"Pure e-commerce will be reduced to a traditional business and replaced by the concept of New Retail the integration of online, offline, logistics and data across a single value chain"* (Internet Ma, 2016). In the new retail the line between offline and online is blurry. The stages demand, research, compare, purchase, receive product, return and refunds needs to have interaction between both offline and online sales, this is called Omni-channel service model (Deloitte, 2017).

4.1.2 E-commerce and sustainability

How does the increasing e-commerce effect the environment? According to McKinnon *et al.* (2015) are the key components in a e-commerce, from an environmental sustainability aspects, compared to a physical store the transportation and warehousing. The growing e-commerce has lead to increased transport and especially van-traffic due to home deliveries (Mangiaracina *et al.*, 2015). A more sustainable delivery can be seen in pick up point or parcel lookers since they reduces travel distance for the conveyor (Weltevreden & Rotem-Mindali, 2009). E-commerce has a global platform and can be made anytime worldwide (Nisara & Prabhakarb, 2017), this also has an increased effect on the shipment transportation (Mangiaracina *et al.*, 2015). When shopping online, multiple retailers may be used and transportation for all of these parcels comes in separate deliveries. While a shopping trip in physical stores can also involve many different retailers and many products can be bought, the deliverery home would only result in one trip and

not several transports (Mangiaracina *et al.*, 2015). Some of the large e-commerce platforms also have different warehouse locations and a large order can be split into more then one delivery to the warehouses (van Loon *et al.*, 2015).

The warehousing process in terms of storage, picking and material involves energy and resources which can have a negative influences on the environment. The fact that some business uses large warehouses can lead to a reduction in inventory levels and the energy use can decrease which will have positive impact on the GHG emissions (Sui & Rejeski, 2002). On the other hand are there negative effects on the environment with the large number of small deliveries and returns from the customers (Matthews *et al.*, 2002). Returns in e-commerce is more common due to the fact that the customer can not feel and try the product before buying it (McKinnon *et al.*, 2015). The returns gives a negative contribution to the environment because of the transportation back to the warehouse and the new packing (van Loon *et al.*, 2015). Free returns is something a grate deal of customers in Sweden would like to have as a service when buying from a e-commerce, the environmental effects of the return is not something costumers reflect over when returning products from online purchases (PostNord, 2018).

4.2 SUSTAINABLE CONSUMPTION

The Swedish Parliament has adopted the Generational goal. To success it is important to know how the awareness about sustainable consumption among customers looks like, and to be able to communicate the right fact (Gullers Group, 2018). To gain information about customers attitude, knowledge and behaviour towards sustainable textile consumption, Gullers Group (2018), commission from SEPA, have made a customer survey. According to the survey, many people are open to change their buying behaviour and buy fewer clothes, more eco-labelled clothes, take care of their clothes better and recycle more. But many people lack the knowledge in what to do with torn clothes and how textiles can affect the environment and peoples health (*ibid*). Even though they want to buy more eco-labelled clothes they lack knowledge about the subject. Of the customers there are 47 percent that wishes to get information about the textiles in a physical store and wants the information to be available direct and that they do not need to search for it by them self (Gullers Group, 2018, p. 11). The study also showed that young customers and women often are more sustainable and also more open to change their behaviour and recycle more. Gullers Group (2018) think that it is possible to change customers buying behaviour and attitude towards sustainable consumption, but it is important to communicate this in the best way. It is also important to facilitate for the customer if their behaviour is going to change. There are many obstacles like supply, price and availability that are not affected by better communication that needs to be taking into account. But if the Swedish Parliament can overcome that and provide

information that is informative in a easy way Gullers Group (2018) think it is possible that the textile market can be the next big behaviour change among Swedes.

SB Insight (2018) have made a survey that was focused on peoples attitude towards circular behaviour, and saw that people are generally positive to recycling but are more cautious about co-owning products. In table 10 there are some results listed from the SB Insight (2018) survey.

Table 10: Result from SB Insight (2018, p. 35) survey about customers attitude towards circular behaviour.

Question	**% positive**	**% open to the concept**	**% negative**
Recycling	82	15	3
Reduce consumption	42	43	15
Renting Things from Others	46	37	16
Buying Second-Hand	44	37	19
Co-owning	13	36	51

Table 10 shows that most customers are positive towards recycling and many want to reduce their consumption. People are positive and open to the concept of renting things from other and buy second-hand but less positive to co-owning. The main reason people do these thing in table 10 is to save money. To do it because it is good for the environment is less prioritised, according to the survey. When developing new platforms, related to circular behaviour, it is important to know the different attitudes between age-groups and genders. For example are millenniums less in favour for repairing things and men are more positive to renting products than women. This gives an opportunity to take advantage of this information depending what is the most favourable for the business. The government can also use the information to create labelling and polices targeting a specific groups that will be more susceptible for the change (SB Insight, 2018).

4.3 TOWARDS A SUSTAINABLE RETAIL

According to Swedish Environmental Protection Agency (2012b), Sweden needs to work together with different actors like UN and EU to be able to reach the Generational goal, and it is also important to involve companies and businesses. SEPA is claiming that *"Efforts by business to improve environmental performance – in terms of production, transport and technology development – are crucial to the prospects of realising the environmental objectives"* (Swedish Environmental Protection Agency, 2012b, p. 7) and that NGOs can have a big input on public opinion and can make a big difference (Swedish Environmental Protection Agency, 2012b). The 25th of September

2015 the members of the United Nations General Assembly adopted the Agenda 2030 for sustainable development. The agenda includes 17 sustainability development goals (SDGs) and 169 targets that should stimulate the world towards a future without poverty, war and climate change by 2030 (United Nations, 2015). SDG 12 are focusing on consumption and production and follows: *"Ensure sustainable consumption and production patterns"*(United Nations, 2015, p. 14). SDG 12 consist of eleven targets where all are focused on different stages in the supply chain to individual costumer needs. GSCM and customer behaviour is the key factors to understand the progress towards SDG 12 (Tseng *et al.*, 2018). According to Sachs *et al.* (2018, p. 18), Sweden's progress towards SDG 12 are highly insufficient, SDG 12 is one of the most complicated SDG to reach until 2030 for most of the develop countries. Among the Nordic countries is not only Sweden who rank poorly in the progress to reach SDG 12, the rest of the Nordic countries do the same. Due to that fact have the Nordic Co-operation examined the challenges for the Nordic countries of reaching SDG 12 and how the Nordic Countries can collaborate to reach SDG 12 in the report: *Sustainable Consumption and Production: An Analysis of Nordic Progress towards SDG 12, and the way ahead* (Bauer *et al.*, 2018). In the report, the Nordic progress in SDG 12:s eleven targets are evaluated. In table 11 four targets focused towards retail from SDG 12 are described together with their evaluated progress according to Bauer *et al.* (2018). These targets can give an pointer in how retail business most operate in the future if the planet is going to be saved from degradation (United Nations, 2015).

Table 11: Four targets from SDG 12 (United Nations, 2015, p. 22-23) that retail business needs to address and the Nordic progress on these targets (Bauer *et al.*, 2018, p. 14)

Targets	**Description**	**Progress**
12.2	*By 2030, achieve the sustainable management and efficient use of natural resources*	Little progress
12.4	*By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimise their adverse impacts on human health and the environment*	Well on the way
12.5	*By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse*	An uphill climb
12.6	*Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle*	Well on the way

Several actions have been adapted to improve the progress in SDG 12 and to help Swe-

den change to a more sustainable consumption (United Nations, n.d.). Chalmers University of Technology have started *Centre for Environmental Assessment of Product and Material Systems* (**CPM**) that collects LCA methodology and data from businesses and corporations to receive greater knowledge in this area. According to United Nations (n.d.) it is important to collect data on environmental impact for a product by studying its life cycle, and SEPA think that CPM will connect academia and businesses and new products that are more sustainable can be developed. Furthermore, in 2003 SEPA funded a research program *Furthering Life Cycle Considerations Through Integrated Product Policy* (**FLIPP**), a basis for life cycle based decisions for government agencies and businesses. No business have full control over all stages in a products life cycle, therefore FLIPP have as a goal to develop a basis for how a central government can make an impact and reduce the environmental impact for a product life cycle. FLIPP concluded that due to many product chains are global the need for a global data collecting system is crucial to be able to follow all information of a products life cycle (United Nations, n.d.). According to SB Insight (2018), to accomplish targets 12.2 and 12.5 circular economy is a most. When producing a new product the design principle behind it needs to be cradle to cradle, not cradle to grave. The flow of material cannot be linear and stop at the grave, it needs to be able to be reused and recycled so it can contribute to another products cradle (SB Insight, 2018).

Many businesses are already adopting to more circular business models, and one example is the Swedish Stocking, that uses recycled yarn to produce pantyhose (SB Insight, 2018). Swedish Stocking uses renewable energy and the water that is needed for dyeing process are purified after use. In additional the dyeing process emits no CO_2eq. Furthermore, the factory work with a no-zero waste policy and to close the life cycle for the pantyhose, Swedish Stocking have their own recycling program where customers can get discounts on their products if they recycle old pantyhose (Swedish Stocking, n.d.). Another business that works in similar way but in a larger scale are Patagonia. They work with sustainability in many different shapes, thinking responsible regarding energy, storm-water runoff, employee transportation, textiles and technologies. Taking environmental and social consideration in every stage (Patagonia, n.d.).

4.4 BRIEF PRESENTATION OF AMF FASTIGHETER

AMF Fastigheter became an independent subsidiary of the AMF Pension in 2010, which sets demands on their returns (AMF Fastigheter, 2017). AMF Fastigheter has since then developed and administrated 37 offices and trading locations in Sweden. A total space of about 682 000 square meters, which many are placed in the central parts of Stockholm. In total, AMF Fastigheter administrate 77 percent offices, 17 percent retail spaces and six percent other types of spaces. Of the 17 percent retail spaces they have focused their

operation to develop and administrate big marketplaces as property owners, like Urban Escape Stockholm, MOOD Stockholm, Gallerian, Västermalmsgallerian, Fältöversten and Ringen (AMF Fastigheter, n.d.).

When AMF Fastigheter develops and administrates offices and trading locations, sustainability is something prioritise highly, and they make sure that the responsibility is clearly distributed inside the organisation (AMF Fastigheter, 2017). AMF Fastigheter defines sustainability as consideration of the environment and peoples health throughout their work. For AMF Fastigheter it is to take responsibility for the next generation and to save the resources available, so the environmental impact will decrease. It is about taking responsibility when developing and administrate offices so people can live in a sustainable and living city. But for AMF Fastigheter it is also about social responsibility, to make sure all employees have a work space that is both equally, diverse and safe (Eskils, n.d.). AMF Fastigheter works actively with Agenda 30 goal 12 by having a environmental friendly waste management, and provides *green leases* to tenants that helps tenants with their sustainability work (AMF Fastigheter, 2017).

AMF Fastigheter's newest retail development is The Lobby, a new type of marketplace. The Lobby opened the fifth of April 2018 and are situated at Regeringsgatan in Stockholm City, The Lobby is created as a place where new innovations and ideas can be tested. It is a new retail concept were the transition from a physical, store to e-commerce is merge (Ehlin, 2018). According to Swärdh (pers. com., 2018), business developer at AMF Fastigheter, environmental sustainability in retail business do not get enough attention. At the opening of The Lobby there where no questions about the sustainability of the project, something Swärdh (pers. com., 2018) thinks always should be in focus. Swärdh (pers. com., 2018) wants economy and sustainability to be more integrated in retail business and thinks that The Lobby is great platform to try new retail concepts that are more sustainable than the ones existing today.

5 RESULTS

This chapter presents AMF Fastigheter's organisational structure and how they work with sustainability. Moreover there is a description of The Lobby and their objectives. The result was conducted by interviews with COO and CFO, Head of sustainability and Head of business development at AMF Fastigheter. Lastly are the results from the LCA presented.

5.1 SUSTAINABILITY AT AMF FASTIGHETER

AMF Fastigheter is an independent subsidiary of AMF Pension and their goal is to maximise the dividend to pension savers by invest and administrate commercial real estate. AMF Pension has a sustainability council, where AMF Fastigheter is represented by Marie Bakman Hollaus, COO and CFO at AMF Fastigheter. The sustainability council discusses sustainability throughout the concern and presents goals that must be followed by the whole concern (pers. com., Barkman Hollaus, 2018). AMF Fastigheter has chosen to discard their own sustainability council and is not planing to assign a new one. According to Barkman Hollaus (pers. com., 2018) and Michael Eskils (pers. com., 2018), Head of sustainability at AMF Fastigheter, the reason for this was that the path from strategy to implementation in the organisation is faster when Eskils reports direct to Barkman Hollaus, and not through a sustainability council. AMF Fastigheter's company management consists of sex people that all have different areas of responsibility. Barkman Hollaus has the responsibility of finance, accounting, IT, purchase and sustainability. This means that Eskils reports to Bakman Hollaus. Annelie Gullström, Head of business development, reports to another member in the company management and as seen in figure 6 below Eskils and Gullström have no direct contact. This means that the sustainability work which are addressed in AMF Fastigheter has to take the path from Eskils to Barkman Hollaus and then it is company management responsibility to pass over the information to Gullström which is not always properly done (Eskils, 2018).

