Master Degree Project in International Business and Trade

Environmental Sustainability in the Fashion Industry
"A company is no more sustainable than its supply chain"

Torbjörn Johansson and Hanna Månsson

ABSTRACT

Sustainable supply chain management has come to be vital, especially considering the importance of having a fully traceable supply chain, particularly regarding textile production in Asia. Current research has observed a lack of qualitative site studies, in order to acquire a more complete understanding of the interrelationships between strategy, risk management, and transparency throughout the supply chain. This study aims to observe and investigate the process of a Swedish fashion company's supply chain and its sourced production in China to find ways to integrate sustainability throughout the chain. This investigation is based on a field study, observations, and 19 interviews with people along the supply chain. Based on the current research we have found that trust, traceability, transparency and collaboration are the key factors to further integrate sustainability into the supply chain. The main outcomes of this study is that companies need to adopt an inclusive approach when dealing with actors in the most critical processes of the supply chain, and that it is necessary to increase monitoring of distant tiers and collaboration with the closer tiers.

Key words: sustainable supply chain management, environmental sustainability, fashion supply chain, internalisation/externalisation framework, China, Filippa K, intermediary

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Torbjörn Johansson   Hanna Månsson

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ABBREVATIONS

CSR   Corporate Social Responsibility

EMS   Environmental Management System

GSCM   Green Supply Chain Management

MNC   Multinational Corporation

PMS   Performance Management System

SCM   Supply Chain Management

SME   Small and Medium sized Enterprise

SSCM   Sustainable Supply Chain Management

TQM   Total Quality Management

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1. INTRODUCTION

In this chapter a background of the topic is presented, focusing on the current situation and problems of the fashion industry. Followed by a problem discussion, consequently, arriving in the purpose and the research question. Delimitations and an overview of our paper are also outlined in the end of this chapter.

1.1 Background

In the Western world it has lately been observed that it is rather difficult to be sure of the origin and the actual content of raw materials. One example is the so-called "horse meat scandal" where the communicated content differed from the actual content in sold products. The search for lower prices is pointed out as a main driver for the cheating (SR, 2013). A similar problem is facing the fashion industry where the search for lower production costs has led to a repositioning of production sites to developing countries such as India, Bangladesh and China. In 2010, China was the major exporter of textiles with a comparatively cheap labour force and less strict environmental and labour regulations (Koplin, 2005). Moreover, the fashion industry's environmental impact is very high, particularly in relation to its global volumes; it accounts for 4.4 per cent of worldwide exports (UNCTAD, 2012).

The relocation of production sites and prolonged supply chains has led to operations of fashion brands having become more and more complex. These global supply chains are creating substantial challenges for companies when considering the traceability of the origins of raw materials and the ability to have control over environmental and social impacts that arise at different stages in the life cycle. Simultaneously companies are often held accountable for environmental and social problems not only produced directly by themselves but also indirectly through their suppliers. This general responsibility can be harmful to the company in terms of social awareness, reputation and popularity (Koplin, 2005).

Further, the fashion industry is known for being an example of a sensitive business area associated with intensive use of natural resources and poor labour conditions, which makes sustainability action essential to the strategies of companies (Caniato, Caridi and Crippa, 2012). Cooperation among stakeholders and members of the supply chain as well as acceptable usage of natural and internal resources is becoming more important in an industry that faces high competition and a short life cycle (Chung and Wee, 2008). As well, it is known that the fashion production is an industry that has received high media attention with

regard to sustainability concerns. Examples of public scandals in the fashion industry are clothing brands such as Nike, Disney, Levi Strauss, Benetton, Adidas and C&A (Seuring and Müller, 2008). These have in the last few years been accused of difficulties with inhumane working conditions and local environmental contamination that happened during their clothing production. Occasions similar to this have enlarged those companies' interests in Green Supply Chain Management (GSCM) and Sustainable Supply Chain Management (SSCM) (Seuring and Müller, 2008). Hence, we will to large extent only concern ourselves with the environmental aspect of sustainability.

GSCM and SSCM are interesting when considering the fashion industry, but completing decent environmental performance in a global supply chain is challenging (Zhu, Sarkis and Lai, 2008). Even in cases when actors in the chain make an effort in being consistent, it is difficult to do this at an international level. For example, Faisal (2010) writes about the case of a Dutch shoe manufacturer, which experienced that an Indian supplier was reluctant to participate in environmental performance assessment. Another example is Peek & Cloppenburg, a fashion chain store, who could not go outside Europe, because agents and factory tailors did not want to offer information or to collaborate. Researchers have noticed regional discrepancies in regard to CSR (Corporate Social Responsibility) and sustainability between Asia and Europe. Nevertheless, it should be mentioned that some countries in Asia have started to work more actively towards sustainability, for example China (Carter and Mol, 2006).

Current trends point to the fact that sustainability is a trigger to reach environmentally aware consumers and to increase the general brand image in developed countries. Performance of apparel that goes beyond style, quality and price has been communicated by end-consumers to be of increased importance (Faisal, 2010). This sort of aware consumers display a new opening for fashion companies. Researchers have studied the prospect of "green fashion" to deliver a competitive advantage. For instance, an investigation on the approaches and beliefs of Finnish consumers towards sustainable textile and clothing merchandises in 2009 indicated that 62.7 per cent of the respondents were highly interested in ethical consumption and products' impact on the environment, while 28.3 per cent were somewhat interested (Niinimaki, 2009).

1.2 Problem discussion

Diverse activities have been executed in the fashion industry in order to manage environmental sustainability goals, both in terms of a single enterprise and the entire supply chain (de Brito, Carbone and Blanquart, 2008). The most significant ways are; usage of organic fibres, reuse and recycling of materials for instance old clothes, manufacturing scarps, bottles and tyres, vintage actions and second hand, clean technologies (Caniato et al., 2012), green certificates, and green products and process design, product characteristics, and the material used. Turning to the whole supply chain, traceability of goods is an essential action, especially for organic fibres, which need an on-going control of product and information sharing (Lakhal, Sidibe and Mida, 2008).

Sustainability should not only be considered during product design and manufacturing stages, but as well in supply chain strategy and management. In the fashion industry, sustainability requires the participation of several actors and their collaboration. Logistics processes can become more environmental sustainable through collaboration and partnership; green practices for logistics and transport include the optimisation of burdens, adoption of resource-sharing solutions and ''clean'' transport (de Brito et al., 2008). Therefore, to maximise the results of an environmental campaign, de Brito et al. (2008) underline the importance of involving a wide set of stakeholders: suppliers (fibres, machinery and chemicals), manufacturers (clothing and textiles), retailers and fashion departments, post-consumer actors (operating in the second-hand market), service providers (press and industry associations), and independent experts (scholars). Seuring (2008) suggests further research to attain a greater understanding of especially companies and their strategies in the field of SSCM. In order to attain greater insight of companies, one should do empirical or case studies of businesses, which have an intention to develop sustainability aspects that could be incorporated into supply chain management (Seuring, 2008). Carter and Rogers (2008) also recommend studies via full time, "on-site participation" and observation of a business and its supply chain to increase a comprehensive understanding of the opinions and drives of companies' commitment in SSCM. Further, supply chain scientists could use such an approach to study the supportive role of organisational culture in SSCM, along with the interrelationships between culture, strategy, risk management, and transparency (Carter and Rogers, 2008). UN Global Compact also shares this viewpoint, as they argue that this process is necessary for a successful mapping of the supply chain and is required to determine actions

towards sustainability. There are several levels of Supplier Control, identifying the impact on CSR and compliance (UN Global Compact, 2010).

Supply chains today are worldwide; multinational companies (MNCs) source from emerging countries and foreign firms interact close together with the local small-scale manufacturers but nevertheless, nearly all the debate about codes of conduct and sustainability standards is concentrated on the result of MNCs associated with their implementation at the corporate level, voluntary practices, and auditing procedures. The existing research emphasises that for sustainability initiatives to succeed there is a crucial need to highlight concerns like information sharing and collaborative relationships (Faisal, 2010). In Asia most of the manufacturing and service establishment is produced by small- and medium-sized enterprises (SMEs). Within the supply chains, larger corporations are often dependent on these SMEs for critical parts. Therefore, there are prospects for great opportunities to impact the operational practices and technologies of SMEs to integrate environmental and social initiatives (Seuring, 2008).

Further, current research has to large extent concentrated on the problem of whether it pays to be green or sustainable. Even though it could be of importance, it is believed that this question is starting to be irrelevant as it is gradually clear that companies are required to deal with environmental and social concerns (Pagell and Wu, 2009). As well, various authors have studied environmental initiatives within all of the different phases of the supply chain, focusing largely on only one functional part (Sarkis, 1999; 2006) and one finds that most studies suggests a different task or investment as the key to being sustainable. Some outstanding exceptions (for example Zhu et al., 2008), have focused on the whole supply chain, as it has been increasingly recognised that the critical step for incorporating sustainable principles within processes is the analysis of the interaction among environmental principles and supply chains (Linton et al., 2007). Nevertheless, the common research approach of studying a supply chain has been the fundamental statement that there exists a single, ideal way of evolving and handling sustainable initiatives in the supply chain area (Carbone and Moatti, 2011). Hence, in our case study we will focus on all functional parts of the supply chain.

1.3 Purpose and research question

In response to the above problem discussion we will cover the opening between strategic sustainability and traditional literature on supply chain management. The focus of our paper

will be on concrete initiatives along the supply chain, instead of beautifying actions such as corporate responsibility reports and media promotions, and consequently therefore reducing the current extensive green-washing approach. Thus, the overarching aim is to get knowledge on how a *complete* supply chain today function and cooperate among the actors by doing an in-depth study of the supply chain process of the Swedish fashion company Filippa K and their production in China.

Hence, we have created the following research question:

- *How can a fashion company more clearly integrate environmental sustainability throughout their supply chain process?*

By a more clear integration, we mean the establishment of a well-defined and more apparent strategies and actions to develop environmental measures. In order to answer this question, we are intending to create an understanding of existing literature and a framework for a sustainable supply chain. Further, to answer our research question we want to describe how and if Chinese companies try to integrate sustainable supply chain management in their value chain when cooperating with a Western larger company. Also, we must attain knowledge and information about the most critical processes in the supply chain, and how to deal with this using sustainable supply chain management. Further, we want to answer the question from a management and strategic perspective, focusing mainly on achieving a framework for opportunities and challenges, and what strategies should be used to effectively implement a more modern sustainability approach.

1.4 Delimitations

This study is industry-specific, focusing on the high fashion and apparel industry in one case process, more specifically a supply chain. The geographic scope is Sweden as a focal country with outsourced production in China being handled to a great extent by a Chinese agent.

We will throughout our paper predominately focus on environmental sustainability with no intention of directing the social or financial aspect of sustainable development. The reason behind focusing our paper on the environmental aspect is due to the scope of the study, we believe that we will attain higher quality by only looking at one aspect and we find the environmental aspect most relevant to this case.

Additionally, we do not intend to give any concrete solutions to the environmental problems in the textile supply chain, but only give a framework from which a company can more clearly address these issues.

1.5 Research outline

Theoretical Framework

This chapter outlines the literature used to build our conceptual framework. The theoretical framework starts by introducing basic definitions of sustainability, supply chain management and sustainable supply chain management followed by more concrete theory towards a more environmental sustainable fashion supply chain.