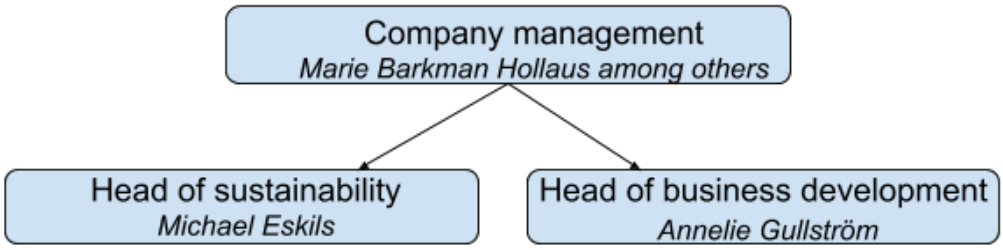

Figure 6: *Simplified figure over AMF Fastigheter's management structure*

The lack of dissemination of information about AMF Fastigheter's sustainability work became clear when AMF Fastigheter's EMS was studied. Eskils (n.d.) has developed and is controlling AMF Fastigheter's EMS that is based on their policy, materiality analysis[4], over all goals for AMF Fastigheter and information conducted from meetings. From these are six processes determined to be included in the EMS. The structure of the EMS is seen in figure 7 below.

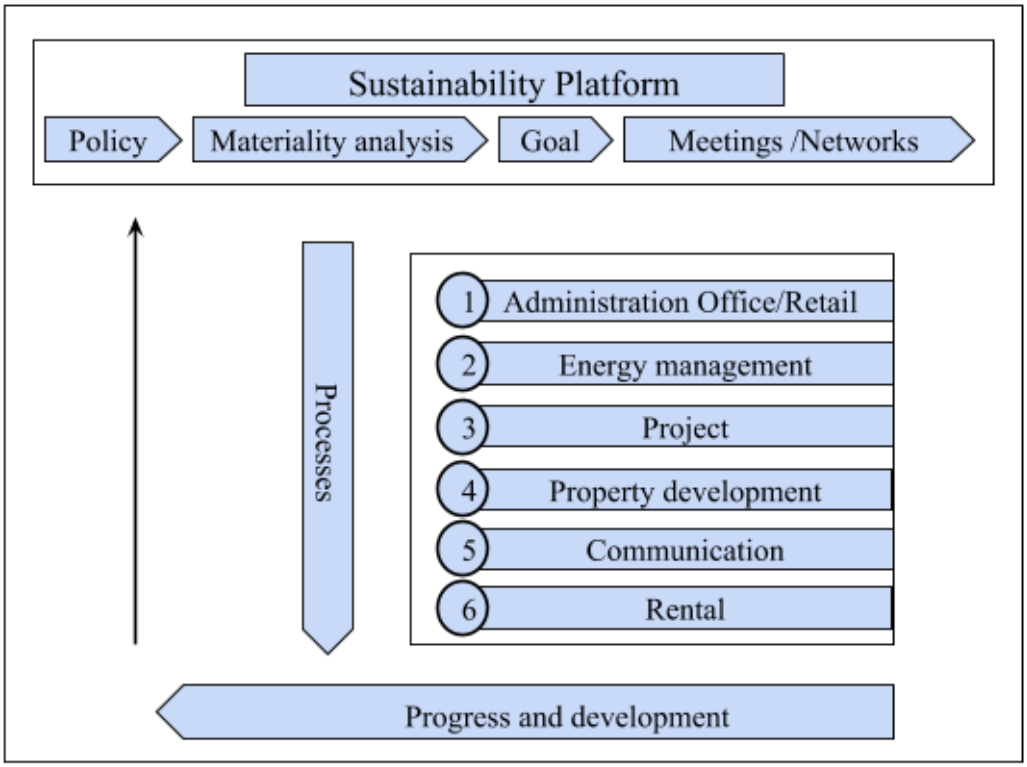

Figure 7: *Schematic figure over AMF Fastigheter's EMS (Eskils, n.d.)*

As seen in figure 7 the business development is not included as on of the processes in the EMS, a possible reason why the EMS have not been implemented in The Lobby (per. com., Swärdh, 2018). The sustainability work that Eskils has developed has not always been communicated to all of AMF Fastigheter's operations. According to AMF Fastigheter's sustainability policy should sustainability aspects be taken into account for all investment decisions (Hederos, 2015). For The Lobby has this requirement not been demanded by the company management and The Lobby has not felt the pressure to act sustainable (pers. com., Gullström, 2018; Swärdh, 2018).

[4]In Swedish called *väsentlighetsanalys*.

AMF Fastigheter has developed some sustainability measurements and tools, for example *building product assessment*, *structured working methods within energy* and *green lease*. All building materials that are used by AMF Fastigheter or their suppliers when building or renovating retail spaces and offices, need to be evaluated by the building product assessment[5]. They also require their suppliers, planners and contractors to follow the same standard as they do. If a building material is prohibited but needs to be used anyway, a deviation form must be filled with an explanation (pers. com., Eskils, 2018). One tool is the structured working methods within energy. Eskils (pers. com., 2018) explains that AMF Fastigheter has built a system where they can keep track of their energy use and see how much CO_2eq they are saving by using fossil free energy. The technicians are a target group that seems more in favour for sustainable management, and every month they have meetings to evaluate the buildings energy use. Action plans, goals and relevant tools are making the work for the technicians easier which leads to a better understanding of their effect on sustainability (pers. com., Eskils, 2018). AMF Fastigheter also provides green leases to tenants that rent offices (can be used for retail but some modifications are needed). These green leases sets a action plan and goals for the tenants to work against. Every year there is a meeting to follow up and to discuss what have been done and what can be improved in the future. The request for green leases have increased the last couple of years, but Eskils (pers. com., 2018) implies that is hard to start a dialogue with the tenants. They want a green lease but later on they do not show up at meetings and it is sometimes hard to keep the interest among the tenants. Eskils (pers. com., 2018) thinks that *"Klimatportalen"* is going to help in this area and hopefully start a better dialogue with the tenants. Klimatportalen is a website were the tenants can see and change input and output data and thus get more interaction with their sustainability commitments.

AMF Fastigheter produces a sustainability report every year. Together with the release of the sustainability report they usually have some form of information seminar with the employees to present the report. They also offer their employees a course in sustainability where they include information about global environmental challenges, the challenges AMF Fastigheter stands in front of and what the employees in person can do to be more sustainable. The course is mandatory for all new employees at AMF Fastigheter, but voluntary for old employees. If the employees decides not to attend the course in sustainability there is no more compulsory general information about AMF Fastigheter's sustainability work, however there are some courses regarding sustainabil-

[5]In Swedish called *"Byggvarubedömning"*. Data about the products are used to see if the product is ok to use or not. It gives a red indicator if the product is environmentally dangerous, yellow if the product is moderate but can be used and green if it is a good product to use.

ity for specific working groups. According to Eskils (pers. com., 2018) specific courses is a way to start a dialogue with the employees which can be easier to take on than the more heavier courses in sustainability.

When AMF Fastigheter decides if a business can rent one of their spaces, there is always a discussion about the business first. Businesses that are unethical or do not "fit in the frame" of AMF Fastigheter will be turned down. There is a process for how leases are distributed and if the business is involved in environmentally hazardous operation it is important that it is properly discussed. However there are no specific sustainability demands on the tenants except when rebuilding offices and retail spaces, but Eskils (pers. com., 2018) says that this is an ongoing process under development. Eskils (pers. com., 2018) can see an interest from employees to sponsor different sustainability organisations and sometimes employees organise cloth swap days in AMF Fastigheter's malls without promotion from Eskils. But according to Eskils (pers. com., 2018) sponsoring is not preferred and it is better to work with sustainability in practice. These initiatives are often made by the younger employees and they have a more positive attitude towards sustainability in general. Some employees sometimes think that sustainability requires extended work which make them lack in interest.

The next step for AMF Fastigheter to become more sustainable according to Eskils (pers. com., 2018) is to update their processes and their different managements, for example communication, energy management and project. The strategy to do this is to develop their materiality analysis. The developed materiality analysis can hopefully answer some questions about if and how processes needs to be updated and if a controller function can help AMF Fastigheter to become more sustainable. If AMF Fastigheter creates and adapts a developed materiality analysis and more stringent requirements, their work with sustainability can be improved (pers. com., Eskils, 2018).

5.2 THE LOBBY

The fifth of April 2018 AMF Fastigheter opened a new retail concept called The Lobby, located at Regeringsgatan 61 in Stockholm (Ehlin, 2018)[6]. The definition of The Lobby from a customer perspective is still not defined and Gullström (pers. com., 2018) says that AMF Fastigheter from the beginning of The Lobby choose not to put a label on the concept. *"It must be the customers who guides us and tell us what The Lobby really is from a consumer perspective"* (pers. com., Gullström, 2018). The most common answer to the definition of The Lobby is a showroom or a pop up market, but customers are still trying to figure out a clear definition (pers. com., Gullström, 2018).

[6]When this paragraph where written The Lobby had been open for a little more than six months.

The Lobby is divided in two floor levels with one on entry level and the second floor in the basement, without windows. The second floor is called The Lobby Market and due to the fact that it is situated in the basement, the rent is cheaper than the above floor. Most of the retailers[7] in The Lobby Market are start-ups, small upcoming stars and indie brands. The Lobby believes in the mix of large well known brands, medium sized omni-channel brands and smaller unknown start ups or e-commerce brands, both Swedish and international (pers. com., Gullström, 2018). In the basement there are also changing rooms, a conference room and a post office. A customer can order from any e-commerce and then collect the parcel at the post office and try it on in The Lobby's changing rooms. If the clothes do not fit, the customer can directly send it back through the post office. The Lobby shift retailers often and the venue is therefore open without permanent walls. Instead the interior is portable so it can be changed and used for brands and products with different needs. Both The Lobby and The Lobby Market have had a wide range of retailers that offers different products. During the past six month The Lobby has displayed cars, kitchens, washing machines, jewellery, furniture, bags, shoes, clothes and many other things (pers. com., Gullström, 2018).

5.2.1 Objectives of The Lobby

The Lobby has three main goals, firstly to learn and figure out the future of retail. How will the customers behave and what are the expectations and demands from the retailers and consumers in the future. Secondly, it is to prepare AMF Fastigheter for the future, today they own five large marketplaces in Stockholm and they have already seen a change in the demand for smaller rental areas. A reason can be the growing e-commerce which have in some countries doubled, when Amazon has entered, which thus leads to uncertainties about the future in retail. It is important to prepare for the upcoming demand of smaller rental space and a retail scene where more consumption are made online. From a real estate and retail perspective, The Lobby serves as test bed for the future of retail, with the main goal to learn and understand more about changing needs and demand. Thus be prepared to scale up and act in time to secure future revenue streams and to be able to add value for the customers in the future (Gullström, 2018). The third goal is to be a thought leader in the future of retail (pers. com., Gullström, 2018). *"Thought-leaders are the go-to people in their field of expertise. They are trusted sources who move and inspire people with innovative ideas; turn ideas into reality, and know and show how to replicate their success"*(internet Brosseau, 2014).

There are six main cornerstones in the foundation of The Lobby: short-term leases,

[7]Retailers in the context of The Lobby is the retailer that are renting a space in The Lobby. This can also resemble as different project that The Lobby conducts.

service, social, innovation, technique and event and exposure. Sustainability is not one of the cornerstones in The Lobby. Gullström (pers. com., 2018) explains that when AMF Fastigheter planned The Lobby they discussed if sustainability should be one of the cornerstones in the foundation, but decided not to. The reason for not include sustainability were because they thought it will just be for the cause of the sake, and maybe become green washing. Instead Gullström and her team at AMF Fastigheter decided that sustainability should be part of the whole project. For example when AMF Fastigheter build The Lobby they used environmental friendly floors and material as much as possible. But when a retailer wants to be part of the Lobby there are no sustainability requirements from AMF Fastigheter, but of course they always look at the retailers from a ethical perspective (pers. com., Gullström, 2018). From AMF Fastigheter's company management there are no pressure or expectations to make The Lobby sustainable. One other discussion in the early stage of The Lobby where to have sustainable retailers in The Lobby Market, but the idea did not become reality. Gullström (pers. com., 2018) says AMF Fastigheter's main goal is to give stable return to the pension savers and to do so the retailers most pay for a spot at The Lobby, but is been hard to find a sustainable retailer how have the possibility to do so.

5.2.2 Marketing agreements

When it comes to the business to business (B2B) relationship between The Lobby and the retailers the big difference is the time period for the lease. In a traditional marketplaces the lease run for several years. In The Lobby no leases exists, instead they use something called marketing agreements[8]. The marketing agreement for The Lobby has a minimum time period as low as one month. For The Lobby Market the minimum time period is two weeks. Table 12 shows the services included in the marketing agreement, both for The Lobby and The Lobby Market.

Table 12: The services included when renting a space at The Lobby and The Lobby Market

Services
Staff
Security and alarm
Payment system
Interiors
Cleaning

The services shown in table 12 can be compared to a service package and as a retailer

[8] In Swedish called *samarbetsavtal*.

you can buy these service package in three sizes: small, medium and large. The only difference with the packages are the sizes in space the retailer gets in The Lobby. Small is two m^2, medium four m^2 and large ten m^2. For the Lobby Market the packages comes in xxsmall, xsmall, small and medium. For the xxsmall and xsmall package the minimum time period is two weeks, for small and medium package the minimum time period is one month. The Lobby have been opened for a little more than six months and there have been different reactions from the retailers. Some are really happy with their time there, while others are not. The retailers that are most satisfied with The Lobby are the ones who have been hosting events and made a grate deal of marketing around their time in The Lobby (pers. com., Gullström, 2018). Contrary to brands who only used The Lobby as a regular store without any promotion and marketing around it, hence sell less and do not attract customers to their brand in the same way (pers. com., Gullström, 2018). For the customer the differences from walking into The Lobby compared to a traditional marketplace is that the products and brands are changing every month and the brands and the products should represent something new. Gullström (pers. com., 2018) explained that something new can have different meanings as a launch of a new product, a brand launches in Sweden for the first time or a e-commerce goes live. The customer should go to The Lobby for inspiration, to seek for news and to attend interesting events (pers. com., Gullström, 2018).