Methodology

This chapter presents the methodology used when constructing our case study. The chapter further explain the method of preparing, gathering and analysing our empirical findings.

Empirical Background

This chapter provides an empirical background of the textile and cotton industry and the environmental impacts of the processes connected to this industry.

Empirical Findings

In this chapter we present our empirical findings gathered from interviews, observations and physical material from both Sweden and China. The differences between managed and non-managed processes in the supply chain are presented.

Analysis

In this chapter we outline our analysis of our empirical findings and discuss our theoretical framework. We analyse our findings combined with theory and create an understanding in which we can answer our research question.

Conclusion

In this chapter we present the answer to our research question and emphasise on concrete methods for a more environmentally sustainable supply chain. We also give suggestions for further research in the area.

2. THEORERTICAL FRAMEWORK

In this chapter we outline the literature in the field of sustainable supply chain management. We start by introducing sustainability, supply chain management and sustainable supply chain management, followed by strategies and actions of companies towards a more sustainable supply chain. We end this chapter by introducing our own conceptual framework as a tool to analyse our empirical findings.

2.1 Sustainability

The most common and recognised definition of sustainability was constructed by the Brundtland Commission (World Commission on Environment and Development, 1987:8) and is as follows: "…sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their needs". This definition puts forward a main factor of sustainability: an attention to cross-generational impact (Kashmanian, Wells and Kennan, 2011) and refers to the fact that economic progress in the long term cannot be reached without taking the environment and society into consideration (WCED, 1987). Today, the term sustainability often refers to a combination of social, environmental, and economic responsibilities (Carter and Rogers, 2008) which should be considered in decision-making processes; however this definition lacks the core cross-generational characteristic of the Brundtland definition (Kashmanian et al., 2011). The broad definition of sustainability by Brundtland is often too complex for corporations to apply and delivers restricted assistance and directions on how companies could determine future versus present needs, decide the technologies and resources needed to meet those needs, and recognise how to efficiently balance organisational duties to various stakeholders (Carter and Rogers, 2008).

As a consequence of difficulties in incorporating too broad definitions of sustainability, more micro-definitions of sustainability have been implemented. Shrivastava (1995:955) for example, defines sustainability as contributing "…the potential for reducing long-term risks associated with resource depletion, fluctuations in energy costs, product liabilities, and pollution and waste management." Other scholars and non-governmental organisations (NGOs) have during the previous decade focused on constructing an updated version of the Brundtland definition more applicable to non-politicians (Tollin and Vej, 2012). A prominent contributor in this regard is the triple bottom line concept (TBL) (Elkington, 1998);

frameworks providing meanings to the economic, ecological and the social dimension, as well as what an integration of the dimensions imply (Baumgartner and Ebner, 2010).

2.2 Supply chain process and management

One of the most basic definitions of the supply chain is that it "…consists of all parties who are involved in fulfilling a customer request, including the suppliers, transporters, warehouses, retailers and customers themselves" (Cox, 1999: 168). Even though the supply chain process is as old as production itself, the term Supply Chain Management (SCM) was not coined until 1982. Since then, SCM has grown to become one of the most popular considerations to improve performance and competitiveness of organisations. In a literature review by Lambert and Cooper (2000), it is argued that the SCM theory has largely grown from the logistics management theory. SCM is however broadened to include the logistics outside the firm and in such a way also incorporating both suppliers and customers into the chain. Lambert and Cooper use the Global Supply Chain Forum's definition of SCM as: "…the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders" (Lambert and Cooper, 2000: 66-67). This broadened perspective of a supply chain can be explained by the figure below, where it is clear that to a large extent, a company's supply chain affects several external actors. The process of a supply chain extends far out from the focal company.
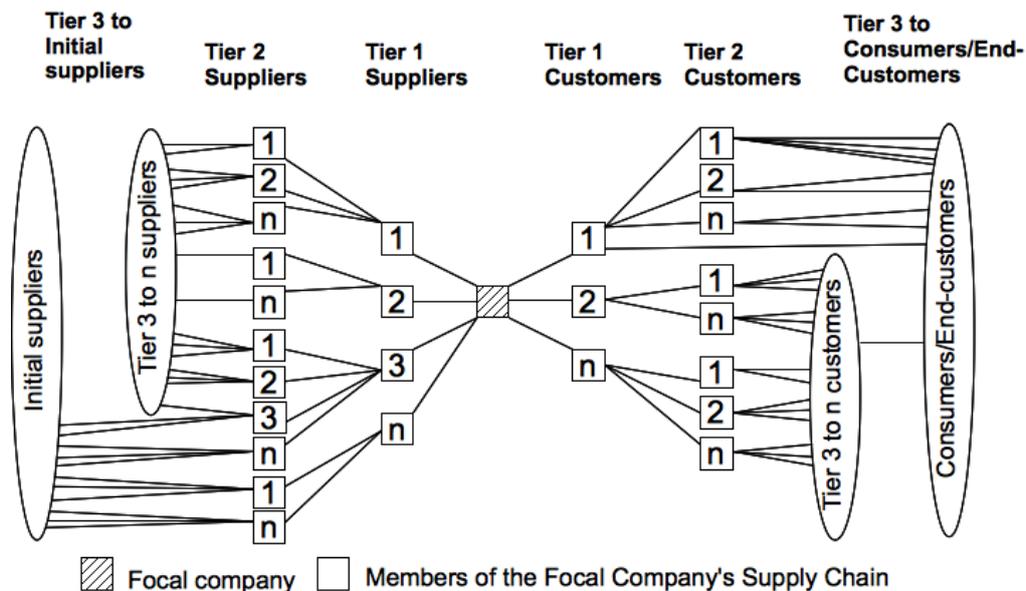

Figure 1. Supply chain network structure. Source: Lambert and Cooper (2000)

The figure tries to give an understanding to the complexity of a supply chain network. Depending on the level or tier that the supplier exists in, the further away they are from the

focal company, the harder it often is for the company to exercise management and control over the supplier (Lambert and Cooper, 2000). Normally, each tier has not only one but several suppliers at each tier, with the exact number sometimes being unclear (demonstrated by the *n* in the figure).

Considering this, it can be stated that all firms participate in a supply chain in some way, however some companies more than others. There are several factors to be considered when looking at a supply chain, including but not limited to; the complexity of the product, availability and quantity of suppliers and material, and the availability and quantity of customers (Lambert and Cooper, 2000). This would further indicate that the length of a supply chain could vary greatly depending on the company, and a specific company is often part of more than one supply chain (Arshinder and Deshmukh, 2008). The complexity of the network is not fully given by figure 1 above, as a more practical model of a supply chain network structure looks more like a bush or uprooted tree, where branches and roots intertwine making the structure less clear. The suppliers and the links between them often intertwine and go beyond the tier levels. This naturally creates problems for companies, as it can often be almost impossible to manage and control all points of the supply chain network for both suppliers and customers (Flynn, Huo and Zao, 2010). Weighing a supply chain point's importance against the company's capabilities to decide what parts to integrate is a key aspect of the supply chain management. To integrate all of the actors that the company, directly or indirectly, interacts with is considered to be counterproductive in most cases. Instead it is argued that the company should identify the key members of the network, and distinguish between primary and supporting members of the chain (Gunasekaran and Lai, 2008).

Consequently, there are several types of supply chain networks, where Lambert and Cooper (2000) mark out those of many tiers as having a more horizontal structure, compared to a vertical structure with a very wide network with many network members at each tier. Depending on the number of tiers of a supply chain network, companies decide to structure their management differently (Lambert, 2012). To further develop this reasoning, Lambert and Cooper (2000) identify four different types of business process links in the supply chain network, depending on the distance from the focal company and the level of control:

Managed process links: The most critical links for the focal company, the most important ones to manage and integrate. Generally all links with suppliers and customers in tier 1, but could be further down the supply chain also.

Monitored process links: Not as crucial to the focal company, but still important enough that these links are integrated and managed between other members of the supply chain. The focal company monitors and audits this process.

Non-managed process links: Links that the focal company is not involved in. They are not critical for the focal company, and they rely on the other members to manage these links.

Non-member process links: Links that the managers of the focal company are aware off, and that could have effects on the decisions made through their influence of the rest of the supply chain network.

To simplify this reasoning, one can define processes as fully ***managed links*** and ***non-managed links*** (including monitored, as these processes are not directly controlled). This simplified version (Lambert, 2012), defines that the company has direct control to influence and structure some parts of the supply chain, but not others. The managed processes are often closer to the company, and can be considered ***close tiers***, while the non-managed can be considered ***distant tiers***, both in terms of physical and mental distance. This theoretical classification assumes that the focal company is rational when it comes to what supply chain processes to manage, and what processes not to manage. However, there is evidence that companies either act irrationally or have other competing interests (i.e. short-term financial gains), and thus limit their involvement in processes that could be crucial for them both in regard to production and quality, and risk issues. There is also theory indicating a shift of the competitive nature in business studies, from individual organisation competition to a more whole-sided view of supply chains competing amongst each other (Bai, Sarkis and Wei, 2012).

2.3 Sustainable supply chain management

SSCM is a concept that derives from the previously mentioned conceptions sustainability and supply chain management and, consequently, regards how companies' strategic and operative parts of the supply chain can become more sustainable. The theory regarding sustainable supply chain management (SSCM) is relatively young and hence there is no general definition so far. Carter and Rogers (2008:368) define SSCM as "…the strategic, transparent integration and achievement of an organisation's social, environmental, and economic goals in the

systemic coordination of key interorganisational business processes for improving the long-term economic performance of the individual company and its supply chains" (see figure 2) (Carter and Rogers, 2008). Another definition of SSCM is constructed by Seuring and Müller (2008:1700) and follows "…the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements".
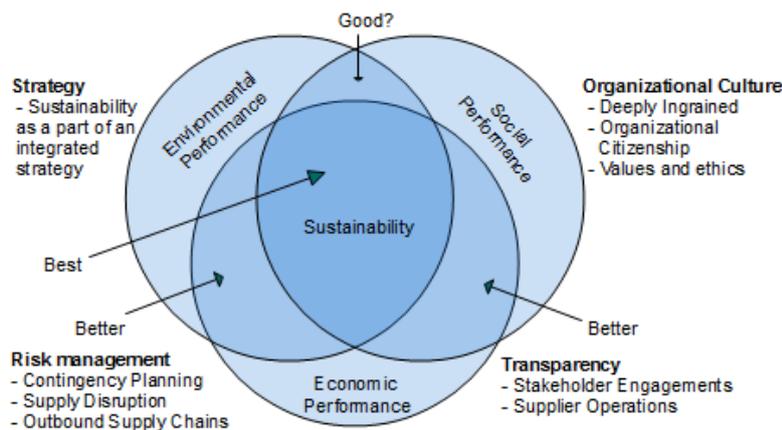
Figure 2. Sustainable Supply Chain Management. Source: Carter and Rogers (2008)

Genuine sustainability arises at the intersection of all three area; environmental, social, and economic, and embraces several activities (activities in the aggregate) where an organisation clearly and systematically combines social, environmental, and economic objectives in developing strategic vision and long term strategic intentions.