The future of The Lobby according to Gullström (pers. com., 2018) will be to change and adopt according to input and feedback from customers, retailers and techpartners. One thing that have been missing since the start is a cafe or the new term *coffice*, a combination of coffee and office, to make The Lobby more of a destination where you can socialise. This is a priority within The Lobby right now (pers. com., Gullström, 2018).

5.3 LIFE CYCLE ASSESSMENT

The result from the LCA can be used as an indicator in decision making, and should not be seen as the truth, therefore no exact numbers are presented. This result should only be seen as a guidance when studying the different processes, emission of GHG and the difference between T-shirt bought in physical store and e-commerce.

In this research project a LCA was conducted for two different cases: if a T-shirt was bought in a physical store or bought from e-commerce. There has been differences in which data that is used for some of the systems and processes for the different cases. Table 13 gives a brief explanations of the systems included in the LCA. A thoroughly explanation of the systems boundaries, both for physical store and e-commerce are explained in the inventory analysis in chapter 2.4.2.

Table 13: Description over the systems included in the LCA and what colour it belongs to in the figures presenting the results

System	**Processes included**	**Colour in figure 8 and 9**
Resource Depletion	Raw material extraction	Dark blue
Manufacturing	Textile refinement, yarn production and weaving cotton	Red
Transport production	From manufacturing country China to warehouse, warehouse to physical store (physical store T-shirt) and warehouse to post office (e-commerce T-shirt)	Green
Transport customer	From/to customers home and back to post office (e-commerce T-shirt)	Purple
Use phase	Washing, drying and ironing	Light blue
End phase	Waste incineration	Orange

The LCA result showed that the differences between physical store and e-commerce is not large, when using the inventory analysis stated in chapter 2.4.2, due to that many of the stages are the same regardless. The process that differs the most in percentage, and approach, is transportation, both on the production side and customer side. This is shown in figure 8 below.

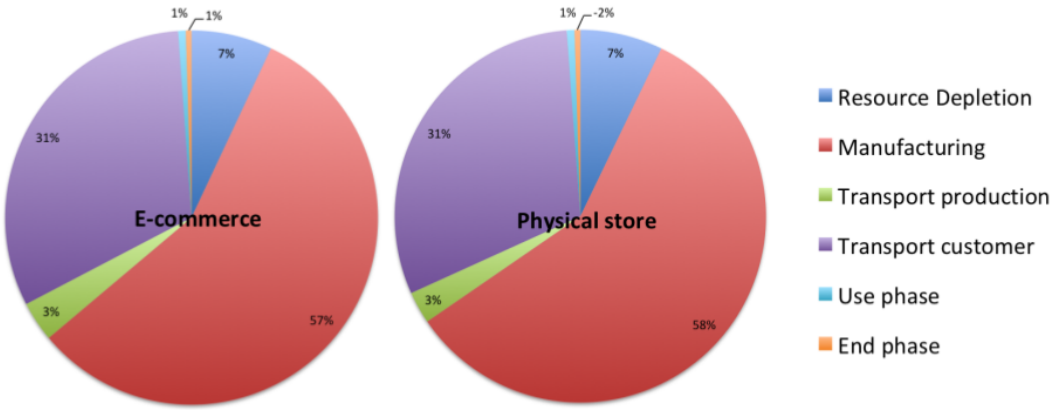

Figure 8: *Percentage of the different processes for T-shirt bought at physical store and e-commerce.*

In figure 8 the different processes are divided in percentage of total amount of CO_2eq. The manufacturing stage is the process in a T-shirt life cycle that contribute to GHG emission the most. This process in the LCA is the same for both a T-shirt bought in physical store and e-commerce. The manufacturing stage stands for about 58 percent of the total amount of CO_2eq. In figure 9 below both the GHG emission from physical

store and e-commerce can be seen and the difference between production phase and customer phase.

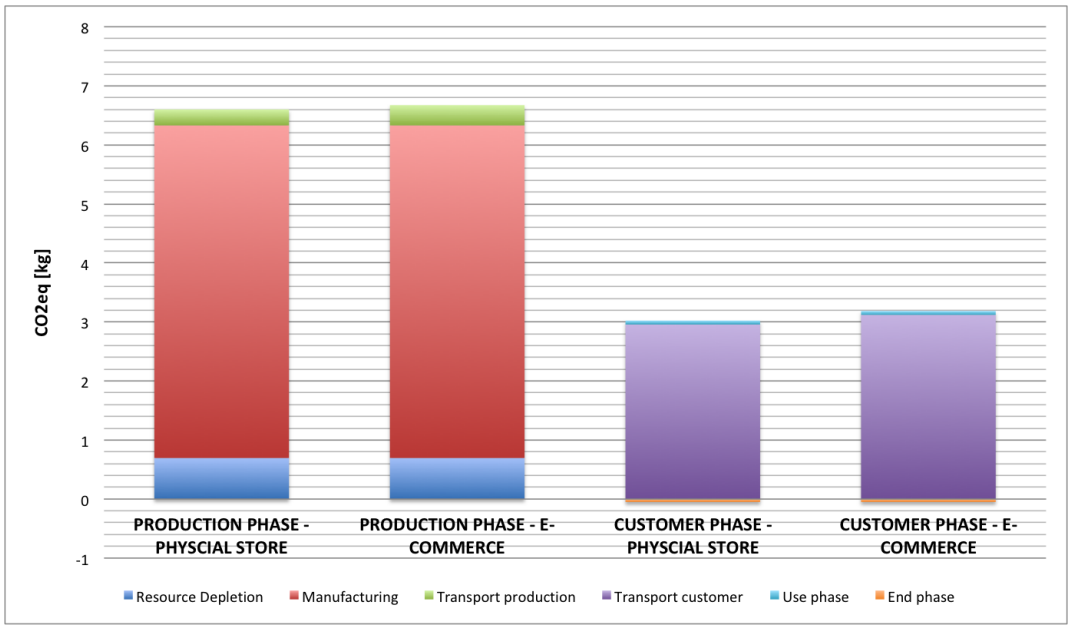

Figure 9: *The amount from different processes for a T-shirt bought at physical store and e-commerce.*

In the production phase, resource depletion is the second largest contributor to GHG emission. This process is the same for both e-commerce and physical store but a process that differs is the transport production. From the manufacturing country, China, to the warehouse, the transport, by ship, look the same but afterwards the transport to physical store will be with a rigid truck, less than 7.5 tonnes. This transportation will release less CO_2eq than the transportation contributed by Postnord's delivery system to the post office. The difference however does not significantly affect the total result. On the customer side the process that have the largest impact on the result is the customer transport. This transportation is the transportation from the store or post office to the customers home and are made by car. The LCA results shows that the GHG emission is larger if the T-shirt is bought at e-commerce. This is due to that it is more common to return clothes if bought at e-commerce (McKinnon *et al.*, 2015), therefore an extra transportation distance is added which contributes to more emissions.

The use phase is the same for both and only stands for a small part of the total emissions of CO_2eq which comes from washing, drying and ironing. The end phase is negative, due to energy is saved by this step and no GHG emission is released. This is due to

that incineration heat is created when burning clothes, which can be transformed into energy, and therefore will give a negative result of the total amount of GHG emission.

6 ANALYSIS

This chapter aims to analyse the results together with the empirical background and the terms of the concepts in chapter 3.

6.1 THE MANAGEMENT

The Lobby has been developed with a focus on the future of retail, and AMF Fastigheter's operations and management will affect The Lobby's sustainability and their possibilities to become more sustainable. Both the indirect and direct decisions that AMF Fastigheter act on will affect The Lobby and therefore the management within AMF Fastigheter are also important for The Lobby. According to Ammenberg (2004) and Chin *et al.* (1999) support and sustainability commitments need to come from the company management. Therefore should AMF Fastigheter review their EMS and try to make the company management responsible of the implementation of the EMS in AMF Fastigheter's different processes, and not Eskils. They should also develop their EMS so several processes are included. This will help the employees at AMF Fastigheter to be more integrated in all levels of AMF Fastigheter's sustainability work (Hohnen, 2007). Moreover, if business development is included as one of the processes, then it will also make it possible for The Lobby to implement the EMS (pers. com., Eskils, 2018).

AMF Fastigheter have chosen to have experts on finance and social values in their company management but Eskils how is Head of sustainability is not included. Instead it is Barkman Hallaus that is responsible for sustainability in company management. Eskils is a helping hand in questions regarding sustainability matters (pers. com., Barkman Hollaus, 2018). The lack of direct knowledge and expertise in sustainability in AMF Fastigheter's core business and decision making is obvious also for The Lobby, which has chosen not to include sustainability in their six main cornerstones. When The Lobby was under development, there were discussions about how sustainability should be integrated into the concept, but these discussions did not result in anything and The Lobby does not have any sustainability goals or focus right now (pers. com., Gullström, 2018). One reason for that might be that even though AMF Fastigheter have developed a sustainability policy and a sustainability report the employees that developed The Lobby do not feel included in AMF Fastigheter's sustainability work. If the company management of AMF Fastigheter decided to implement a EMS or CSR for all areas, it could also help to encourage the employees and include front-line staff that is a part of the business development to understand the importance of sustainability in all of AMF Fastigheter's operations (Hohnen, 2007). The Lobby's goals and scopes regarding sustainability and how theses are connected to AMF Fastigheter is too unclear. It might be hard for The Lobby to integrate sustainability and environmental thinking without

natural pressure from EMS and CSR. Those concepts could help to ease the process of defining why The Lobby should include sustainability (United States Environmental Protection Agency, n.d.).

6.2 DEMANDS ON SUPPLIERS AND EMPLOYEES

When it comes to AMF Fastigheter's marketplaces the sustainability focus is placed on the direct aspects, namely the building product assessment and structured methods within energy. Due to the fact that AMF Fastigheter is one of Sweden's largest commercial real estate companies and own a total space of 682,000 square meters (AMF Fastigheter, n.d.), the environmental performance that is under direct control by them can have a large impact on the climate To build these spaces, a grate deal of building materials are required which cause GHG emission, as do the buildings (Ibn-Mohammed *et al.*, 2013). To minimise the impact when the spaces are being constructed and reconstructed, AMF Fastigheter has developed a building product assessment (described in chapter 5.1) (pers. com., Eskils, 2018). The building product assessment has both direct or indirect impact on their sustainability. This is also a way for AMF Fastigheter to work towards SDG 12 and to implement GSCM in their building material consumption. A problem with the building product assessment is the deviation forms. Those require extra work, which is not always appreciated by the employees. Limited follow-up if the deviation form is filled in or not leads to the employees sometimes skipping it, and there is no control function for the forms (pers. com., Eskils, 2018). Here, the lack of interest, knowledge and guidance in sustainability can be observed. If the employees know why and which impact they have they may feel more motivated to fill in the deviation forms.

A major difference with the building product assessment and AMF Fastigheter's structured working methods within energy is that their energy methods are using a control function that monitors the energy being used. This resembles a partial EMS as it follows the same structure but on a smaller scale. AMF Fastigheter provides tools and goals which can resemble like an EMS *plan*. They also provides action plans, like the *act*-step, together with monthly follow-ups that auditing the goals and scopes which can resemble to *check*. This process is almost following the same structure as the Deming cycle in figure 5 (Deming & Edwards, 1986). The reason their structured working methods within energy are more successful than the building product assessment might be that they have some type of control function and EMS while other operations in AMF Fastigheter do not (United States Environmental Protection Agency, n.d.). By develop their EMS, AMF Fastigheter can choose that one of the goals and scope in the step *plan* will be to minimise the prohibited materials in building product assessment, then when there is time for auditing, *check*, there will be time to evaluate if the prohibited materials

have decreased or not. After this an improvements can be done, *act*, to help minimise the prohibited materials when the cycle is repeated (Searcy *et al.*, 2012; Stapleton *et al.*, 2001). Furthermore, Eskils (pers. com., 2018) explains that the employees' attitude towards sustainability is relatively positive but there are some problems with employees thinking it is too much work which leads to sustainability not being priorities in every stage by everyone. With a developed EMS the scope and goal for AMF Fastigheter and why sustainability is important for them can be more clear (Stapleton *et al.*, 2001). Also, by dividing AMF Fastigheter's environmental aspects into direct and indirect can give a clearer picture of AMF Fastigheter's different areas and which improvements that can be done (Swedish Environmental Protection Agency, n.d.).

6.3 SUSTAINABILITY REQUIREMENTS ON RETAILERS

According to Eskils (pers. com., 2018) and Gullström (2018, pers. com.,) there are no sustainability requirements for renting a space at The Lobby or in any other of AMF Fastigheter's market or office places. When a business wants to rent, a discussion about the business ethical side is always in place. A business that does not fit into AMF Fastigheter's frame are not welcome but that is something discussed for every business (pers., com. Eskils, 2018; Gullström, 2018). If AMF Fastigheter and The Lobby does not put certain sustainability demands on the tenants, this can affect the way the stakeholders think about The Lobby in a negative way. By not choosing to include sustainable products and brands, they might stain their relationship with their stakeholders (Esty & Winston, 2009). They should take responsibility and advantage of their position as a bridge between retailers and customers and chose to work with businesses that can change customers buying behaviour (Brito *et al.*, 2008; Jones, 1980). AMF Fastigheter should also seize the opportunity to expand their green leases if they want to add on to their work with SDG 12. They should make it easier for tenant of retail spaces, not only offices to gain a green lease. Consequently has this caused that The Lobby neither are a provider for green leases. But they should combine the growing interest in sustainability and the outside pressure (Hohnen, 2007) to enlarge their marketing agreements to include more sustainability services and be more transparent with the sustainability services already included, for example green energy.