The environmental and social features of sustainability can extend outside an organisation's framework to take account of supply chain activities. When attached with economic objectives to develop a clear, long-term strategy, the presence of supply chain management activities in a firm's sustainability can in fact generate a longer durable and less imitable set of processes (Carter and Rogers, 2008). An organisation's sustainability engagements and its corporate strategy should be thoroughly linked, instead of separate programs that are handled independently persons (Shrivastava, 1995). Organisations should clearly link environmental, social, and economic objectives within a wider strategic perspective to make sure that environmental and social engagements take place at the intersection of the triple bottom line mentioned above (Carter and Rogers, 2008). Therefore, a supply chain is required to develop right strategies to effectively incorporate the sustainable practices across the supply chain to provide the competitive advantage in the marketplace (Faisal, 2010). Further, in order to have

sustainable supply chains there is need for attentiveness regarding sustainable processes such as ethical sourcing, green and environmental friendly purchasing, and logistics social responsibility (Faisal, 2010).

2.4 Strategies and actions towards a sustainable supply chain

Inter-organisational cooperation, internal and external supply chain integration and enhanced information sharing have been reflected as the main requirements for an effective green supply chain strategy (de Brito et al., 2008; Vachon and Klassen, 2008; Seuring, 2008). Nevertheless, implementation of sustainable practices in supply chains is concerned with various challenges. In supply chains where problems such as price competition and responsiveness are of key significance, the implementation of sustainable practices is a discouraging undertaking. For instance, outsourcing strategies make it more challenging to have control on the working conditions in the offshore production sites, especially in developing economies, smaller size of deliveries originating from shorter delivery times might increase number of shipments, consequently raising its environmental impact. This proposes that sustainability initiatives should be analysed in line with an integrated approach, which would deliberate the trade-off between the environmental, social, and economic dimensions (Faisal, 2010).

In addition to increased customer service and cost optimisation, the effective management of both the internal organisation of each company and the external organisation of the entire supply chain has an impact on supply chain performance. Well-performing companies are those who successfully manage *internal* and *external* relationships (among functions and organisations), through enhanced coordination (de Brito et al., 2008; Rao and Holt, 2005). This will be further discussed in the following sections.

2.4.1 Top management involvement

Institutional theory has been broadly used in organisation literature and especially in the field of sustainability, but supply chain management and decisions have seldom been analysed. However, it has been argued that the institutional perspective is important for a more comprehensive understanding of the grounds and impact of organisational behaviour within supply chain systems (Carbone and Moatti, 2011). In accordance with the institutional theory (Di Maggio and Powell, 1983) companies have a tendency to assume the same actions as the companies they have inter-organisational ties with. Consequently, supply chain management initiatives should initial turn to the direct partners before moving to other companies that are,

sequentially, connected to the previous. Thus, the supply chain performs as a catalyst for the dispersion of invention. Specially, green supply chain initiatives and activities can be analysed as an organisational change (Carbone and Moatti, 2011).

Carbone and Moatti (2011) found that it is of importance for managers to (1) recognise institutional pressures and their mechanisms of influence at the sector, supply chain and separate firm levels, (2) tactically succeed the institutional environment to efficiently outline the green orientation of their supply chain and (3) formulate strategies to reflect and move further than the regulatory environmental framework. When recognised as significant, one needs to create knowledge of the impact of institutional pressures and on managerial ability to grasp the experiences and effects of the several isomorphic processes. However, managers could without problem recognise clear environmental regulations, but may oversee the consequences of the institutional environment when having other companies' activities in mind. In cases where managers fail to classify critical institutional pressures, they could be affected adversely by them. This could for instance be losing the chance to green their supply chain whereas their main competitors are doing so. This is especially critical in a market environment which is gradually alert to the ecological stimulus (Carbone and Moatti, 2011).

After identifying strategies and processes, managers must incorporate sustainability goals, practices and awareness into daily supply chain management, in order to build a sustainable chain. Responsibility for sustainability should not be restricted to an isolated unit in the organisation; it should be included in everyone's job, beginning with top management. Also, there are indications that a proactive attitude needs to be supported with a tangible commitment to sustainability, frequently as an engraved environmental policy (Pagell and Wu, 2009). Further, looking at top management commitment is important during design of products and processes. Redesigning processes to decrease pollution has been connected to improved plant performance. These performance paybacks will largely increase to those companies that have the capability to innovate. Yet, there is evidence that the majority of designers do not reflect sustainability when designing due to incentive structures. Therefore, there is need for proactive top management that knows that sustainability is an organisational obligation. Redesigning products and/or processes can only happen if all employees comprising the designers are suitably encouraged and rewarded (Pagell and Wu, 2009).

Further, it is assumed that good directors form reward systems that connect desired behaviours to outcomes of employees' value. The sustainability literature has come to similar

conclusion at two levels of analysis. At the company level there is proof that connecting sustainability goals and measures to business strategy supports incorporation of sustainability into what the organisation does. At the individual level personnel must be educated in sustainability, and then given encouragements to follow through. These linkages offer employees the motivations to follow sustainability goals beside the more traditional goals such as quality developments. When lacking these incentives, personnel are expected to carry on following only traditional goals (Pagell and Wu, 2009).

2.4.2 Performance management

A study from the British Sigma project (Charter, 2001) tried to identify the key drivers for sustainable supply chains in a number of British companies, and consequently also identifying the tools that these companies used to measure and improve sustainability. This particular study helped to inspire the European Commissions Inditex, part of bestLog. The Inditex Pro-Kyoto Project (European Commission, 2009) analysed several European companies out of a sustainable supply chain perspective, and the results were similar to that of the Sigma project. Both reports conclude that there is a need for a variety of tools needed, that company should build a strong portfolio of strategic, tactical and operational methods that are focused on the specific organisation, combining both the "hard" performance measurement with the "soft", i.e. partnerships and networking collaborations. This reasoning has strong support in theory (Young and Kielkiewicz-Young, 2001; Sarkis, Zhu and Lai, 2007; Bai et al., 2012). Some of the key measures that have been identified by these studies are the following:

Communicating corporate policy: The corporate policy and the corporate values, especially in relation to sustainability, must be clearly understood throughout the supply chain.

Pre-qualification criteria: The suppliers must qualify based on a list of minimum demands relating to sustainability before any agreement can take place.

Purchasing specifications: The purchasing department should have specifications on what they should consider before doing any new deals.

Internal training: All departments of a company should receive training to develop their understanding for sustainability and environmental issues.

Supplier alliances/partnerships: Companies should strive to make alliances, to further develop their sustainability work within the whole supply chain.

Contractual measures: The contracts signed with suppliers should include specifications on sustainability to either fine companies or annul contracts that break company values.

Cross-functional teams: A company should develop teams working on sustainability across the different functions and departments.

Working with organisational peers: A company could work with other companies, rivals or not, to put pressure on governments, institutions, suppliers, or work with internal issues together, to further develop their sustainability work.

However, looking at the overall performance of these measures, we see that the results are somewhat disappointing. The practices of companies are often varied and arbitrary, and especially in larger companies they are implemented as "island solutions" by individual business units. Possibly most alarming is that many of the practices might only seem sustainable at first glance, but when analysing the full supply chain they are not (Darnall, Jolley and Handfield, 2008; Seuring, 2008). Cetinkaya (2011) identifies the main reason for this complex problem is the lack of a clearly aligned strategy across all members of the supply chain. The figure below shows the need and structure of a strategy that goes beyond the corporate borders.
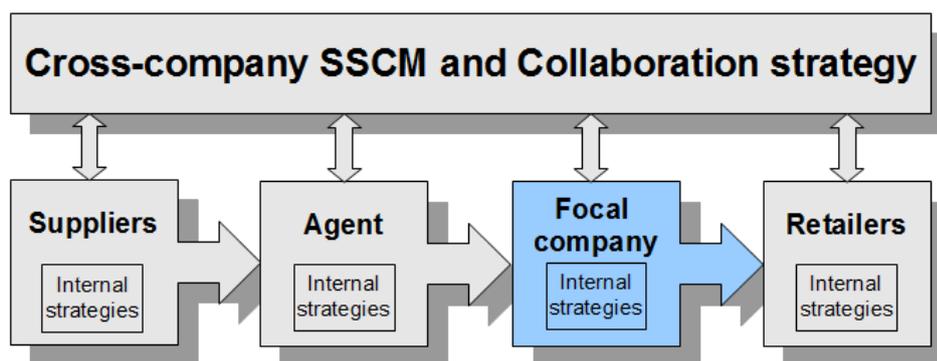
Figure 3. Cross-company strategy. Source: Authors own in accordance with Cetinkaya (2011)

However, it is clear that a cross-company sustainability strategy is not by itself enough to create better sustainability and environmental performance in a supply chain. The need for a performance management system (PMS) or total quality management (TQM) has been proved to be elemental aspects to provide good SCM in a company (Gunasekaran, Patel and McGaughey, 2004; Bai et al., 2012). This is also true when a company tries to implement better performance in regard to environment and sustainability factors as discussed by Bai et al. (2012). It is argued that there is a need for making more of a business argument to achieve good sustainability in the supply chain, and that this should be done by implementing more metrics and measurement systems. One of the most frequent ways of doing this is through the ISO 14001 standard environmental management system (EMS) (Peglau, 2005) and studies

imply that mandating such systems have a positive impact in improving a company's internal environmental policies (Darnall, 2006). However, voices are questioning if the implementation of such EMS is really challenging the suppliers to improve their environmental performance throughout the supply chain or if it is simply a way to document and verify the current intra-company environmental performance (Darnall et al., 2008). According to studies, it is also shown that EMS adopters often develop a culture that pushes the organisation to achieve higher efficiency in their environmental performance. However, since EMS are unlikely to involve third parties (or in this case second and third tier suppliers), the implementation of EMS in the absence of a clear SSCM strategy, environmental benefits are prone to diminish. This is because all tiers in the organisation's supply chain do not necessarily share the environmental goals and strategy, and to reach true sustainability is therefore impossible without implementing environmental practices and strategies throughout the chain. That demands are put forward on first tier suppliers does not mean that the same demands are automatically put on second tier suppliers (Darnall et al., 2008).

2.4.3 Monitoring and collaboration

Studies in supply chain management are more and more grounded on a network view, both upstream and downstream, of constructing combined advantage, instead of merely competitive advantage (Chen and Paulraj, 2004; Seuring, Gold and Beske, 2010). Actions can be accomplished via markets (externalising) or by integrating those same actions into the current organisational hierarchy (internalising). When turning to environmental concerns, an organisation can reach environmental management in the supply chain using the internalisation/externalisation framework either through; internalising actions in the supply chain concerning the environment; or using market-based tools, without substantial commitment of its own resources in order to increase environmental performance outside its processes (Vachon and Klassen, 2006). An organisation can perform both internalisation and externalisation for environmental progress (Vachon and Klassen, 2006).

Based on the internalisation/externalisation framework it is possible to express two green practices of collaboration; shared problem-solving and inspection and risk minimisation, more specifically, named environmental collaboration and environmental monitoring (Vachon and Klassen, 2006).