The Lobby have a possibility to change towards a more sustainable retail by for example implement sustainable PPM into The Lobby. In The Lobby the retailers can resemble as different projects and by applying PPM to The Lobby, they can tighten their projects, integrate them to their business and harmonise them with their strategies (Levine, 2005). One of The Lobby's cornerstones is innovation (pers. com., Gullström, 2018) and according to Brook & Pagnanelli (2014) innovation themes that are based on global trends is one of the requirements for a successful PPM. A global trend expected to

have a significant impact on future retail is sustainability (Arnberg *et al.*, 2018). Thus, by applying sustainable PPM they can integrate sustainability in The Lobby's project without changing their cornerstones and risk being stamped with green washing. A sustainable PPM can help The Lobby manage their projects and by choosing long- and short-term projects their risks will decrease (Brook & Pagnanelli, 2014).

With sustainable PPM, the combination of short-term projects with long-term project, the implementation in The Lobby Market, that focus on short-term marketing agreements, may be successful. Having short-term project that focus on sustainability whilst the long-term project is focusing on another alignment of business which can provide larger and more stable revenue. The balance will then reflect the competitive approach of the firm towards an innovative marketplace (Brook & Pagnanelli, 2014). Furthermore, if The Lobby wants to be considered as an innovative marketplace and use sustainable PPM they need to implement a new business model that integrate all three dimensions, for example TBL or CSR (Brook & Pagnanelli, 2014). The importance of top management support in sustainable management is well established according to Ammenberg (2004). This means that lacking sustainability objectives for The Lobby from AMF Fastigheter may lead to inertia, in despite of awareness of sustainability approach of business conducts.

SDG 12 is one of the most difficult SDGs to reach for Sweden and a change in consumption patterns towards a more circular behaviour is important for SDG 12 to be reached (SB Insight, 2018; Sachs *et al.*, 2018). To get a circular flow in The Lobby the products which are sold must have a flow of material that can be reused and recycled (SB Insight, 2018). Gullström (pers. com., 2018) says that sustainable building materials are necessary but in retail it have to be more than only the direct impacts, the future is shared economy. AMF Fastigheter's main goal is to give a stable return to the pension savers (AMF Fastigheter, 2017) and Gullström (pers. com., 2018) says that it has been hard to find a sustainable retailers that can pay as much as the other businesses and brands can do. There are example of businesses that have integrated sustainability and still are successful, like Patagonia and Swedish stocking. Also, according to Swedish Trade Federation (2016) the range of sustainable products has rapidly increased in Sweden and more businesses are working with sustainability.

6.4 FUTURE OF THE LOBBY

Today e-commerce stands for nine percent of Sweden's total retail (Arnberg *et al.*, 2018, p. 7). This has lead to a change in business models, were the traditional linear business flow is changing. As Sweden's second biggest commercial real estate owner AMF Fastigheter must try new ways to integrate retailers into their locations, The Lobby is

developed for this reason. The future of physical retail is not easily predicted but there are three trends that are important to keep in mind. The demographic change, technological change and change of bushiness models (Arnberg *et al.*, 2018). For The Lobby the main focus lays in the change of business models, at The Lobby there is a bridge between e-commerce and physical store. The Lobby can work as a physical platform where retailers can show their brands and products for a limited time. Still 89 percent of Swedish retail is made in a physical store so the need for market space is important but maybe is the need for a permanent space less important. AMF Fastigheter is already seeing a trend in the demand of less renting space from retailers (pers. com., Gullström, 2018). But by choosing retailers that work with e-commerce, that represent something new (Gullström, 2018), they can simultaneously be more sustainable. One key component in how e-commerce can be more environmentally sustainable than physical store is the transportation (McKinnon *et al.*, 2015). Due to that The Lobby is a pick up point with a good communication customers can buy products on e-commerce and pick it up easily at The Lobby. This gives The Lobby the opportunity to only sell only some products at the store and sell the rest online. A negative impact e-commerce has is that it is more common to return clothes bought at e-commerce than at physical stores (McKinnon *et al.*, 2015). But an alternative for The Lobby, that serves as a pick up and return point, can be to take the returned clothes and sell them at The Lobby. Minimise the transport for the retailers back to their warehouse storage and thus minimise the impact an extra transport will have on the climate (PostNord, n.d.).

When entering The Lobby's homepage, there is no information about sustainability either from B2C or B2B perspective. From a B2B perspective The Lobby is sustainable in the way that they use the same interior for every new retailer. Because of that The Lobby is resource efficient and that is something a retailer might want to know when they looking at The Lobby as a future renter. One thing that costumers want today is to be well-informed and they also demand more transparency from retailers and businesses (World Wildlife fund, 2017). When entering The Lobby information about the different brands and products comes informs of small notes and from the staff. According to Gullers Group (2018, p. 11) 47 percent of the customers wishes to get information about the textiles which gives The Lobby a opportunity to provide more knowledge about the products, if they are sustainable and how the product should be taken care of. To ease the information to the customers The Lobby have a chance to change their behaviour (Gullers Group, 2018). The Lobby has permanent staff but sometimes a business complement The Lobby's staff with their own. For sustainable retailers it can be smart to during the rush hours have their own staff talking about the product or brand. The business that do more marketing around their time at The Lobby has gained a better experience (pers. com., Gullström, 2018).

6.5 SUSTAINABLE SUPPLY CHAIN AND TRANSPORT

The LCA result in chapter 5.3 provides useful knowledge which might be used when evaluating a supply chain. The LCA have identified two main point sources that have the highest GHG emission in a T-shirt's life cycle: *manufacturing* and *transport production*. Improvements and development in these two areas can have a large impact on sustainability. An implementation of GSCM can help businesses that produces T-shirts to minimise the emission from the production stage (Srivastava, 2007). This is also something that The Lobby can take into account when they chose their retailers. From the LCA result AMF Fastigheter knows that the manufacturing stage is the stage that has the largest impact on the climate and therefore they can chose to only do business with company's that has a sustainable manufacturing processes and a GSCM. If the retailers uses SCM or GSCM, a holistic and transparent picture of the products are given (McKinnon, 2010). This gives in return The Lobby transparency, which is required by customers (World Wildlife fund, 2017) and shows that The Lobby take responsibility towards customers (Brito *et al.*, 2008). The Lobby can take advantage of their position and indirect reduce their climate impact by reviewing which retailers they are accepting. There are no sustainability requirements at The Lobby right know (pers. com., Gullström, 2018), and according to (Brito *et al.*, 2008), many customers may expects businesses to take responsibility and chose retailers that are more sustainable. If they do not this may risk their relationship with their stakeholders (Esty & Winston, 2009). The Lobby can also indirect minimise the impact from the manufacturing stage by choosing tenants that uses some type of circular business model. An example for a business that possesses circular economy is if the products have joint ownership (Piscicelli *et al.*, 2014).

Joint ownership can both include co-owning and renting things from others, which are concepts that are included in table 10 in chapter 4, empirical background. Form SB Insight (2018) survey it is showed that 85 percent of the customers are open and positive to renting thing from others. If The Lobby can find businesses that are focused on rentals of clothing, for example Something Borrowed (Something Borrowed, n.d.) and Sabina and friends (Sabina and friends, n.d.), they can integrate circular economy into The Lobby. But according to SB Insight (2018) women are less positive to renting products so if The Lobby wants another target group than female clothes there are other business that provides rental of products. For example Don för Person (Don för Person, n.d.) and Hygglo (Hygglo, n.d.), that are more focused on different products and tools. This will also help The Lobby towards a more sustainable retail and SDG 12 (United Nations, 2015).

Furthermore, the result in chapter 5.3 also showed that the transport from and to the

post office and physical store made by the customer is the second largest contributor to GHG emission for a T-shirt. According to Gullers Group (2018) many customers have changed their transport patterns in favour for the environment but despite this the most common way to travel when the destination is service and shopping is with car (Holmstrom, 2017, table 1). This fact, The Lobby can use for indirect affect their sustainability by promoting to take public transport to The Lobby. The Lobby is situated in the central part of Stockholm which has good public transport connection and therefore they can show how easy it is to take public transportation to The Lobby via their website for example. The Lobby can be more transparent with how much GHG emission that is saved by choosing the bus instead of the car, something often appreciated by young customers (World Wildlife fund, 2017) and might be available trough a LCA.

Another finding in this research project is the difference between a product bought at e-commerce or physical stores is not significant according to the system boundaries from this LCA. There are no sustainable reasons, according to this research project's LCA, to chose to focus on e-commerce. But if The Lobby wants to be to be a thought leader of retail it can be a good way to integrate e-commerce. Internet and e-commerce will play a bigger role in the future and the fact that The Lobby have technique as one of their cornerstones may suggest that they are in front edge and can keep up with the development. The demographic shift that is happening right now will increase the digital natives that are more in favour for e-commerce (Arnberg *et al.*, 2018) but on the other hand, the digital natives are also more concerned about sustainability (World Wildlife fund, 2017; SB Insight, 2018). Two facts that needs to be taking into account when developing the future of retail as The Lobby tries to do.

A reason for the similarities in this research project with physical stores and e-commerce is that the most processes are the same. There is a small difference in the way the T-shirts are transported, which is according to Mangiaracina *et al.* (2015) the most common difference. E-commerce products often require more transport because of multiple retailers with individual packing, separate deliveries and more returns (Mangiaracina *et al.*, 2015; McKinnon *et al.*, 2015) which all contributes to increased GHG emission. And therefore some can argue that e-commerce is less sustainable than physical store. But the parameters to decide this are many and therefore it is hard to say which method are the most sustainable. But more sustainable deliveries for e-commerce are needed to reduce distance and GHG emission (Weltevreden & Rotem-Mindali, 2009). The Lobby works as both a physical store and pick up point for e-commerce and thus has an opportunity to affect the transportation process.

7 DISCUSSION

This chapter gives answers to the two research questions from chapter 1, Introduction: what are the key areas for The Lobby in their integration of sustainability and how can life cycle assessment be part of decision making at product level.

7.1 WHAT ARE THE KEY AREAS FOR THE LOBBY IN THEIR INTEGRATION OF SUSTAINABILITY?

The Lobby has a foundation of six cornerstones: short-term leases, innovation, service, social, technique and event and exposure. Sustainability is not included as a cornerstone but the ability to integrate sustainability in all six of them is possible. The integration can be done in many ways but this research project has found three main key areas that are most important to focus on if the integration of sustainability will be successful. The suggested main areas that will add value and sustainability to The Lobby found in this research project are defined in table 14.

Table 14: Suggested main areas to add value and sustainability into the Lobby and which cornerstones they interact with

Main area	Cornerstone	Description
The overall management commitment	All	A EMS developed by the company management for The Lobby will support sustainable integration
Choice of retailers	Short-term leases & innovation	Sustainable PPM will combine short- and long-term projects to minimise risks
Information and transparency	Service, social & event and exposure	GSCM will give information and transparency about the products and retailers

These main key areas in table 14 are explained further in chapters 7.1.1-7.1.3.

7.1.1 The overall management

The first suggested key area in which to integrate sustainability in The Lobby is the overall management. The company management need to push and demand sustainability actions from every process of the business. Right now there is no expert on sustainability in the top company management. At AMF Fastigheter the sustainability objectives comes in the form of their sustainability policy and sustainability report. Their largest sustainability measurements are building product assessment, structured working methods within energy and green leases. These are some of the areas for AMF Fastigheter's

sustainability work and of these it is only the structured working with energy which has a control function and a goal for the two upcoming years (for green leases their are only goals for offices, not retail). According to Shrivastava & Hart (1995) these are common initiatives for trying to implement sustainability, but this only scratches the surface when it comes to sustainability initiatives and more action is needed. A business must have sustainability as a corporate purpose if a deep change is to be made according to Shrivastava & Hart (1995). With an implementation of a developed EMS that can be used in The Lobby the main reasons for working towards sustainability will become clearer and a more structured working method will be adopted (Stapleton *et al.*, 2001). With a more overall EMS, AMF Fastigheter can chart the indirect and direct environmental aspects that effects the business. By charting, the main areas the largest impact can be detected, one major indirect aspect is the supply chain of the retailers products. Therefore, EMS can in turn also help The Lobby and make it clearer for them where to lay their focus. When the support for sustainability comes from the company management, something that is required according to Ammenberg (2004), Chin *et al.* (1999) and Shrivastava & Hart (1995) for EMS to work, it can ease the integration also for The Lobby. Since the company management today do not require any sustainability goal or focus from The Lobby, the sustainability aspect has stayed at discussion level and limited action has been taken regarding sustainability. But if AMF Fastigheter chose to implement a developed EMS, The Lobby will also be affected and therefore, the overall management is a key area for successful integration of sustainability.

7.1.2 Choice of retailers

The second key area is choice of retailers. AMF Fastigheter's main measurement all focus on building materials and the green leases is only provided for their office tenants. For the marketplace sector, the sustainability focus is not as clear and more focus is needed on the retailers possibilities to adopt sustainability. Green leases can be adopted for retailers but that request is rarely made from the retailers and no special lease has been developed by AMF Fastigheter. When renting a space at either The Lobby or in any other marketplace owned by AMF Fastigheter there are no sustainability requirements (Gullström, 2018, pers. com.,). Every business is reviewed from an ethical perspective but there is no consideration for how sustainable the business is. AMF Fastigheter can develop a document with sustainability measurements that the tenants needs to fulfil to be able to rent from AMF Fastigheter, this will in return also affect the retailers in The Lobby. By choosing retailers that work in a sustainable way The Lobby's indirect sustainability will increase. To be able to chose the right retailers, sustainable and return value, sustainable PPM might be used. Sustainable PPM will help The Lobby include businesses that are innovative, which is one of The Lobby's cornerstones. Innovation comes hand in hand with new sustainable solutions, which have had a increasing de-

mand lately (Rautera *et al.*, 2018). With PPM The Lobby can combine new products and brands from sustainable retailers together with bigger brands and retailers who do not have the same sustainability focus. One requirement that The Lobby demands from their retailers is that the retailer has to be something new. The Lobby can take advantage of this when signing marketing agreements with large retailers, that do not have a sustainable business model but are trying to implement suitability into some of their new products. Because of pressure from stakeholders, some businesses have been forced into the sustainability direction, and have started to develop more sustainable products. By choosing large and stable retailers that have a sustainable assortment, the retailer can fit in the innovative cornerstone, because it is something new from the retailer and at the same time provide stable revenues to The Lobby. This gives the possibility to work with smaller retailers that are sustainable without jeopardising The Lobby's revenue, but at the same time also integrating sustainability into the larger retailers. The Lobby also acts as a connection between producer and customers which makes their role towards a national sustainable consumption and SDG 12 very important. They have a position where they might affect their customers. Customer behaviour is one of the important keys for progress in SDG 12 (Tseng *et al.*, 2018). Furthermore, customers today expect retailers to take responsibility, which The Lobby can do by choosing sustainable products and retailers (Brito *et al.*, 2008).