Environmental monitoring is connected to the externalisation element of the internalisation/externalisation framework and focuses on the result of environmental efforts

made by the suppliers such as attainment of certification for example ISO 14001, being in compliance with certain regulations, or having the accurate environment documentation in place. Environmental monitoring is linked to actions of collecting and processing supplier information via publicly environmental archives, surveys, and audits performed by a third party or the buyer themselves. Lately, supplier analysis has increased in popularity as companies have been more concerned with the environmental as well as social performs of upstream suppliers. One example mentioned briefly earlier, was that Nike was some years ago connected with child labour actions in developing countries due to its supplier. As an outcome of happenings like this, companies had become more careful, for example, certain chemical producers have gradually implemented product principles to guarantee the accurate handling of their products by downstream organisations. As well, US buying companies have been linked with increased usage of green purchasing practices due to the risk of non-compliance with rules and liabilities in the supply chain (Vachon and Klassen, 2006).

In opposition to the internalisation dimension, environmental collaboration requires the buying organisation to offer detailed resources to improve cooperative actions to address environmental problems in the supply chain. This could result in capturing the added value that can occur from combined collaboration among the participants of a same supply chain to decrease environmental impact. One example is the chemical industry, where a supplier of chemicals is collaboratively working with customers to decrease their use of chemicals (Vachon and Klassen, 2006). Collaborative organisational engagements, such as collaborating with suppliers to reduce product and process environmental burdens, are useful for decreasing unnecessary wastes and inefficiencies in actions through supply chains (Seuring and Müller, 2008; Seuring et al., 2010).

Collaborative activities consist of shared planning gatherings concerning the environment, knowledge sharing activities working for greener product design or process adjustment, and reducing waste in the logistics process. Environmental collaboration focuses more on the process by which more environmentally-sound processes or product could be accomplished and not as much on the direct outcome of the suppliers' environmental efforts (for example obedience to current regulations) as does environmental monitoring (Vachon and Klassen, 2006).

As each focal plant performs as a buying organisation to its suppliers and as well as a supplier to its customers; environmental collaboration and environmental monitoring practices can

occur simultaneously upstream with the suppliers as well as downstream with the customers. Additionally, environmental collaboration and environmental monitoring are hypothesised as being diverse, yet associated dimensions. Consequently, a firm can be high on collaboration, yet might be either high or low on monitoring or the opposite (Vachon and Klassen, 2006).

2.4.4 Trust, transparency and traceability

In order for collaboration between the focal company and the suppliers trust if often necessary among the actors. Trust is an essential relationship advantage that confirms that one relationship partner will perform in the best concern of the other partner (Wilson, 1995). Trust between the focal company and their supplier is stated as an example of inter-organisational resource by Skjoett-Larsen (1999). Trust is normally developed over time and ascribed as particular relationships and therefore, trust cannot be easily duplicated by competitors and can consequently be regarded as a competitive advantage. Capabilities and resources are problematic to mimic and are often an outcome of multifaceted social collaboration and not observable for external actors outside the organisation (Skjoett-Larsen, 1999).

To build sustainable competitive advantage it is, as mentioned earlier, identified that long-term and highly collaborative ways of working, which are normally based on trust and transparency, have to be generated among all actors in the supply chain, discussed to as partnering or alliancing (Cox, Chicksand and Palmer, 2007).

Further, traceability is an internal practice of sharing information among supply chain members concerning materials and methods (for example toxins usage and use of child labour) to improve noneconomic chain performance and reduce risks. Representative traceability activities comprise demanding information on all materials used in a supplier's product (including those the supplier bought) to guarantee that all inputs follow the buying firm's standards and/or requiring that suppliers make available evidence that working conditions are acceptable (Pagell and Wu, 2009).

Transparency is an activity where organisations in fact are demanding information on the flow of money through their complete chain. The main difference between traceability and transparency is that with transparency the buying company is demanding to know the profitability of every supplier in the chain, with the clear goal of certifying that chain members at origins made sufficient of a profit to do more than just survive. Traceability is then concerned with how things are made while transparency is concerned with profits across

the entire chain (Pagell and Wu, 2009). Information sharing through the whole chain has been associated with improved overall chain performance (Pagell and Wu, 2009).

2.5 Reconceptualise the chain – our conceptual framework

The concept of sustainable development has progressed to a new level, from its environmental and CSR origins of the last decade to embrace the "triple bottom line" where it come to be an important part of business strategy, bringing in business profits and of sustainability itself, not only as part of cost declines for the bottom line. In a time where outsourcing is the standard, all large corporations need to discover methods to make sure they understand and are able to influence sustainability into their supply chains. The nature of branded merchandises guarantees that they are high in the public awareness and many stakeholders continue to hold branded merchandises corporations accountable for issues concerning the production of the raw materials and goods that go into their products, whether or not they themselves own or directly control the manufacturing processes (Faisal, 2010).

Krause, Vachon and Klassen (2009:18), writes that a company "…is no more sustainable than its supply chain". This is for us an important statement impossible to replicate and covers a strong strategic emphasis on environmental issues as an integral part of the work in SSCM for the focal company. Strategic measures cannot be limited to the focal company, strategic management need the inclusion of all levels of suppliers for the effects to be truly sustainable. Strategy should include measures of control and monitoring throughout the supply chain, but should also embrace the values and moral beliefs of sustainability to make sure these are shared by all members of the supply chain. This is of great importance to both develop a high level of trust in the supply chain, and also to maximise the effect of SSCM implementation. Sustainable strategies should always be inclusive and not exclusive, and they should be developed together by all members of the supply chain. Nevertheless, arising from the institutional literature, companies should as an initial step turn to companies they have direct contact with before affecting other companies, linked to the former.

Arising from literature, the differences in the supply chain connections can be defined as either *managed supply chain processes* or *non-managed supply chain processes* (including monitored), when looking at the sustainability perspective. This classification is depending on what level of integration, monitoring, controlling, and transparency that exist between supplier and focal company. We believe that the difference between these two groups is significant for the study of sustainability and environmental concepts in the supply chain. This

is due to the fact that classifications are largely based on the same characteristics that are needed for a company to increase the implementation of sustainable practices in their supply chain management. It is however worth mentioning that, simply because a supply chain process is hard to trace and less integrated into the focal company does not necessarily mean that it is unsustainable.

The sustainability effect over these process links can then by understood through the different aspects affecting sustainability in the supply chain. Our study will focus on some of the key concepts presented in the literature review. The main notions that we will base our empirical data on are namely:

1) The current integration and implementation of environmental concerns in focal company
2) The trust, transparency, and traceability among suppliers and focal company
3) Collaboration and monitoring along the supply chain

In addition, the definitions of SSCM mentioned in the beginning of the chapter put forward important points of SSCM including foremost transparency and cooperation within the supply chain. In order for a thorough analysis of our empirical data we have, hence, developed our own definition of SSCM: *managing a fully traceable supply chain performing proactive cooperation among both managed and non-managed actors focusing on sustainable processes; integration, collaboration, monitoring and trust, throughout the entire supply chain.*

The definition raises fundamental focus concerns when working in a complex supply chain with numerous participants. A fully traceable supply chain directs at being able and/or having an aim to trace each and every component and actor within the supply chain. Performing proactive cooperation signifies cooperation that at initial basis is conducted by means of a willingness and eager to improve sustainability work, hence not grounded on a green washing approach. Further, proactive stands for continuous improvements, work and involvements in changes and hence, not taking a reactive position towards a more sustainable supply chain. Managed and non-managed actors concerns concepts discussed in theory, and consists of actors that could be both easily identified and harder to spot. Sustainable processes are focused on the environmental aspect of sustainability. Integration and collaboration focuses on incorporating cross-company strategies and methods of working with sustainability among actors in managed processes, whereas monitoring is related to attaining information of the

non-managed processes. Trust signifies relationships among the actors in the supply chain, which would indicate that higher trust increases the possibility to trace actors along the chain.

Additionally, our definition aims at delivering objectives for corporations to focus their agenda and prioritising actions on.

Further, based on our definition we have, by applying a sustainable strategy of the focal company to its stakeholders, formed an analytical tool to evaluate our empirical data.
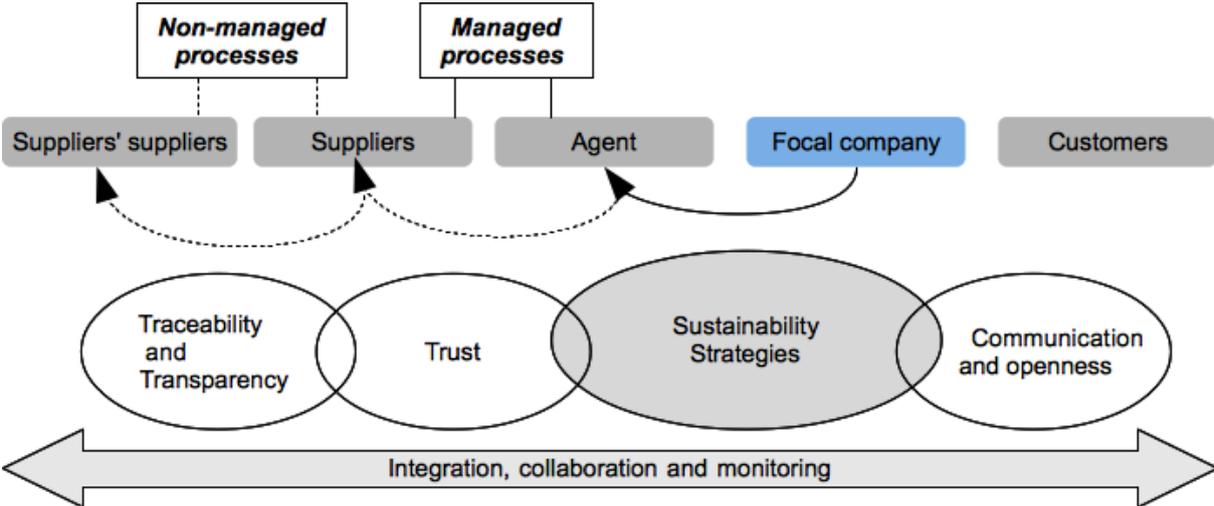
Figure 4. Our SSCM framework. Source: Own conceptualisation.

Looking at the figure, managed processes include an agent or suppliers in which the focal company has direct communication and also suppliers in cases where communication between focal company and supplier could occur if needed even though an agent is present. Managed processes are the ones that the focal company can influence and control based on their communication and involvement. Non-managed processes are suppliers that the focal have no or minimum communication with or are even not aware of. The figure aims at explaining that the focal company ought to integrate its sustainability strategies throughout its supply chain, in the first step through its agent if working with one, the next step it is the agent that provides the information further to the suppliers. However, due to different interpretation, some information will be reduced in the following steps. Therefore, it is of great importance working with integration and collaboration in order to build trust, traceability and transparency to have a sustainable supply chain. Further, monitoring could act as an instrument to reach the non-managed processes. Communication and openness is important when looking at customers and their knowledge of the focal company, but this is also vital when analysing the customers' relation to the company.

3. METHODOLOGY

This chapter contains an overview of our research method. It explains in detail the structure of our empirical gathering and how we assured credibility and validity throughout our study.

3.1 Research approach

This study focuses on sustainability in the supply chain, a subject that is relatively new and widely debated in current literature. Although it is a subject broadly researched in current literature, there is a distinct lack of hands-on studies into specific supply chains. Most of the research today instead has a more general approach, looking at overall policies and measures in the area. We therefore intend to make this study more hands-on, using a qualitative case-study approach. The purpose of a qualitative study is to describe an observed reality and provide findings and results based on a contextual angle (Merriam, 1998). Our case study is not focused on one of the companies of the supply chain, but rather on the process itself. Case studies are often appropriate when addressing questions such as "how" or "why", and when the goal of the study is to answer this through a real-life context (Piekkari and Welch, 2004).

Further, we adopted an open approach to the question, performing both deductive and inductive reasoning. As we created a conceptual framework based on a literature review we attained a pre-understanding of the question, which we used when conducting the field study (Bryman and Bell, 2011). This conceptualisation was then matched against the more profound understanding accomplished through the qualitative field study. By then again returning to our literature framework, our approach is abductive (Ghauri, 2004). Our abductive approach is exemplified in the figure below.
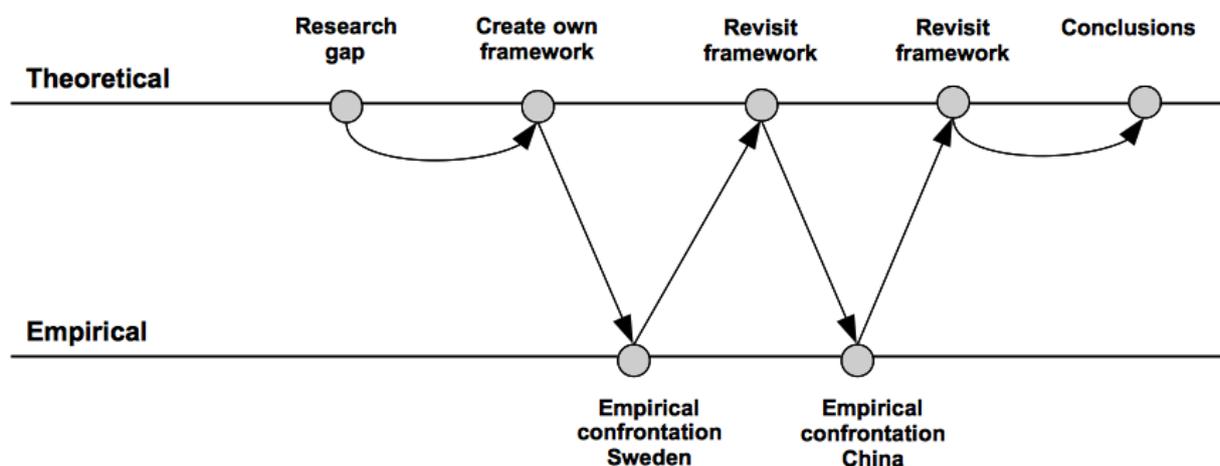

Figure 5. The abductive model. Source: Created with own reasoning using thesis seminar 30th January 2013.

This abductive approach also follows in line with the hermeneutical reasoning behind case studies; an approach that argues that hermeneutics or even double-hermeneutics is necessary when studying in a real-life international business context (Lervik, 2011; Piekkari and Welch, 2004). By using an abductive approach as presented in the model above, the researcher is urged not only to base their theory in the empirical data, but continuously and simultaneously to use questions arising from these findings to confront the original theoretical ideas and perspectives (Andersen et al, 2011). As we re-visited "the reality" several times throughout our thesis, this notion is very valid. The research design for this thesis has been based on the expertise of several authors on methodology for qualitative research, both in the general field and specifically for international business. Consequently, we have been able to build a research design that is well-aligned with both the purpose and the delimitations of this study.

3.2 Research design

As the theoretical field of sustainable supply chain management still is young, there is a lack of concrete research adopting a clear qualitative approach (Seuring, 2008), and hence this focus would be more interesting (Merriam, 1998). There is also a scarcity of longitudinal research in international business, where statistics show an underrepresentation of process-oriented articles (Blazejewski, 2011). International business research methodology often overlooks the longitudinal, process-oriented case studies, much due to problems arising with both time and validity (Ghauri, 2004). Since the process-focused research focusing on implementation in a diverse national setting often is largely temporal in nature, this creates several problems for the researcher and this leads to a need for a case study approach rather than a quantitative approach (Blazejewski, 2011). Merriam (1998) also stresses the need for thorough preparation and understanding of a topic before data collection, this is especially true when using an abductive approach. Thus, we have created a theoretical frame for forming our pre-understanding of the topic that then has played an active role throughout our research process (Andersen, Paul and Kragh, 2011).

3.2.1 Research unit and sample

To fully understand the supply chain of a fashion company, we early realised the need to use an isolated case where we could get in-depth knowledge of all aspects. Consequently, we decided to limit our research unit to one *process*, namely the defined supply chain of a fashion company. We argue that this is the most efficient way to answer our research question. The use of a single case study is considered to be the most effective when looking at a process with limited resources and time (Lervik, 2011). Further, we have decided to limit our research

unit to the part of the supply chain that can be considered to be of most relevance to our study, namely the part that is linked to Asia and undertaken by a local agent. This limitation is chosen to achieve the highest potential in terms of qualitative empirical findings (Lervik, 2011).

To achieve this, we identified several suitable companies that could be a good match with our goals in terms of their production, their brand, and their current focus on sustainability and environmental issues. These companies were contacted either through telephone or e-mail. Based on how well their answers matched our idea we chose the company – the well-known Swedish fashion brand Filippa K. Filippa K had, at the time we contacted them, just started to work with environmental sustainability strongly connected to our approach and were therefore willing to cooperate fully with us.

3.2.2 Data collection method

The empirical data has been collected through several sources. The data collection is largely based on – but not limited to – the findings of a field study conducted abroad, where we have had the chance to follow the early stages of the supply chain. Data was collected through interviews and observations. We gathered data from plentiful formal interviews with key people in the supply chain, more specifically 15 respondents. Further, we have also undertaken uncountable informal interviews in the business setting to get a deeper understanding of what elements affect business decisions. The interviews – both formal and informal – have been conducted both in China and in Sweden, with managers and other people involved within the focal company, the local agent, the freight-forwarders, and other types of suppliers. Finally, we had the opportunity to make several visits to facilities and factories in the spinning, weaving, dyeing, washing, finishing, sewing, and warehousing process to further investigate and understand the notion of, and the problems relating to, sustainability in the fashion industry. This field study further leads to the phenomena of "snowball sampling", as we were able to get further contacts, insights, and interviews along the way (Merriam, 1998). In our process of data collection in China, we encountered a situation where people wanted to be anonymous. We have used this material, but in the references these people have been kept anonymous. See appendix 1 for more detail on the separate interviews. To further complement the findings of our field study, we have consulted official reports and documents that we have found to be meaningful, such as social and annual reports, partner codes, strategy documents and the similar.

3.2.3 Interview protocol and interview process

We have chosen to have a wide array of interviews to get a whole-sided perception of the supply chain. Thus, we have decided to interview a majority of actors that can affect our chosen supply chain. Certain people have been interviewed several times to erase the risk for misunderstandings. To further minimise the risk for memory loss or misunderstandings, the interviews have been recorded and transcribed.

The interviews have been conducted in a semi-structured manner, using a question protocol, but constantly trying to get an open discussion on the issues. This decision was because we wanted to give the interviewee the opportunity to give us information that we would otherwise not come across, but at the same time keep the interview clear, organised and efficient (Cannice and Daniels, 2004).

The interviews have been conducted in several languages, and there are both advantages and disadvantages with this (Piekkari and Reis, 2004). Our reasoning was that the interviews should be conducted in a way to facilitate the communication, using the language that the respondent felt most comfortable with. During all of the interviews both authors were present. In total we held 19 interviews with 15 respondents. We got the opportunity to do follow-up interviews with both the focal company and the local agent, which indeed was helpful for our total understanding of the entire supply chain. We conducted 7 interviews in Swedish. The interviews in China were conducted both in English and in Chinese. During the Chinese interviews we used an interpreter. See appendix 1 for details about each interview. One interview was conducted over Skype as the relevant person at the freight forwarder company for our study was located in Amsterdam, all other interviews were conducted face-to-face.

To make sure that the answers that we received during the interviews would be aligned with theory, we created interview protocols that are based on the theoretical framework (Cannice and Daniels, 2004). These protocols can be found in appendix (3 and 4). To further emphasise the validity of the interviews, we specified a list of the people that we wanted to interview before any field study was made. In this process we identified whom the key actors were, to make sure that we had the opportunity to discuss with them. This does not mean that we limited ourselves only to these people, but we tried to get a broad base on our interviewees.

3.2.4 Empirical gathering and validity

In qualitative research it is important to consider validity throughout the process. Andersen and Skaates (2004) discuss the fact that there is not only one approach of validating

qualitative research findings. The use of various data sources and methods of data collecting, such as conducting both interviews and observations, are put forward as ways of increasing qualitative validity. Throughout our work we have taken initiatives to raise the validity of our study. We have interviewed more than one person at the majority of the companies and we have also held follow-up interviews with several persons in order to clarify questions that appeared during the process in order to increase the correctness of the information we attained. Further, we have apart from interviews done several observations in factories and workplaces of the companies to get hold of accurate and comprehensive knowledge of the supply chain of Filippa K.

Nevertheless, there is always an issue of uncertainty related to what the respondent is prepared to talk about, especially with regards to differences in cultural and institutional contexts (Andersen and Skaates, 2004; Piekkari and Reis, 2004). Before our trip to China we were several times told about the cultural differences and the fact that we could face difficulties during interviews; that the respondent would be reluctant to answer our question or come up with beautifying answers. As we had been informed about this issue and also prepared for it we believe that we handled the issue in such a way that we got an accurate picture of our interviewed companies. During some of the interviews we were certain that we were given beautifying answers and at those times we have not included such information in our empirical findings. At times, we also managed to process the respondent in a way that we got more truthful answers, by asking more indirect questions.

3.3 The analytical process

By using the validity gained through an abductive approach of our unique case, we will be able to get a comprehensive answer to our research question (Ghauri, 2004). The empirical data was continuously reflected and analysed to avoid complications in the later part of the process (Merriam, 1998). Further, the empirical findings were organised and structured in alignment with our findings in the literature review part to identify the similarities and differences with regard to our conceptual framework. Through this process we were able to draw the conclusions necessary to discuss and answer our research question (Bryman and Bell, 2011). We further believe that combining and re-establishing our framework throughout the process through the abductive approach presented in the previous section, we will reach a higher level of validity for our unique case (Ghauri, 2004).

Upon the differences and similarities between the framework and the reality, we have analysed and discussed the possibilities and inadequacies to implement a high(er) level of sustainability in the supply chain. As our study takes on a clear hands-on and practical approach, we will also try to – in this process – present and discuss the possibilities to improve based on the literature and other examples. The final conclusion is – based on our results – an answer to the both general and specific question *"how can a fashion company more clearly integrate environmental sustainability throughout their supply chain process?"*

4. EMPIRICAL BACKGROUND

In this chapter we present an empirical background of the textile sector, more specifically the cotton industry, and the environmental problems linked to the production processes. The purpose of this chapter is to provide a context in which our empirical findings can be better understood.