7.1.3 Information and transparency

The third main key area is the information and transparency The Lobby mediates to their customers and retailers. The demand for information and transparency has increased when buying a product, especially among young costumers (Arnberg *et al.*, 2018; World Wildlife fund, 2017). The effect of a product's supply chain, both from an environmental and social view, gets more attention (Fashion Revolution, n.d.). The Lobby can give their customers more transparency and information by having retailers that have a clear GSCM. Information can come in the form of informative notes in The Lobby, at The Lobby's website, from The Lobby's own staff, from the retailers staff or in the form of events. This gives the customers direct contact with the information, which according to Gullers Group (2018) is something the customers want. Being more transparent and giving more information also gives a positive contribution to the cornerstones social and events and exposure. By having retailers with GSCM they can for example expose the information they have about the product by doing an event in The Lobby where they tell the customers about it. And according to Gullström (2018, pers. com.,) the most satisfied retailers at The Lobby are the ones who have been doing a grate deal of marketing around their time in The Lobby. Another way for The Lobby to be more informative and transparent is to mark the retailers which are sustainable with a green label on their website. By having a green label they can give extra promotion to the re-

tailers who are sustainable which will make the customers more aware. The information and transparency is not only important in a B2C perspective but also in a B2B perspective. Sustainable retailers would of course like to know in which way The Lobby is sustainable since The Lobby's sustainability indirectly affects the retailers. The Lobby can do so by having sustainability information on their website where they explain what they have done to be more sustainable. The study *"Communicating Corporate Social Responsibility – Brand management"* by Mark-Herbert & von Schantz (2007) concludes the importance of using the website as communicator for social responsibility acts. The information will add a stronger value to the brand (Mark-Herbert & von Schantz, 2007). The information could for example include how AMF Fastigheter during construction of The Lobby used building materials that were all accepted by the building product assessment, how much energy The Lobby uses and the fact that The Lobby reuses the interior for different retailers. This information can attract sustainable retailers, and give positive impressions for The Lobby being a sustainable choice as a renter.

7.2 HOW CAN LIFE CYCLE ASSESSMENT BE A PART OF DECISION MAKING AT PRODUCT LEVEL?

In this research project a LCA has been performed for a product, a T-shirt. LCA is not only limited to products and can also be used for example a service, which gives the LCA method great opportunities. The fact that LCA does not have a strict process flow and that the different system boundaries can be chosen also makes LCA flexible (Baumann & Tillman, 2008). When conducting a LCA a product's different life steps are investigated, from cradle to grave, which provide knowledge and information of all steps. The information provided by a LCA can be both about a specific step or a holistic perspective on a product. This can be used both in internal and external decision making towards customers and retailers (Ammenberg, 2004; Egilmez *et al.*, 2016).

7.2.1 Internal decision making

Reasons for using LCA for internal decision making are many and The Lobby together with AMF Fastigheter can for example use the result from LCA when they decide what material they will use when building a marketplace such as The Lobby. By using the LCA method on the building materials, knowledge in both GHG emission, hazardous substances and other factors that can be discovered (Baumann & Tillman, 2008). This can be seen as an extended building product assessment where more information can be collected. The holistic perspective that a LCA can provide about the different stages can also give information about how the product should be used and how the customer should handle the disposal. Something that will help both AMF Fastigheter and The Lobby to be more sustainable and raise the awareness about the resources that are used

in their products. By calculating and collecting data for all steps, AMF Fastigheter can develop more accurate control functions that can help audit their environmental performances. The LCA method can be used as a tool to monitor GHG emissions which can help AMF Fastigheter when they work with an EMS (United Nations, n.d.; Stapleton *et al.*, 2001). An important step in their structured working methods within energy is monitoring, where they monitor how much CO_2eq they release, because of energy usage. The auditing together with employees' interest has made their structured working methods within energy successful, something that with the help of LCA and a control function can be successful also for AMF Fastigheter's other operations. According to Eskils (pers. com., 2018) AMF Fastigheter is going to develop a new materiality analysis where the results from LCAs can be helpful. The LCA method can be used to evaluate different processes within AMF Fastigheter, not only products, which can be helpful knowledge in the materiality analysis.

AMF Fastigheter is working actively with SDG 12, with a focus on waste and green leases. But they have the opportunity to do more towards a better result for SDG 12. By using LCA as a method they can gather information that is needed to be more resource efficient (SDG 12.2) by studying the whole life-cycle. LCA can also help to achieve environmentally sound management and minimise climate impact (SDG 12.4) by finding hot spots. Knowing what products are made of gives information about how the product should be handled in the end-stage, which can reduces waste (SDG 12.5) (United Nations, 2015). They can also help by sharing their information from LCAs, with others that collect data. This can help to develop new products that are more sustainable (United Nations, n.d.). When conducting a LCA the system boundaries, time horizon and impact category can differ for each LCA which gives the ability to make a LCA that is beneficial for the needs. Therefore can AMF Fastigheter's develop a LCA that fit their needs and be used in internal decision making for improvement of SDG 12.

7.2.2 External decision making

When taking external decisions about suppliers and retailers, a LCA can help AMF Fastigheter and The Lobby to make sustainable choices. If their suppliers and retailers use LCA methods for their products, they will have more information that can lead to greater transparency (McKinnon, 2010). Which can make it easier for The Lobby to chose sustainable retailers. This research project has also found that it is possible for businesses to both be successful and contribute to a more sustainable world by creating value for their stakeholders (The Coca-Cola Retailing Research Council, 2014). By pleasing the stakeholders, AMF Fastigheter and The Lobby can cherish and improve their brand value (Hohnen, 2007).

With the result in chapter 5.3 The Lobby knows that the manufacturing stage is the biggest contributor to GHG emission in the life cycle of a a T-shirt, something that can be taken into account in the decision of retailers in The Lobby. By prioritising businesses with sustainable production, The Lobby's indirect sustainability can increase and they can have a more positive impact on the climate (Bieser & Hilty, 2018; European Parliament and Council, 2009). By choosing companies like Swedish Stocking, that have adopted a circular business model, The Lobby can be more sustainable and promote new innovative businesses, something that is one of The Lobby's cornerstones. To maintain their customers they can use the result in LCA to promote that they, by choosing sustainable retailers, are indirectly decreasing their GHG emissions and are also in favour of innovative retailers that try to make a difference (McKinnon, 2010).

8 CONCLUSIONS

This chapter starts by answering the aim of the research project: explain how sustainability can be integrated in retail businesses and how life cycle assessment (LCA) can lay the foundation for decision making. Moreover, suggestion for further research are presented.

It is possible for sustainability to be integrated in retail businesses and it can be done without risking their economic value (The Coca-Cola Retailing Research Council, 2014). On the contrary, by integrating sustainability, AMF Fastigheter's value towards stakeholders may increase. This research project found that the most important area to focus on if sustainability is to be integrated successfully is the company management and their commitment. Starting with integrating corporate social responsibilities into AMF Fastigheter and later on adding on an environmental management system, AMF Fastigheter would then be well on its way to becoming more sustainable. With an environmental management system sustainability goals and objectives for AMF Fastigheter will be defined (Stapleton *et al.*, 2001) which will make it easier for The Lobby to implement project portfolio management that has a sustainability focus. An environmental management system will also help monitor and check if progress is being made, which is an important step for improvement (*ibid*). With a working environmental management system that has support from the overall management, sustainability will be a natural part of the whole business and employees will feel more willing to take responsibility (Ammenberg, 2004; Chin *et al.*, 1999).

When The Lobby feels the pressure and support from the company management to integrate sustainability, it will be easier to make decisions not only based on an economic value (Ammenberg, 2004; Chin *et al.*, 1999; Elkington, 1998). Moreover, The Lobby's choice of retailers affects both the indirect sustainability and the customers options in choosing sustainable products. Project portfolio management and green supply chain management are concepts The Lobby can use to integrate more sustainability and can be used to make the integration easier. Sustainable project portfolio management together with more information and transparency will help The Lobby attract retailers that are more sustainable and in the same time minimise the The Lobby's financial risks and raise their brand value (Esty & Winston, 2009; Fabozzi, 2012; Hohnen, 2007). With sustainable project portfolio management The Lobby will learn how to maximise their value by choosing the retailers that fit their concept, something new, innovative, technical and social. By working with project portfolio management and thereby choosing retailers that have a green supply chain, The Lobby will get more information about their retailers. Working with retailers that have a green supply chain will create transparency for The Lobby, a requirement from the customers (Beamon, 1998; Brito *et al.*,

2008; McKinnon *et al.*, 2015). One of The Lobby's goals is to be a thought leader in the future of retail. The findings in this case study point to the importance of including sustainability when wanting to be a thought leader in the future of retail (Gullers Group, 2018; World Wildlife fund, 2017). Both customers and retailers are rising the awareness of sustainability and it is gradually becoming the norm. Building a new concept in retail without integrating sustainability would be to forget one of the most important changes in the future of retail.

In this research project a LCA was performed to see the differences in CO_2eq between e-commerce and physical stores and if this could lay as a foundation for decision making. LCA requires information about a product to be able to set the system boundaries, this may require that the retailers does investigations about their products. If the information needed to perform a LCA is limited more knowledge is required from suppliers and actors along a products life cycle. Collecting information from other actors will create greater knowledge about the product and a more accurate LCA result. Hence, LCA can be used in decision making to gain more information about a product. Information that can be useful if the retailer wants to decrease their climate impact (United Nations, n.d.). By knowing where in the supply chain the most CO_2eq are released action can be taken to reduce the impact. LCA is a great method for finding hots pots in the supply chain, for monitoring when changes have been done, to be use for comparison with other products and for gaining information (McKinnon, 2010; Egilmez *et al.*, 2016). LCA can be helpful for AMF Fastigheter when working towards SDG 12. By doing several LCAs about their products and services the targets might be more easily reached and AMF Fastigheter can help Sweden to change to more sustainable consumption by sharing their information to diffident research programs and data collections (United Nations, n.d.).

Future studies in this area should focus on customers' behaviour and how to influence them towards living in a more sustainable way. One suggestion is to do research in how to affect customers to choose more sustainable products with technical solutions and interactions. Surveys made about customers' attitudes, knowledge and behaviour towards sustainable textile consumption and about customers' attitude towards circular behaviour have been conducted by SB Insight (2018) and Gullers Group (2018) which show that customers are open to change but it needs to be easy for them. If more research is conducted and more knowledge is found in how to influence customers the retail businesses can make a big change towards integrating more sustainability. This is also an important factor that is critical if Sweden is to reach sustainable development goal 12 to 2030 (Tseng *et al.*, 2018).

BIBLIOGRAPHY

LITERATURE AND PUBLICATIONS

Alm, U. and Löf, A. (2012). Stockholms kommuns lokala trafikföreskrifter om allmänna föreskrifter. 10 § Begränsad fordonslängd. *Stockholms Stad*. Vol. 0180 2012:03066.

Althaus, H., Bauer, C., Doka, G., Dones, R., Frischknecht, R., Hellweg, S., Humbert, S., Jungbluth, N., Köllner, T., Loerincik, Y., Margni, M. and Nemecek, T. (2010). Implementation of Life Cycle Impact Assessment Methods. ecoinvent.

AMF Fastigheter (2017). *Hållbarhetsrapport 2017*. Stockholm: AMF Fastigheter.

Ammenberg, J. (2004). *Miljömanagement*. Lund: Studentlitteratur. 1:st edition. ISBN: 978-91-44-02813-2.

Aras, G. and Crowther, D. (2015). Sustainable Practice: The Real Bottom Line. *The Governance of Risk*. Vol. 5. Pages 1–18, DOI:10.1108/S2043-0523(2013)0000005004.

Archer, N. and Ghasemzadeh, F. (1999). An integrated framework for project portfolio selection. *International Journal of Project Management*. Vol. 17 (4). Pages 207–2016, PII: S0263-7863(98)00032-5.

Arnberg, J., Bergh, E., Nevander, O. and Svensson, A. (2018). Det stora detaljhandelsskiftet. Nr. 2. Swedish Trade Federation. Stockholm:.

Bauer, B., Watson, D. and Gylling, A. (2018). Sustainable Consumption and Production: An Analysis of Nordic Progress towards SDG12, and the way ahead. Nordic Council of Ministers, Nordic Council of Ministers Secretariat. Copenhagen:.

Baumann, H. and Tillman, A.-M. (2008). *The hitch hiker's guide to LCA*. Studentlitteratur. ISBN: 91-44-02364-2.

Beamon, B. (1998). Supply Chain Design and Analysis: Models and Methods. *International Journal of Production Economics*. Vol. 55 (3). Pages 281–294.