4.1 The textile industry and its processes

Production processes in the textile sector are linked to substantial environmental problems characterised by the extreme use of chemical products, water usage and natural resources, leading to a high environmental impact (Lakhal et al., 2008). Additionally, the relocation of production sites to the Far East as an outcome of the intention for lower production costs (Bonacich, Cheng, Chinchilla, Hamilton and Ong, 1994) has increased energy consumption and emissions due to transportation (Caniato et al., 2012).

The textile industry can be divided into three main groups: cotton, woollen and synthetic fibres, depending on what raw material that is used (Wang, Xue, Huang and Liu, 2011). Hence, in our paper we will focus on cotton.

The cotton textile industry is among the oldest industries in China, (Wang et al., 2011) where it

Figure 6. Various steps involved in the process of cotton production. Source: (Ramesh et al., 2007)

represents 80 per cent of the natural fibre manufacture (Ramesh, Parande, Raghu and Kumar, 2007). The process of transforming raw fibres into finished apparel textile products is complex; therefore the majority of textile mills specialise. Textiles normally go through three or four stages of production that could include yarn formation, fabric formation, wet processing, and textile fabrication, see figure 6, for detailed scheme of the different stages (Ramesh et al., 2007). Below each step will be discussed further in detail.

4.2 Cotton production processes and environmental concerns

Cotton itself is a natural product and could therefore be considered as a product that can be turned into an ecologically friendly textile. However, more than 50 per cent of its production volume is dyed with reactive dyes, and water usage during cultivation is extensive. From an ecological viewpoint dyes are negative because the effluents caused are severely coloured, contain high concentrations of salts, and display high biological oxygen demand/chemical oxygen demand (BOD/COD) values (Ramesh et al., 2007).

There are several environmental impacts in the processes involved in evolving a fibre into a textile product and each needs to be considered. A number of phases in the fibre-to-fabric process are environmentally unfriendly. Cultivation, dyeing, finishing and other wet processes, drying, and shipping all effect air, water, and land quality (Orzada Moore, 2008). Environmental harms do not end when the cotton is picked. The textile industry is a highly chemical-intensive business, thousands of chemicals substances are used, some of which are carcinogenic, allergenic and environmentally hazardous. Almost each process requires its chemicals, spinning lubricants in spinning, gum in weaving, surfactants in washing, formaldehyde against wrinkling and so on (WWF, 2005).

The key practices in the textiles and clothing manufacturing are (Forman and Sogaard-Jorgensen, 2004): design, fibre production (natural or synthetic), spinning, knitting and weaving, wet treatment (washing, bleaching, dyeing, etc.), sewing, distribution and sale.

The organisation of the textile industry is complex and shields all variations of product chain arrangements from a long chain of separate companies, each covering a single step of the textile production, to chains where one single company covers all steps, apart from the fibre manufacturing and the concluding marketing and sale (Forman and Sogaard-Jorgensen, 2004).

Cultivation/Farming

Cotton covers about 40 per cent of the world's total textile requirement and is of great economic importance for several developing countries. Cotton is predominantly produced in tropical and subtropical regions and as the production often takes place in arid regions where there are pressures of fresh water the cultivation of cotton generally requires irrigation. Additionally, the cotton cultivation also requires numerous pesticides and agriculture chemicals; cotton is actually the most chemical intensive agriculture production in the world. Cotton cultivation occupy merely 2.5 per cent of the total agriculture area but require

approximately 25 per cent of the total use of pesticides in the world, of which the majority are harmful for and the people exposed for the chemicals are exposed to a great health risk (WWF, 2005).

Behind the production and trade of cotton stand several actors with various interests from all over the world. One of the main problems is that the mill often does not know where the cotton is produced. Cotton is often bought at a cotton stock market where quality and price are the most important factors, not how the cotton is actually produced (WWF, 2005).

The main reason of the environmental consequences of the cotton production is that cotton is produced in large scale, that cotton production requires extreme water usage and cotton is cultivated in arid regions and that the plant is exposed to many vermin and requires a lot of fertilisers (WWF, 2005).

Washing/Scouring of Cotton

Textile fibres, particularly natural fibres, call for cleaning before entering the spinning process. The initial washing is treated with water or detergent. Wastewater from cleaning cotton can comprise pesticides or other pollutants (Orzada and Moore, 2008). The chemicals that are used when cleaning raw fibre can be widespread and could contain toxic, corrosive, or biologically modifying reagents. Ecologists have been anxious about the effect of fibre cleaning processes for a long time. Nevertheless, the need to remove impurities from cotton makes washing necessary. If the fibres would not be washed it would lead to products that consumers would not find satisfactory (Slater, 2005). Scouring offers fibres with a thorough cleaning by eliminate persistent dirt from cotton. In scouring, sodium hydroxide, an alkali, is most frequently used to supplement the cleaning process. This substance has major disadvantages in use including damage to the fibres and environmental contamination (Slater, 2005).

Desizing

The existence of sizing ingredients in the textile encumbers processes, for instance dyeing, printing, and finishing. One example is that the presence of starch can hamper the diffusion of the dye into the fibre, which requires removal of starch before dyeing or printing. Starch is removed or converted into simple water-doable products either by hydrolysis or by oxidation. Generally, around 50 per cent of the water pollution is because of waste water from desizing,

which has a high BOD that renders it unusable. The issue can be mitigated by using enzymes that convert starch into ethanol (Ramesh et al., 2007)

Bleaching

Natural colour does not look truly white. In order to achieve white yarn that facilitates producing pale and bright shades, it is necessary to decolourise the yarn by bleaching. Hypochlorite is one of the oldest bleaching chemicals. The creation of extremely toxic chlorinated organic by-products through the bleaching process is reduced by absorbable organically bound halogen (AOX) (Ramesh et al., 2007)

Drying

When fibres are cleaned they must be dried to prepare them for the following production process. Throughout the drying process, large amount of energy is used and contaminations are often produced that are discharged into the air or water. In addition, heat from the drying process is dissipated into the environment, either inside or outside the plant, which as a result wastes heat energy and can pollute the surrounding with the contaminations mentioned (Slater, 2005).

Dyeing

The greatest environmental problems in textile processing take place during dyeing and finishing (Slater, 2005). In the dyeing process dyes containing toxic pollutants in the form of heavy metals such as cadmium, lead, copper, chromium, nickel and zinc can be used. The processes require large amounts of water and energy. Emissions may contain chemical residues and oxygen-demanding substances. Also, salt is used in large quantities in the dyeing process. The salt goes out with the waste water and cause major problems as both surface and ground water get elevated amounts of salt (WWF, 2005).

Finishing

Residuals from finishing can be found in industrial effluents. Furthermore, heat causes the vaporisation of organic compounds used in finishes such as durable press or coating of fabrics. These organic compounds are carried off as airborne gases and must be controlled to reduce air pollution (Slater, 2005).

The greatest challenge for the textile sector today is to transform production methods, making more ecologically friendly at a competitive price available, by using safer dyes and chemicals and by reducing cost of effluent treatment/disposal. Recycling has become a required element,

not because of the shortage of any item, but due to the need to control pollution. There are three ways to reduce pollution: use of new, less polluting technologies; effective treatment of effluent so that it adapts to specified discharge requirements; and recycling waste several times over before discharge, which is considered the most practical solution (Ramesh et al., 2007).

Spinning, weaving and sewing is not discussed in detail, as the impact is far less in those stages. For a detailed table of each textile process and the environmental impact and waste creation, see appendix 2.

4.3 Life cycle assessment of a fibre product

Every manufacturing has an impact on the environment. In creating consumer goods there is a need for inputs such as raw materials, energy, machineries, and labour. When materials and processes for a textile produce are chosen during the design and product stage, the environmental impact of that textile is determined. Derived from these decisions, the environmental impacts of the product can result in all from minimal to severe when considering the manufacturing process, usage, maintenance, and disposal of a textile product. It is of importance to understand the relation between fiver, yarn and fabric in order to grasp the sustainable future of a textile product. Therefore, is a complete and integrated approach to design and manufacture of products required. To guarantee sustainable development, an assessment of the environmental and economic effect of a product during its entire life is essential. Life cycle assessment involves four steps; defining the life cycle of the product, evaluating resource inputs and waste outputs through every step of the life cycle, calculating the environmental effects, and finding possibilities that will minimise the total environmental impact of the product over its whole life cycle (Orzada and Moore, 2008).

5. EMPIRICAL FINDINGS

In this chapter we will highlight findings from our field study in China and interviews conducted in Sweden. The main focus of this thesis has been cotton production but as we got the opportunity to visit silk factories we have as well included data from these visits to get a more comparable picture of the textile industry.

5.1 Focal company

The focal company of our study is Filippa K. Filippa K is the principal company in this supply chain and hence, the focus of our study.
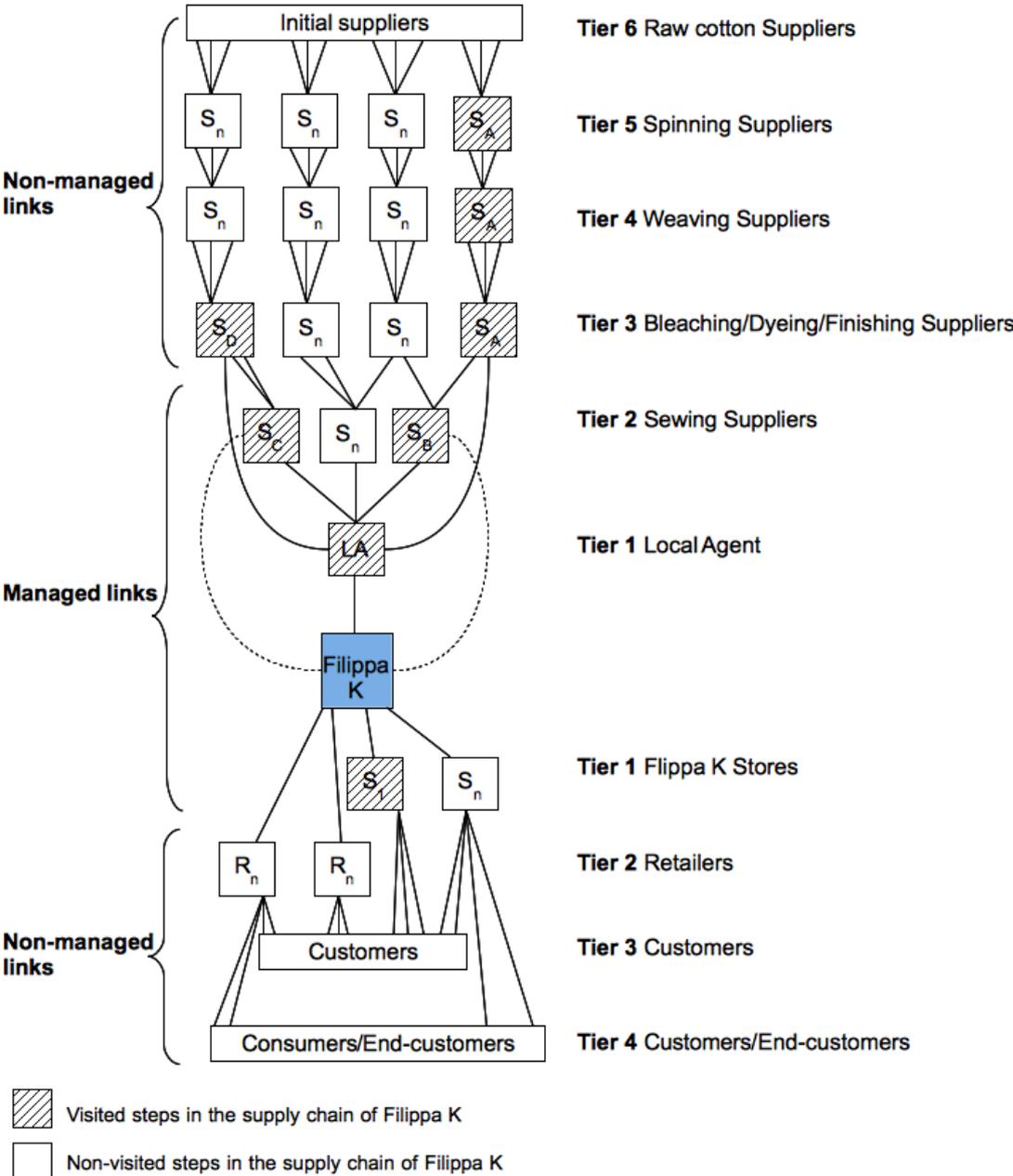

Figure 7. The supply chain of Filippa K

The figure above shows the different parts of the supply chain of Filippa K. The crosshatched boxes indicate parts of the supply chain that we have visited and that we build our empirical findings on. The unbroken lines illustrate paths in the supply chain in which communication is directly among the different tiers. The broken lines demonstrate that Filippa K has some but restricted communication with sewing suppliers (tier 2).

5.1.1 Brief background of Filippa K

Filippa K is a Swedish high-quality fashion brand founded in 1993 focusing on apparel for both men and women. The company has had a continuous growth, and currently employs 200 people with a turnover of 528 million SEK in 2011 (Filippa K, 2011b). They exist on seven core markets and on ten export markets, predominately in Scandinavia and Northern Europe. The business idea has from the start been to focus on the three keywords style, simplicity, and quality and the idea is to design long-lasting fashion (Filippa K Interview, CSR-manager, 2013a). Filippa K works with a rigid business idea for market penetration. Most of their clothes are sold either in their own managed stores, stores-in-stores, or through long-term relationships with retailers (Filippa K Interview, Logistics Coordinator, 2013c).

Filippa K does not have their own production; hence, they work with international suppliers. The majority of the suppliers are located in Europe, but still, in 2011 the production in China accounted for 36 per cent (based on cost) (Filippa K, 2011a). They have had production in China since more than a decade back, for most of this time they have collaborated with an intermediary – see section 5.2 for more information on this. The intermediary is from here on referred to as the local agent. Most or all of the communication and requests of Filippa K to suppliers go through their local agent (Filippa K Interview, CSR-manager, 2013a).

5.1.2 Sustainability strategies

On a company level, Filippa K has strategies and goals related to environment, some under development. A form of sustainability has always been part of the values of Filippa K, mostly in the way their clothes are designed; focus on production of clothes that are timeless in design and long-lasting in quality (Filippa K, 2011a). However, it was not until 2008 that actual sustainability strategies were being discussed for "real" and the focus on sustainability become even clearer with the introduction of a CSR-manager in 2011 (Filippa K Interview, CSR-manager, 2013a). The initial focus of sustainability has been on the social aspect but the environmental aspect has lately received gradually more attention. Apart from the CSR manager, Filippa K has a CSR group with representatives from all business units. Further,

they also have a smaller CSR steering group, consisting of many of the key people affecting strategic decisions. The aim of Filippa K is to make every employee interested and aware of the issues and goals related to sustainable development, everyone should take responsibility in this matter. Filippa K does not work with charity; their focus should be on Filippa K and concentrate on what impact they have on the environment. The CSR strategy can instead be defined as "We stand for who we are, we are aware of all sides of our business and we face the consequences of our actions" (Filippa K Interview, CSR-manager, 2013a). Below is the framework on CSR and sustainability issues for Filippa K, where it is evident that they are inspired by a triple bottom line approach.

CR FRAMEWORK

– RESPONSIBILITY A PART OF EVERYTHING WE DO

Champions of
Long-Lasting Fashion

E / S \ F

ETHIC - the way we act

ENVIRONMENTAL
The way we care for
the environment

SOCIAL
The way we care for
people and societies

FINANCIAL
The way we do business
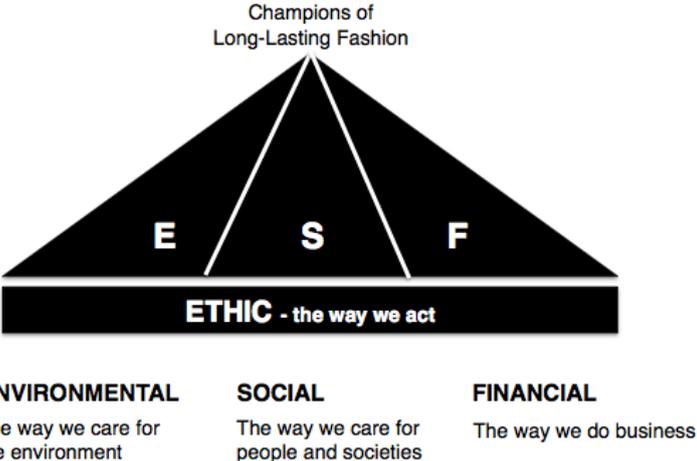
Figure 8. The sustainability framework for Filippa K. Source (Filippa K, 2011a).

5.1.2.1 Vision and mission

As part of the strengthened work with CSR issues that started in 2008, many of the visions and missions of Filippa K were revisited, clarified, and reformulated. As the CSR strategies were constructed, the visions were designed (Filippa K Interview, CSR-manager, 2013a). One of these was the focus on the values – "take a stand for what we believe in" – both among employees and other stakeholders. Another was the long-term responsibility, with a focus on internal innovation and follow-ups. Further, the goal is to always be in control and aware of the consequences, and to evolve with the task of responsibility (Filippa K, 2011a).

Further, the visions and values of Filippa K should also be shared by all employees, and to achieve this; seminars are regularly scheduled with store managers and other employees (Filippa K Interview, Store manager, 2013d).

5.1.2.2 The customer view

The fact that Filippa K takes a very proactive stance on sustainability issues compared to many of their rivals is also reflected in their customer segment. According to a Filippa K store manager (Filippa K Interview, Store manager, 2013d), the customers often ask for the origin and the social and environmental impact of the products, especially when comparing with her previous experience in the fashion retail. This statement is also uttered by the CSR-manager of Filippa K, who believes that their customers are more aware of CSR issues, than customers of other brands in the same segment (Filippa K Interview, CSR-manager, 2013e). This is especially interesting considering that there is no actual link between the marketing department and the CSR-manager in the company, and there is no strategy to emphasise the CSR issues as part of the company's branding (Filippa K Interview, CSR-manager, 2013e).

5.1.3 Integration and collaboration

The collaboration procedure for the focal company and their suppliers mainly consists of the Partner Code of Conduct. This is a mandatory document for all suppliers of Filippa K, and clearly states the "must have's" and the "should have's" of all their suppliers in terms of social responsibility and environmental responsibility (Filippa K Interview, CSR-manager, 2013a). This document should be available for all employees in all companies in their local language, and all of the information should be understood. It is meant to be a binding document that needs to be signed, but it also works as a way of educating the suppliers to work with CSR issues and to understand the basic values of the Filippa K brand (Filippa K Interview, CSR-manager, 2013e).

Filippa K also uses an internal system to measure and evaluate their environmental work through EMS and several key performance indicators (KPI). The environmental KPI's is not part of the overall business performance evaluation, but they do have a strong presence in discussing their success (Filippa K Interview, CSR-manager, 2013a). These parameters are however only internal, and do not account for the activities that are taken outside of the company even though it is a part of their supply chain process (Filippa K Interview, CSR-manager, 2013e). One of the main sustainability measures of Filippa K is their membership in several organisations, most notably the one in the Fair Wear Foundation (FWF). As part of this, they receive training and information on sustainability regularly. The foundation does however mainly work with workplace conditions, and their factory audits are centred on this (Filippa K Interview, CSR-manager, 2013a). Filippa K is nonetheless a member of several other organisations that work more actively with environmental issues (Filippa K Interview,

CSR-manager, 2013e). In terms of organisational cooperation with their suppliers, there is albeit very little in place at the moment. Today, there are no existing cross-company strategies, and the suppliers have no influence on strategic questions related to sustainability and environmental issues that are managed by the focal company (Filippa K Interview, CSR-manager, 2013a).

5.1.4 Trust, traceability, transparency

Today Filippa K cannot trace their whole cotton supply chain. They have awareness of the garment production and to some extent the dyeing process. Filippa K has no notion of the exact origin of the raw cotton (Filippa K Interview, Sourcing Manager, 2013b). This question of traceability is therefore on top of the CSR department of Filippa K at the moment, as it has been identified as one of the most important aspects to consider for a fully sustainable supply chain (Filippa K Interview, CSR-manager, 2013a). Further, Filippa K also argues that the transparency in the supply chain is too poor due to several factors (Filippa K Interview, Sourcing Manager, 2013b). The fashion industry does not have a history of working to promote traceability or transparency with their suppliers, and it is not until recently that this has been of growing concern to the industry (Filippa K Interview, Sourcing Manager, 2013f).

Further, the CSR management also believes that there are some issues with trust on several levels. They build all of their supplier relationships on the notion a long-term, win-win commitment that requires high levels of trust (Filippa K Interview, Sourcing Manager, 2013b). If a supplier is identified as breaking the corporate values of Filippa they are not dumped, but rather given extra focus to help them with their problems and misjudgement (Filippa K Interview, CSR-manager, 2013a). However, even though the sustainability in the supply chain is heavily reliant on the notion of trust, there are no active measures to increase this other than the long-term commitment (Filippa K Interview, Sourcing Manager, 2013f). The lack of trust concerning sustainability can, according to one manager, be related to the limited knowledge of "the environmental concept" of the suppliers (Filippa K Interview, CSR-manager, 2013e).

5.2 Managed processes

This part seeks to explain the structure, the characteristics, and the current situation of the part of the supply chain that the focal company has a direct control of. In this part we label the managed processes, as it includes the actors that Filippa K has direct communication with,

companies which Filippa K can have an evident influence on, and where the presence of Filippa K is clear.

5.2.1 Structure of the managed supply chain

The managed process of the supply chain of Filippa K includes mainly sewing production facilities and the local agent. In China the structure of the managed supply chain looks somewhat different to that in Europe. This is due to their tight cooperation with and use of an intermediary – their local agent. Their local agent often has the direct contact with many of their suppliers when it comes to their main production. This has been the case since ten years back when the first contact with the current agent took place and the initial production in China started (Filippa K Interview, Sourcing Manager, 2013b).