Berntsson, S. and Ado, A. (2016). Godstransportflöden - Analys av statistikunderlag Sverige 2012-2014. No. 9. Transport Analysis.

Beton, A., Dias, D., Farrant, L., Gibon, T., LeGuern, Y., Desaxce, M., Perwueltz, A. and Boufateh, I. (2012). Environmental Improvement Potential of Textiles (IMPRO-Textiles). No. 1. European Commission.

Bieser, J. and Hilty, L. (2018). Assessing Indirect Environmental Effects of Information and Communication Technology (ICT): A Systematic Literature Review. *Sustainability*. Vol. 10(8). Page 2662, DOI: doi.org/10.3390/su10082662.

Brito, M., Carbone, V. and Blanquart, C. (2008). Towards a sustainable fashion retail supply chain in Europe: Organisation and performance. *International Journal of Production Economics*. Vol. 114 (2). Pages 534–553, DOI: https://doi.org/10.1016/j.ijpe.2007.06.012.

Brook, J. and Pagnanelli, F. (2014). Integrating sustainability into innovation project portfolio management – A strategic perspective. *Journal of Engineering and Technology Management*. Vol. 34. Page 46–62, DOI: 10.1016/j.jengtecman.2013.11.004.

Brundtland Commission (1987). *Our Common Future*. New York: Oxford University Press.

Bryman, A. (1997). *Quantity in Social Research*. London: Routledge. 15th edition. ISBN: 978–91–44–00265-1.

Bryman, A. (2012). *Social Research Methods*. Oxford New York: Oxford University Press. 4:th edition. ISBN : 978–0–19–958805–3.

Bryman, A., Bell, E., Mills, A. and Yue, A. (2011). *Business research methods*. New York: Oxford University Press.

Carroll, A. (1999). Corporate Social Responsibility Evolution of a Definitional Construct. *Business and Society*. Vol. 38 (3). Pages 268–295, DOI: 10.1177/000765039903800303.

Chin, K., Chiu, s. and Tummala, R. (1999). An evaluation of success factors using the AHP to implement ISO 14001-based EMS. *International Journal of Quality and Reliability Management*. Vol. 16(4). Pages 341–362, DOI: 10.1108/02656719910248226.

Dawson, C. (2009). *Introduction to research methods*. United Kingdom: How To Books. 4:th edition. ISBN: 978 1 84528 367 4.

Deloitte (2017). Transformation of traditional retailer in the era of New Retail. Deloitte. China:.

Deming, W. and Edwards (1986). *Out of the crisis*. MA: Massachusetts Institute of Technology, Center for Advanced Engineering Study. ISBN: 0911379010.

Dernbach, J. (1998). Sustainable development as a framework for national governance. *Case Western Reserve Law Review*. Vol. 49 (1). Pages 1–103.

DIBS (2017). Svensk E-handel: Allt du behöver veta om e-handel. No. 1. DIBS. Stockholm:.

Egilmez, G., Kucukvar, M. and Park, Y. S. (2016). Supply chain-linked sustainability assessment of the US manufacturing: An ecosystem perspective. *Sustainable Production and Consumption*. Vol. 5. Pages 65–81, DOI:10.1016/j.spc.2015.10.001.

Ehrenfeld, J. (2005). The roots of sustainability. *MIT Sloan Management Review*. Vol. 46 (2). Pages 23–50.

Elkington, J. (1998). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. New Society Publishers. 1:st edition. ISBN: 9780865713925).

Esty, D. and Winston, A. (2009). *Green to Gold*. New Haven: Yale University Press.

European Commission (2017). Moving towards a circular economy with EMAS. European Commission. Luxembour:.

European Parliament and Council (2009). Regulation EC No 1221. *Official Journal of the European Union*. Vol. 39(13). Pages 246–290.

Fabozzi, F. (2012). *Encyclopedia of Financial Models*. John Wiley and Sons Incorporated. 1:st edition. ISBN: 9781118539804.

Freeman, E. (1984). *A stakeholder approach to strategic management*. New York: Springer. ISBN: 978-0-521-15174-0.

Freeman, E., Harrison, J. and Wicks, A. (2008). *Managing for Stakeholders: Survival, Reputation, and Success*. New Haven: Yale University Press.

Grafström, M., Göthberg, M. and Windell, K. (2015). *CSR: Företagsansvar i förändring*. Solna: Liber AB. 2:nd edition. ISBN: 978-91-47-11231-9.

Granello, S., Jönbrink, A., Roos, S., Johansson, T. and Granberg, H. (2015). Consumer behaviour on washing. No. D4.5/D4.6/D2.8. Mistra future fashion. Sweden:.

Grønhaug, K., Heide, M. and Vaaland, T. (2007). Corporate social responsibility: investigating theory and research in the marketing context. *European Journal of Marketing*. Vol. 42 (9/10). Pages 927–953, DOI: 10.1108/03090560810891082.

Guinée, J. B., Huppes, G. and Heijungs, R. (2001). Developing an LCA guide for decision support. *Environmental Management and Health*. Vol. 12 (3). Pages 301–311, DOI: https://doi.org/10.1108/09566160110392416.

Gullers Group (2018). Hållbar textilkonsumtion: En konsumentundersökning om svenskarnas beteende, attityd och kunskap om hållbar textilkonsumtion. No. 1. Naturvårdsverket. Stockholm:.

Gwozdz, W., Netter, S., Bjartmarz, T., Reisch and LA. (2013). Survey Results on Fashion Consumption and Sustainability among Young Swedes. Mistra Future Fashion.

Hall, T. and Slaper, T. (2011). The Triple Bottom Line: What Is It and How Does It Work? Indiana Business Review. Indiana:.

Harland, C., Nassimbeni, G. and Schneller, E. (2013). *The SAGE Handbook of Strategic Supply Management*. SAGE Publications. 1:st edition. ISBN: 9781446274644.

Hohnen, P. (2007). Corporate Social Responsibility: An Implementation Guide for Business. International Institute for Sustainable Development. Canada: ISBN : 978-1-895536-97-3.

Holmstrom, A. (2017). The Swedish national travel survey 2015–2016. No. 1. Trafikanalys. Sweden:.

Hustvedt, G. and Bernard, J. (2008). Consumer willingness to pay for sustainable apparel: the influence of labelling for fibre origin and production methods. *International Journal of Consumer Studies*. Vol. 32(5). Pages 491–498.

Hyllegard, K., Ogle, J. and Yan, R. (2014). College students' responses to prosocial marketing claims on apparel hang tags. *Journal of Fashion Marketing and Management*. Vol. 18(3). Pages 269–283.

Ibn-Mohammed, T., Greenough, R., Taylor, S., Ozawa-Meida, L. and Acquaye, A. (2013). Operational vs. embodied emissions in buildings—A review of current trends. *Energy and Buildings*. Vol. 66. Page 232–245, Doi: 10.1016/j.enbuild.2013.07.026.

International Organization for Standardization (2006). Environmental management - Life cycle assessment - Requirements and guidelines (ISO 14044:2006). Swedish Standard Institute.

Irun, B. (2017). Business Opportunities and Challenges in The Textile and Apparel Market in China. No. 1. EU SME Centre. China:.

Johnson, H. (1971). *Business in contemporary society: framework and issues (Problems in a business society)*. Wadsworth Pub. Co. 1:st edition.

Jones, P., Comfort, D., Hillier, D. and Eastwood, I. (2005). Retailers and sustainable development in the UK. *International Journal of Retail and Distribution Management*. Vol. 33 (3). Pages 207–214, DOI: 10.1108/09590550510588370.

Jones, T. M. (1980). Corporate social responsibility revisited, redefined. *California Management Review*. Vol. XXII (2). Pages 59–67, DOI: 10.2307/41164877.

Kommerskollegium (2012). Handel, transporter och konsumtion - Hur påverkas klimatet? 2012:3 Kommerskollegium. ISBN: 978-91-86575-36-6.

Levine, H. (2005). *Project Portfolio Management*. San Francisco: Jossey-Bass. 1:st edition. ISBN: 13 978-0-7879-7754-2.

Lozano, R. (2007). Envisioning sustainability three-dimensionally. *Journal of Cleaner Production*. Vol. 16. Page 1838–1846, DOI:10.1016/j.jclepro.2008.02.008.

Mangiaracina, R., Marchet, G., Perotti, S. and Tumino, A. (2015). A review of the environmental implications of B2C e-commerce: a logistics perspective. *International Journal of Physical Distribution & Logistics Management*. Vol. 45. Pages 565–591.

Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C. and Hung Byers, A. (2011). "Big Data: the next frontier for innovation, competition, and productivity". McKinsey Global Institute. New York, NY:.

Mark-Herbert, C. and von Schantz, C. (2007). Communicating Corporate Social Responsibility – Brand management. *Electronic Journal of Business Ethics and Organization Studie*. Vol. 12. Pages 4–11.

Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance*. Vol. 7 (1). Pages 77–91, DOI: 10.2307/2975974.

Matthews, H., Williams, E., Tagami, T. and Hendrickson, C. (2002). Energy implications of online book retailing in the United States and Japan. *Environmental Impact Assessment Review*. Vol. 22. Pages 493–507.

McGuire, J. (1963). *Encyclopedia of Financial Models*. New York: McGraw-Hill Book Company. 1:st edition. ISBN: 13:9780070450974.

McKinnon, A. (2010). Product-level carbon auditing of supply chains: Environmental imperative or wasteful distraction. *International Journal of Physical Distribution and Logistics Management*. Vol. 40 (1). Pages 42–60, DOI: 10.1108/09600031011018037.

McKinnon, A., Browne, M., M.and Piecyk and Whiteing, A. (2015). *Green logistics: improving the environmental sustainability of logistics*. London: Kogan Page. 3:rd edition.

Mishra, J., Hopkinson, P. and Tidridge, G. (2018). Value creation from circular economy-led closed loop supply chains: a case study of fast-moving consumer goods. *Production Planning and Control*. Vol. 29(6). Pages 509–521, DOI: 10.1080/09537287.2018.1449245.

Nikolaeva, R. (2006). E-commerce adoption in the retail sector: empirical insights. *International Journal of Retail and Distribution Management*. Vol. 34 (4/5). Pages 369–387, DOI: 10.1108/09590550610660288.

Nisara, T. and Prabhakarb, G. (2017). What factors determine e-satisfaction and consumer spending in e-commerce retailing? *Journal of Retailing and Consumer Services*. Vol. 39. Pages 135–144, DOI:10.1016/j.jretconser.2017.07.010.

Nykvist, B., Persson, A., Moberg, F., Persson, L. and Rockstrom, J. (2013). National Environmental Performance on Planetary Boundaries. No. 6576. Swedish Environmental Protection Agency. Stockholm:.

Piscicelli, L., Cooper, T. and Fisher, T. (2014). The role of values in collaborative consumption: insights from a product-service system for lending and borrowing in the UK. *Journal of Cleaner Production*. Vol. 97. Pages 1–9.

Platje, A., Seidel, H. and Wadman, S. (1994). Project and portfolio planning cycle. *International Journal of Project Management*. Vol. 12 (2). Pages 100–106, DOI: 0263-7863(94)90016-7.

PostNord (2018). E-Handel i Norden 2018. No. 1. Postnord. Stockholm:.

Rautera, R., Globocnikb, D., Perl-Vorbachc, E. and Baumgartnerd, R. (2018). Open innovation and its effects on economic and sustainability innovation performance. *Journal of Innovation & Knowledge*, DOI:10.1016/j.jik.2018.03.004.

Reikea, D., Vermeulena, W. and Witjesb, S. (2018). The circular economy: New or Refurbished as CE 3.0? - Exploring Controversies in the Conceptualization of the Circular Economy through a Focus on History and Resource Value Retention Options. *Resources, Conservation and Recycling*. Vol. 135. Pages 246–264, DOI: 10.1016/j.resconrec.2017.08.027.

Robson, C. (2011). *Real world research*. United Kingdom: John Wiley and Sons Ltd. 3:rd edition. ISBN: 978-1-4051-82409.

Roos, S. (2016). Advancing life cycle assessment of textile products to include textile chemicals. Chalmers university of technology. Gothenburg: ISBN: 978-91-7597-521-4.

Rosenström, M. (2016). Tar e-handeln över? Union of commercial employees.

Sachs, J., Schmidt-Traub, C., G.and Kroll, Lafortune, G. and Fuller, G. (2018). SDG Index and Dashboards Report 2018. Bertelsmann Stiftung and Sustainable development solution network (SDSN). New York:.

Saunders, M., Lewis, P. and Thornhill, A. (2009). *Research methods for business students*. Harlow Financial Times Prentice Hall. 5:th edition. ISBN: 978-0-273-71686-0.

SB Insight (2018). The Swedish market for circular economy. No. 1. SB Insight AB. Sweden:.

Searcy, C., Morali, O., Karapetrovic, S., Wichuk, K., McCartney, D., McLeod, S. and Fraser, D. (2012). Challenges in implementing a functional ISO 14001 environmental management system. *International Journal of Quality and Reliability Management*. Vol. 29(7). Pages 779–796, DOI: 10.1108/02656711211258526.

Shrivastava, P. and Hart, S. (1995). Creating sustainable corporations. *Business Strategy and the Environment*. Vol. 4. Pages 154–165.

Srivastava, S. (2007). Green supply-chain management: A state-of-the-art literature review. *International Journal of Management Reviews*. Vol. 9 (1). Pages 53–80, DOI: 10.1111/j.1468-2370.2007.00202.x.

Stapleton, P., Glover, M. and Davis, P. (2001). *Environmental Management Systems: An Implementation Guide for Small and Medium-Sized Organizations*. Grasonville: NSF International. 2:nd edition.

Sui, D. and Rejeski, D. (2002). Environmental impacts of the emerging digital economy: the e-for-environment e-commerce? *Environmental Management*. Vol. 2. Pages 155–163.

Swedish Environmental Protection Agency (2012a). From waste management to resource efficiency. Swedish Environmental Protection Agency. ISBN: 978-91-620-6560-7.

Swedish Environmental Protection Agency (2012b). Sweden's environmental objectives. Swedish Environmental Protection Agency. ISBN: 978-91-620-8620-6.

Swedish Environmental Protection Agency (2017). Med de nya svenska klimatmålen i sikte. Swedish Environmental Protection Agency. Sweden: ISBN: 978-91-620-6795-3.

Swedish Environmental Protection Agency (n.d.). EMAS – Det ambitiösa miljöledningssystemet. Swedish Environmental Protection Agency. ISBN: 978-91-620-8724-1.

Swedish Trade Federation (2016). Konsumenterna kan påverka – företagen har kraft att förändra. No. 1. Svensk handel. Sverige:.

The Coca-Cola Retailing Research Council (2014). A new sustainability springboard for retailers in Eurasia and Africa. The Coca-Cola Retailing Research Council.

The Government of Sweden (2010). Swedish environmental objectives – for more effective environmental policy. Government offices of Sweden. Prop. 2009/10:155.

The Government of Sweden (2017). Sweden and the 2030 Agenda. No. 1. United Nations. Stockholm:.

Thoresson, A. and Davidsson, P. (2017). Svenskarna och internet 2017. No. 1. The Internet Foundation In Sweden. Stockholm:.

Tseng, M., Zhu, Q., Sarkis, J. and S.F. Chiu, A. (2018). Responsible consumption and production (RCP) in corporate decision-making models using soft computation. *Industrial Management & Data Systems*. Vol. 118. Pages 322–329.

United Nations (2015). Transforming our world: the 2030 Agenda for Sustainable Development. No. 1. United Nations. New York City: 22-23.

United Nations General Assembly (2005). World Summit Outcome. No. 60. United Nations General Assembly.

United Nations (n.d.). Sustainable consumption and production patterns. United Nations.

van Loon, P., Deketele, L., Dewaele, J., McKinnon, A. and Rutherford, C. (2015). A comparative analysis of carbon emi ssions from online retailing of fast moving consumer goods.. *Journal of Cleaner Production*. Vol. 106. Pages 478–486.

Weltevreden, J. and Rotem-Mindali, O. (2009). Mobility effects of b2c and c2c e-commerce in the Netherlands: a quantitative assessment. *Journal of Transport Geography*. Vol. 17. Pages 83–92.

Wiese, A., Kellner, J., Lietke, B., Toporowski, W. and Zielke, S. (2012). Sustainability in retailing a summative content analysis. *International Journal of Retail and Distribution Management*. Vol. 40 (4). Pages 318–335, DOI: 10.1108/0959055121121179.

World Wildlife fund (2017). WWFs Klimatbarometer Sifo - undersökning 20 mars 2017. World Wildlife fund. Stockholm:.

Yin, R. (2009). *Case Study Research*. Thousand Oaks: SAGE. 4:th edition. ISBN: 978-1-4129-6099-1.

Östlund, A., Wedin, H., Bolin, L., Berlin, J., C., J., Posner, S., Smuk, L., Eriksson, M. and Sandin, G. (2015). Textilåtervinning - Tekniska möjligheter och utmaningar. No. 6685. Swedish Environmental Protection Agency.

INTERNET

Allerup, J. (2017). *Konsumtionsbaserade växthusgasutsläpp per person och år*. URL: `https://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Klimat-vaxthusgasutslapp-fran-svensk-konsumtion-per-person/`, Accessed [2018-08-06].

AMF Fastigheter, . (n.d.). *Kortfakta*. URL: `https://www.amffastigheter.se/om-oss/kortfakta/`, Accessed [2018-08-08].

Brosseau, D. (2014). *What is a thought leader?, Thought Leadership Lab*. URL: `www.thoughtleadershiplab.com/Resources/WhatIsaThoughtLeade`, Accessed [2018-10-16].

Claesson, C. (2013). *Lindex öppnar lager i Partille*. URL: `http://www.gp.se/ekonomi/lindex-%C3%B6ppnar-lager-i-partille-1.501494`, Accessed [2018-10-01].

Don för Person (n.d.). *Hyr verktyg i Stockholm*. URL: `https://www.hygglo.se/`, Accessed [2018-11-05].

ecoinvent (n.d.). *About ecoinvent*. URL: `https://www.ecoinvent.org/about/about.html`, Accessed [2018-08-13.

Ehlin, B. (2018). *The Lobby – framtidens butiksupplevelse*. URL: `https://www.amffastigheter.se/pressrum/pressmeddelanden/2018/the-lobby--framtidens-butiksupplevelse2/`, Accessed [2018-08-06].

Ellen MacArthur Foundation (2017). *Methods*. URL: EllenMacArthurFoundation, Accessed [2018-10-29].

Englund, C. (2018). *När kommer Amazon till Sverige?*. URL: https://www.breakit.se/artikel/15022/nar-kommer-amazon-till-sverige, Accessed [2018-10-17].

Eskils, M. (n.d.). *Hållbarhet inom fastighetsbranschen*. URL: https://www.amffastigheter.se/om-oss/vart-hallbarhetsarbete/, Accessed [2018-08-07].

Fashion Revolution (n.d.). *About transparency*. URL: https://www.fashionrevolution.org/about/transparency/, Accessed [2018-11-14].

Hederos, M. (2015). *Vår hållbarhetspolicy*. URL: https://www.amffastigheter.se/om-oss/vart-hallbarhetsarbete/hallbarhetspolicy/, Accessed [2018-12-13].

Hedman, J. (2017). *Cirkulär ekonomi*. URL: https://www.naturvardsverket.se/Miljoarbete-i-samhallet/EU-och-internationellt/EUs-miljooarbete/Cirkular-ekonomi/#, Accessed [2018-08-07].

HUI Research (2018). *Begrepp och definitioner*. URL: http://www.handelnisverige.se/tillgaengliga-data/begrepp-och-definitioner/, Accessed [2018-10-12].

Hygglo (n.d.). *Hyr istället för att köpa*. URL: https://www.hygglo.se/, Accessed [2018-11-05].

Kappahl (n.d.). *Hitta hit*. URL: https://www.kappahl.com/sv-SE/om-kappahl/kontakt/kontakt/hitta-hit/, Accessed [2018-10-01].

Lonnroth, V. (2016). *RO-Gruppen bygger HochM:s nya lager i Borås*. URL: http://www.bt.se/7haffarer/ro-gruppen-bygger-hms-nya-lager-i-boras/, Accessed [2018-10-01].

Ma, J. (2016). *Alibaba's New Retail Integrates E-Commerce, Stores, & Logistics: Is This The Next Gen Of Retail?*. URL: https://www.forbes.com/sites/deborahweinswig/2017/04/14/#33b96d88767c, Accessed [2018-10-24].

MCR (n.d.). *20 fots container*. URL: http://www.mcr.se/20-fots-container/, Accessed [2018-10-02].

Nationalencyklopedin (n.d.). *Digitalisering*. URL: https://www-ne-se.ezproxy.its.uu.se/uppslagsverk/encyklopedi/l%C3%A5ng/digitalisering, Accessed [2018-08-14].

NTMCalc Basic 4.0 (n.d.). *NTMCalc Basic 4.0 Environmental Performance Calculator*. URL: https://www.transportmeasures.org/ntmcalc/v4/basic/index.html#/.

Patagonia (n.d.). *Environmental and social responsibility*. URL: https://www.patagonia.com/environmentalism.html, Accsessed [2018-10-17].

PostNord (n.d.). *Miljokalkylator*. URL: https://www.postnord.se/information/om-postnord/hallbarhet/miljokalkylator.

Sabina and friends (n.d.). *Välkommen till Sabina and friends!*. URL: http://sabinaandfriends.se/, Accessed [2018-11-05].

Something Borrowed (n.d.). *Something Borrowed*. URL: https://www.somethingborrowed.se/, Accessed [2018-11-05].

Stahel, R. (2016). *The circular economy*. URL: https://www.nature.com/news/the-circular-economy-1.19594, Accessed [2018-08-07].

Susman, A. (2018). *Building A Brick-And-Mortar Retail Space As An E-Commerce Company*. URL: https://www.forbes.com/sites/theyec/2018/04/11/building-a-brick-and-mortar-retail-space-as-an-e-commerce-company/#384f8650127c, Accessed [2018-10-18].

Swedish Environmental Protection Agency (2018). *Agenda 2030 och globala hållbarhetsmålen*. URL: https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Agenda-2030-och-globala-hallbarhetsmalen/, Accessed [2018-09-17].

Swedish Stocking (n.d.). *Our Sustainability, Swedish Stocking*. URL: https://en.swedishstockings.com/pages/production, Accessed [2018-10-17].

Swedish Trade Federation (n.d.). *Om svensk handel*. URL: http://www.svenskhandel.se/om-svensk-handel/, Accessed [2018-08-15].

Uggla, E. (2017). *Hållbar konsumtion och produktion*. URL: https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Konsumtion-och-produktion/, Accessed [2018-08-06].

United Nations (n.d.). *Greenhouse Gas Calculator*. URL: https://unemg.org/resources/greenhouse-gas-calculator, Accessed [2018-08-31].

United States Environmental Protection Agency (n.d.). *Environmental Management Systems (EMS)*. URL: https://www.epa.gov/ems, Accessed [2018-09-06].

Zils, M. (2014). *Moving toward a circular economy*. URL: https://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/moving-toward-a-circular-economy, Accessed [2018-10-29].

INTERVIEWS AND INTERNAL DOCUMENTS

Barkman Hollaus, M. (2018). *Personal interview with Marie Barkman Hollaus at AMF Fastigheter*. Date: 2018-10-17.

Eskils, M. (2018). *Personal interview with Michael Eskils at AMF Fastigheter*. Date: 2018-10-11.

Eskils, M. (n.d.). *AMF Fastigheters hållbarhetsarbete*. Unpublished report.

Gullström, A. (2018). *Personal interview with Annelie Gullstrom at AMF Fastigheter*. Date: 2018-10-12.

Swärdh, G. (2018). *Personal interview with Göran Swärdh at AMF Fastigheter*. Date: 2018-05-31.

APPENDIX

A APPENDIX - INTERVIEW GUIDE TO GÖRAN SWÄRDH

Questions to Göran Swärdh, Business Development Manager at The lobby the 31:st of May 2018, *(unstructed interview)*.

- Berätta lite kort om The Lobby, vad är det?
- Hur väljs företagen som får marknadsföra sig i The Lobby?
- Vad händer med osålda produkter?
- Om det finns ett hållbarhetsarbete i the Lobby, hur defineras det?
- Finns det något problem/bekymmer med hur The Lobby är utformad för tillfället?
- Övrigt du kan berätta om The Lobby

B APPENDIX - INTERVIEW GUIDE TO ANNELIE GULLSTRÖM

Interview guide to Annelie Gullstöm, Head of business development. Interview conducted the 12:th of October 2018, *(semi-structed interview)*.

- Hur definierar du hållbarhet? (lämna ute The lobby, enbart personlig åsikt)
- Har The Lobby en nedskriven definition av hållbarhet?
- När ni utvecklade the Lobby hur mycket tänkte ni då på hållbarhet?
- Hur implementerar ni digitalisering i The Lobby?
- Vad är det som särskiljer The Lobby från andra retail butiker?
- Det ni erbjuder till retailers, hur har det tagits emot, positivt eller har de inte förstått innebörden?
- Vad är målet med att hyra ut till flera återförsäljare under kort tid?
- CSR är det något ni aktivt har implementerat i The Lobby?
- Känner du att konsumenterna efterfrågar hållbara produkter?
- När ni tar in företagen, finns det så att ni tar reda på hur de jobbar med social, ekonomiska och miljömässiga aspekter?
- Finns det några andra kriterier för att få hyra en plats i The Lobby?
- Har ni något krav gällande hållbarhet inom The Lobby från ledningen?

- Är hållbarhet inom The Lobby något som har efterfrågats från ledningen?
- Känner du att ni på The Lobby har ett ansvar för vad retailers på the Lobby säljer?
- Berätta lite mer om The Lobby Market?
- Är det de stora bolagen som möjliggör att de små kan vara där?
- Ni har nu haft the Lobby i 6 månader behöver ni själva leta efter företag som vill vara i The Lobby eller kommer företag till er?
- Vad är framtiden för the Lobby?

C APPENDIX - INTERVIEW GUIDE TO MICHAEL ESKILS

Interview guide to Michael Eskils, Head of Sustainability. Interview conducted the 11:th of October 2018, *(semi-structed interview)*.

- Hur ser du personligen på hållbarhet, vad betyder det för dig? (personlig åsikt)
- Berätta lite mer om hållbarhetsrådet, hur fungerar det?
- Vad hoppas ni få ut med rådet?
- Ni säger att ni jobbar mot Agenda 30 mål 12, men det verkar enbart vara förvaltning samt gröna avtal?
- Hur ser ni med ert ansvar gentemot hyresgäster arbete och att de verkar i era lokaler?
- Vilket ansvar känner ni att ni har mot hyresgästernas kunder?
- Tycker du att det finns ett driv inom företaget att jobba med hållbarhet? Är det du som är den drivande personen eller kommer det andra medarbetare och vill utveckla hållbarheten?
- Kan du ge ett exempel på där du inte har varit den drivande inom hållbarhet?
- Vilka är era tre största hållbarhetssatsningar som du har varit med att driva igenom?
- Har du sett en ökning av efterfrågan på gröna hyresavtal? (spontan)
- Har ni någon typ av certifikat (spontan fråga) ?
- Hur ser AMF fastigheter på framtiden, vad är nästa steg i er hållbarhetsarbete?

- Tycker du att hållbarhetsarbetet genomsyrar hela AMF Fastigheter?

- Ni skriver att alla medarbetare har kunskap om ert hållbarhetsarbete och ska agera och förhålla sig till detta, hur ofta uppdaterar ni era medarbetare inom denna punkt?

D APPENDIX - INTERVIEW GUIDE TO MARIE BARKMAN HOLLAUS

Interview guide to Marie Barkman Hollaus, COO and CFO. Interview conducted the 17:th of October 2018, *(semi-structed interview)*.

- Hur ser du personligen på hållbarhet, vad betyder det för dig? (personlig åsikt)
- Vad är AMFs definition på hållbarhet?
- Hur ser strukturen ut för AMF fastigheter? Vem rapporterar till vem?
- Hur förmedlar AMF hållbarhetsarbete inom företaget?
- Finns hållbarhetsperspektivet med i er grundläggande affärsplan?
- Vilken roll har hållbarhetsarbetet för AMF? Högst upp på "agendan" eller längre ned". Hur skulle du prioritera den? Och hur väl stämmer det överens med hur ni faktiskt arbetar med det?
- Genomsyrar hållbarhetsarbetet hela ledningen (spontan fråga)
- Hur ofta kommer hållbarhetsfrågor upp på ledningsmöten?
- Det tidigare hållbarhetsrådet har tagits bort, varför?
- Hur kommer det sig att ni inte valt att använda miljöledningssystemet ISO14001?
- Hur stor påverkan har AMF pension på er arbete? Har AMF pension några hållbarhetskrav på er?

- Finns det påtryckningar från pensionssparare att ni ska jobba mer med hållbarhet?

- Får du hållbarhets-input från andra än enbart Michael?

- Har ni upplevt att medarbetarna har haft en positiv eller negativ inställning till hållbarhetsarbete som har påverkat dem?

- Hur ser AMF fastigheter på framtiden, vad är nästa steg i er hållbarhetsarbete?

- Hur många är ni i ledningen, vilka är med? (spontan fråga)

E APPENDIX - DESCRIPTION OF THE LCA METHOD

LCA is a method to describe how a products life cycle effects the environment. In LCA the definition of a product refers both to material products and services (Baumann & Tillman, 2008). The ISO 14044:2006: *Environmental management – Life cycle assessment – Principles and framework* describes the four main steps in a LCA, which are presented in figure 10 (International Organization for Standardization, 2006). The boxes are processes and the arrows shows in which order the steps are made, the arrows with dots are possible iterations.

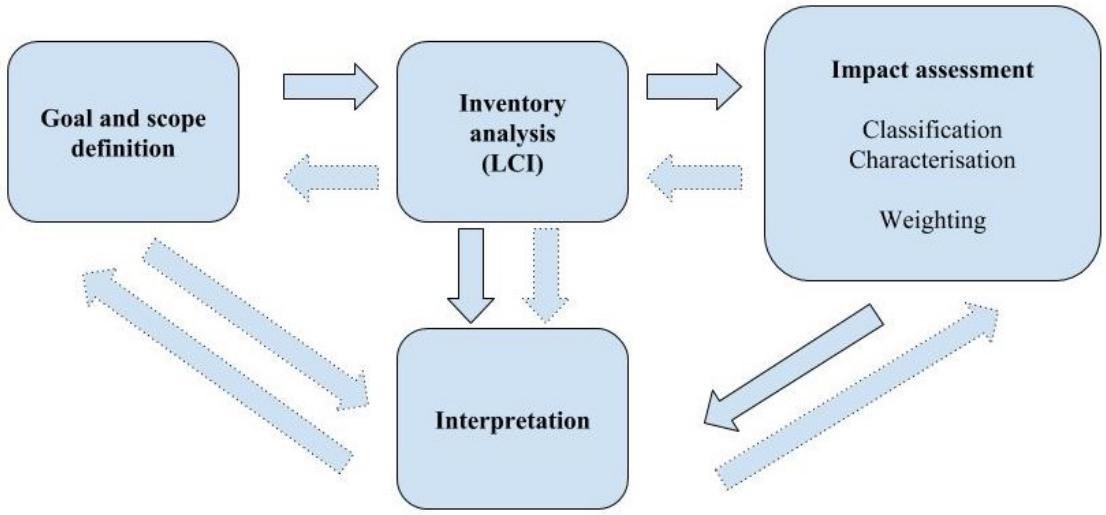

Figure 10: *The LCA procedure, self-made with inspiration from Baumann & Tillman (2008, 20).*

The goal and scope gives a introduction to the product, the intentions of the LCA and to whom the result will be presented for. This step also include modelling specifications such as the functional unit, system boundaries, environmental impacts being considered and level of detail of the study (Baumann & Tillman, 2008).

Functional unit are a definition of the product in quantitative terms, for example if the environmental impact from beverage packing is the goal for the LCA, then the functional unit can be litres of packaged drink. The system boundaries in a LCA are divided into four boundaries. A product can either be in human control also called the technical system or in the natural system. To define the boundaries in relation to the natural system is the first boundary to be set in a LCA. Next up is the geographical boundaries, a products life cycle can occur in many different countries, infrastructure, waste management and electricity can vary from country to country and sometimes even for regions.

Time horizon is the third boundary to set, this is extra important for long lived products. The last boundary to set includes capital goods, which are buildings, machinery, vehicles and other things that are used to produce the product in the LCA. For an Attributional LCA (ALCA) the goal is to make the LCA as complete as possible. For a Consequential LCA (CLCA), capital goods only need to be considered if they are affected by the change (Baumann & Tillman, 2008). The product in the LCA are connected to other products at different stages in the LCA and for some processes the product share the environmental load with other products. This is called the allocation problem and the three most common cases of allocation problem are multi-output, multi-input and open loop recycling. Multi-output are the results of a process that makes several products, multi-input is when a process contains of different inputs, and open loop recycling when material is recycled into a new product quality losses are happening (Baumann & Tillman, 2008).

Life cycle inventory analysis (LCI) starts with a construction of a flow chart that are based on the system boundaries. Then the data is collected according to the product system in the flow chart. During the data collecting the researcher gets a better understanding of the products life cycle and changes might have to be done in the goal and scope definition, hence the arrows with dots going in the other direction in figure 1. When the data have be collected for all of the steps included in the LCA calculation on the environmental loads related to the functional unit are made.

The data collected in the LCI are translated into environmental consequence in the life cycle impact assessment (LCIA). Mandatory steps in a LCIA according to the standard *ISO 14044:2006* (2006) are impact category definition, classification and characterisation (International Organization for Standardization, 2006). Impact categorise can first be divided in resources use, human health and ecological consequence and then into smaller subcategories such as resource use - water, human health - toxic gases, and ecological consequences - global warming (Baumann & Tillman, 2008) a LCA can contain different kind of impact categorise. Classification, the parameters collected from the LCI are divided into their impact category, one parameter can take place in more than one impact category. Characterisation is a calculation and addition all of the different impacts for example if global warming have been the reason for collecting data, then emissions of GHG have been calculated. The GHG effects the global warming on different levels and to summarize their total effect they are translated into CO_2eq through GWP. The characteristic factors are using data from this document.

The last step of the LCA interpretation are the phase when the result are presented in a simplified way and the evaluation of the robustness of conclusion are tested (Baumann & Tillman, 2008). To present the data in a simplified way can be to show the step with

highest emissions, make a diagram with the impact categorise Their are six different test to check the robustness of the result, completeness check, consistency check, uncertainty analysis, sensitivity analysis, variation analysis, and data quality assessment (Baumann & Tillman, 2008).

F APPENDIX - THE TRANSPORT PROCESS IN LCA

Maps over the travelled destinations for transport to warehouse storage, see figure 11 and transport from warehouse storage to physical store, see figure 12

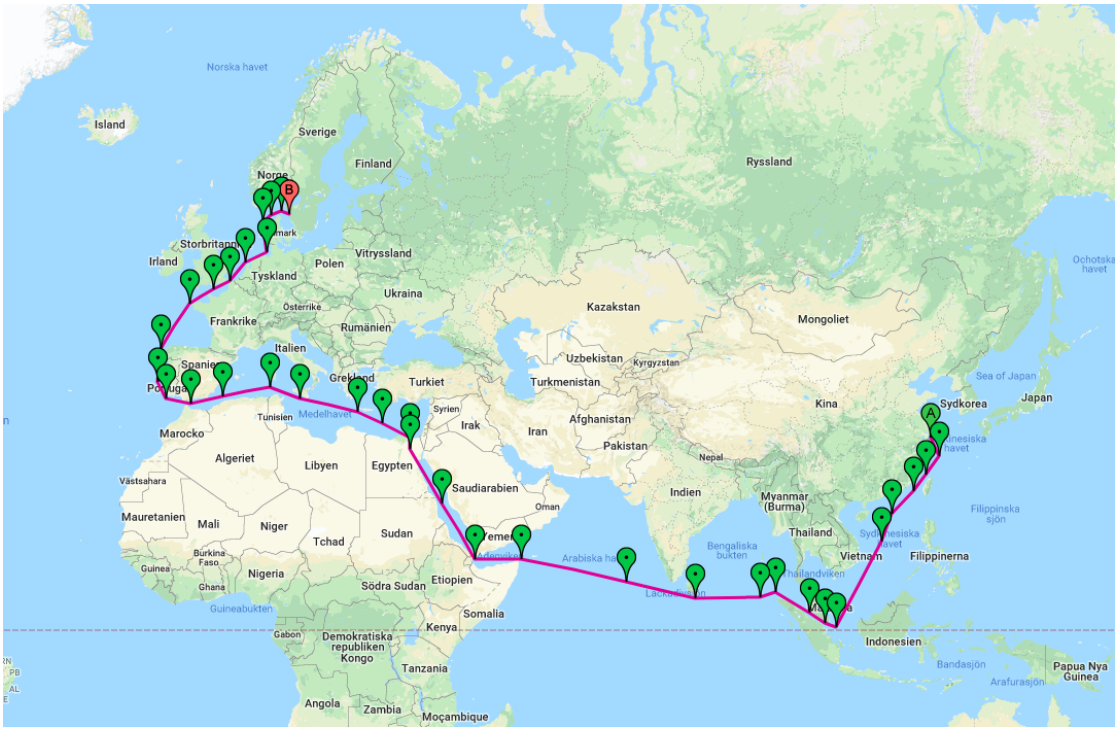

Figure 11: *Rout from Shanghai to Gothenburg with container ship*

The shipment from Shanghai to Gotenburg will include a container that will result as an extra weight on the vehicle. But the functional unit is 100 T-shirts á 200g per piece which will not fill up a whole container. To include also the weight of the container the T-shirts total volume was calculated, see equation 1,from Kappahl.se size guide for a medium sized T-shirt, where the length was 67cm, width 80cm and hight about one cm.

$$67 * 80 * 1 * 100 = 536000cm^3 = 0.536m^3 \tag{1}$$

A 20 feet container have a total volume of 33.1 m^3, and total weight is 2300kg (MCR, n.d.). Whit the answer from equation 1 the corresponding weight that the container contributes to for 100 T-shirts was calculated in equation 2 below.

$$\frac{0.536}{33.1} = 0.016 * 2300 = 37kg \tag{2}$$

In conclusion will the total input weight at NTMCalc Basic 4.0 for container ship from Shanghai to Gothenburg be as below:

$$TotalWeight = 100 * \frac{200}{1000} + 37 = 57kg \tag{3}$$

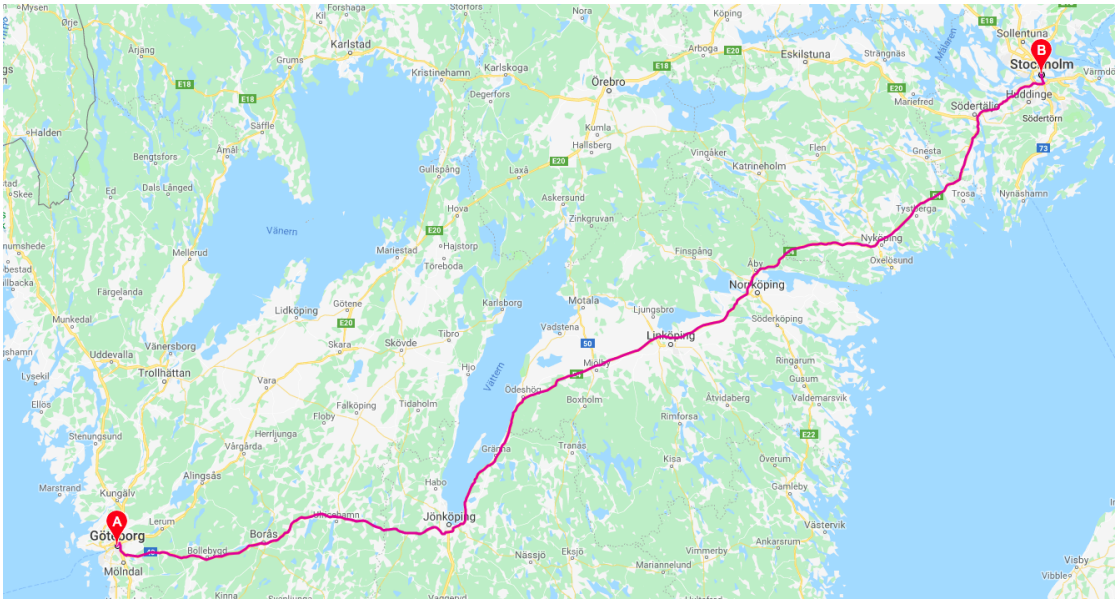

Figure 12: *Rout from Gothenburg to Stockholm with rigid truck < 7.5 t*