The local agent was founded in 1992 and the company is a Chinese trading company in the textile and fashion sector. Their office is located in Guangzhou and has ten employees. The local agent also has a local office in Shengzhou with one local manager and seven Quality Controllers (QC: s) to control the garment factories located in this region. Apart from Filippa K, the local agent works with six other Swedish fashion brands. The orders of Filippa K stand for around sixty per cent of the total business (both in quantity and value) of the local agent (Local Agent Interview, Executive Manager, 2013c). The local agent takes care of most of the contact with the local producers on behalf of Filippa K, much due to language barriers and their local presence. Some of the production process can still be considered a managed process link in the supply chain of Filippa K. This is because of the high influence of Filippa K, their regular visits, and high awareness. To this part of the supply chain, we define the seven sewing facilities in China (Local Agent Interview, Executive Manager, 2013a). In this part of the supply chain, we visited two of the most important facilities.

Factory B is based in Shengzhou in Zhejiang Province in China. The factory was founded in 2009 on the initiative of the local agent who funded the factory. The factory is a garment factory, predominately focusing on sewing of pants. Even though the factory is under the ownership of the local agent it operates without interference of the local agent. However, the production orders from the local agent should have the priority. The factory employs 70 workers and the local agent stand for 60 per cent of the total production (Factory B Interview, Manager, 2013). Factory C is a silk factory based in Xinchang, Zhejiang province. The factory was founded in 1980 and it is privately owned by the manager. The factory employs 80 workers and the main production is sewing of silk garments. Factory C is specialised in

high fashion brands and besides the local agent, Factory C works with four other international brands. The local agent stands for 60 per cent of the total production out of which 30 per cent is Filippa K production (Factory C Interview, Manager, 2013).

The transportation of the goods is to a large degree a non-managed process, at least for the non-finished material. In the production process, the focal company does not take any responsibility for transportation or moving of the goods, instead this process is undertaken by the suppliers (Filippa K Interview, Logistics Coordinator, 2013c). In this process, very little regard is put to environmental concern; the main focus is put on moving the goods efficiently and to a small cost. Still, many cost savings can be made that also have a positive impact on the environment (Local Agent Interview, Executive Manager, 2013b). It is not until the production is finalised that the responsibility for transportation is moved to the focal company (Factory B Interview, Manger, 2013). The goods are moved from the factories to a central warehouse outside of Shanghai, belonging to Geodis Wilson. This is part of a process to gather the goods centrally to maximise utilisation and reduce transportation costs. Still it can be mentioned that very little of the goods are shipped as a full container load (FCL), but almost all of the goods (that are shipped by sea) are shipped as less than a container (LCL) (Geodis Wilson Interview, Implementation Manager, 2013a).

5.2.2 Sustainability strategies

The tiers of the fashion supply chain that is closest to the customer – in our case the agent and the sewing facilities – often have a fairly low degree of environmental impact. The sustainability issues in this section of the supply chain rather relates to questions on worker conditions and other social factors (Filippa K Interview, CSR-manager, 2013a). This is something that is easily detected when looking into the supply chain as well. The factories have a high awareness of the CSR pressure from the focal company when it comes to working conditions, and as a consequence of this, one of the factories have a list visible for the workers where they demonstrate the rights of the workers – such as working time, freedom of association and many of the ILO conventions (Factory B Interview, Manager, 2013). This is well aligned with the partner code of conduct from Filippa K.

On environmental issues, the responsiveness is however much lower. For example, the local agent does not have anyone who is dedicated to, or knowledgeable of, environmental issues (Local Agent Interview, Executive Manager, 2013a). Neither does Factory B have a specific person working with environmental issues; hence a manager is responsible for CSR issues in

general, but predominately the conditions of the workers (Factory B Interview, Manager, 2013). This is largely the same for Factory C, where environmental regards are not seen as high priority; "…*we do not need ISO 14001 as we are a garment factory*" (Factory C Interview, Manager, 2013). This is also in line with the attitude of the local agent, as they do not see the need for any sustainability or environmental strategies, as they only work as an intermediary – and they mention that the situation is similar in most of their suppliers (Local Agent Interview, Executive Manager, 2013b). The local agent does however realise that there is increasing pressure on many of the intermediaries to be more aware of the environment, and they do make sure that their employees are sent to seminars to further educate them in the environmental concerns of clothing production when these seminars concerning environment are announced by the textile industry in the region of Guangzhou (Local Agent Interview, Executive Manager, 2013a). However, this increasing focus is not the result of internal values, but rather an effect of external demands from primarily Filippa K.

As mentioned previously, there is very little knowledge of environmental issues in the transportation process among the managed suppliers. This is not the case for the freight-forwarder used by Filippa K, Geodis Wilson. It is a large company with a lot of customer- and governmental-related pressure, and hence a lot of consideration is taken to reduce environmental impact, carbon emissions are controlled, and customers are advised to maximise utilisation rate of their shipments (Geodis Wilson Interview, Environmental Coordinator, 2013b). The key numbers are monitored and communicated to the customers, including our focal company. Such a process is not existent for the local transportation of any of the goods in China (Local Agent Interview, Executive Manager, 2013c).

5.2.3 Integration and collaboration

The practice of designing clothes is a very delicate and time-consuming procedure, due to this the collaboration and cooperation between the focal company, local agent, and sewing facility is already at a high degree. Further, a company such as Filippa K puts high demands on quality and detail, and thus gives clear instructions to the production (Local Agent Interview, Executive Manager, 2013a). Due to this, it is clear that the integration is high at the current stage. Since the collaboration also is old in terms of time, the parties could be considered to be close to each other, both when talking about the local agent and the sewing facilities. The local agent emphasise that they enjoy this long-lasting relationship; "…*we learn from our suppliers, they educated us and inform us about what happens, what is important for them, and what they want us to consider when placing orders*" (Local Agent Interview, Executive

Manager, 2013b). The local agent has also received training on CSR issues from the focal company (Filippa K Interview, CSR-manager, 2013e).

In this part of the supply chain it is clear that much of the sustainability and environmental concern of Filippa K is not directly integrated and collaborated with the actors, but rather just by influencing them. This is most clearly done by their use of the code of conduct, which can be seen translated into Chinese on the wall of Factory B (Factory B Interview, Manager, 2013). The manager of Factory C however agrees that there is room for more cooperation within the supply chain, and that she can provide a more detailed information about the origin of the material, "…*but no one ever asks about this*" (Factory C Interview, Manager, 2013). The awareness of Filippa K is high among all actors in the managed processes supply chain. They regard Filippa K as high quality brand and states that they appreciate the collaboration with them. However, they do not really understand the core value of Filippa K; the focus on long lasting fashion. One example of the reply we received on this subject was that it is "…*not good for the business of Filippa K*" since they will sell less clothes (Local Agent Interview, Executive Manager, 2013c). According to one manager, Filippa K is the most well organised company they work with and they yearly receive a comprehensive guideline to follow regarding for example what chemicals not to be used (Local Agent Interview, Executive Manager, 2013c). The presence of the focal company in the managed supply chain could be considered to be high as Filippa K visits the factories frequently, and have independent audits on a regular basis (Factory B Interview, Manager, 2013).

However, the local presence is mainly due to the strong demands on production quality that Filippa K puts on their suppliers, and the presence is not directly related to sustainability. One way to describe the character of the presence is that the suppliers in the managed processes feel that they are rarely or never asked about the origin of the product, but instead only asked about the quality of the material (Factory B Interview, Manager, 2013; Local Agent Interview, Executive Manager, 2013a). While the sourcing manager of the focal company feel that the presence is sufficient and that they do query them on several issues of sustainability, the CSR manager feel that the focal company can work more actively with this (Filippa K Interview, CSR Manager, 2013e; Filippa K Interview, Sourcing Manager, 2013f).

5.2.4 Trust, traceability, transparency

During our interviews with the local agent and the suppliers, we are constantly reminded of the notion of trust. It is clear that many business decisions are based on factors of trust and the

long-term nature of the relation. The decisions are based on experience and personal relations, as stated by the local agent: "…*we already know which suppliers is the better*" (Local Agent Interview, Executive Manager, 2013a). Apart from the seven sewing facilities that the local agent uses, they have about 15 suppliers for fabrics and another 20 suppliers for different accessories such as buttons, labels, and zippers. All of these relationships have been long-standing, and they very rarely look for new suppliers. The focus when evaluating suppliers are high quality products, long experience, flexibility, but maybe more than anything the (competitive) price and their acceptance for smaller quantities (Local Agent Interview, Executive Manager, 2013a). The local agent normally does not change supplier, they have tried but has not worked well on those occasions. The local agent considers it difficult to find a reliable and high-quality supplier and when they do find one they focus on retaining a good and long relationship (Local Agent Interview, Executive Manager, 2013c). In cases where the local agent has changed suppliers: it is mentioned that they inform Filippa K that they will use a different supplier (Local Agent Interview, Executive Manager, 2013a). At the same time, managers responsible for the production at the focal company have experienced that the local agent have changed suppliers to rapidly, without discussing with them, due to capacity problems in the past (Filippa K, Sourcing Manager, 2013b).

The local agent is a rather small company and in order to stay "important" to their suppliers they need to place repetitively orders and maintaining good relations with the suppliers. The local agent states that he trust and rely on his suppliers; both concerning social and environmental issues (Local Agent Interview, Executive Manager, 2013b). When it comes to the traceability of the production, the local agent consider them being able to trace the whole process of their clothes, they are aware of where the spinning and weaving take place and also the dyeing and sewing. But, "…*could never say where the raw cotton is produced, we can call our suppliers to ask, we never call the agents providing the cotton directly*" (Local Agent Interview, Production Controller, 2013d). The majority of the accessories and fabric Factory B works with are bought by the local agent therefore they do not themselves have that much influence on the suppliers. If Factory B knows about the origin of the cotton "…*depends on if the supplier tells us, sometimes when the cotton is imported the local agent tells us directly*" (Factory B Interview, Manager, 2013). This can be compared to the (silk) Factory C, that buys all the fabric themselves and they have around eight suppliers, one for each quality (for example satin and creep). Factory C has worked with these suppliers for an extended period and has developed a good relation with them in order to keep a high quality. They know that

the weaving is made in Xinchang and that the dyeing is made in Hangzhou. The manager at Factory C also knows where the silk is from; as you cannot mix silk from different groups of silk worms' one need to know exactly where the silk is from. There is a strict process control in the factories to locate where the silk is from, and hence, it is possible to trace the silk back to the farm. When discussing the chemicals that are used by these suppliers, Factory C knows that the chemicals used by the dyeing factory comes from Germany and that there is strict control of this, the government controls the water in the area. Regarding the transport company used by Factory C they use the same company all the time and the main reason for using the specific company is that they are reliable, on time, good protection of the goods and they meet the requirements of the government concerning environmental standards (Factory C Interview, Manager, 2013). This awareness on the suppliers between Factory B and Factory C can probably be related back to the difference in purchasing procedures. For example, Factory C always make sure that their suppliers have ISO 14001 certification, something which Factory B has no knowledge of.

However, it can be argued that just having knowledge of a supplier is not enough, if the will to improve is non-existent. The local agent uses individual suppliers for some material, including sewing thread. For example, they state that Chinese suppliers today have a significantly better knowledge of sustainability and CSR issues than previously, especially when comparing to other countries in Asia. They give us an example of a thread supplier in India, where they are aware of horrendous working conditions, but still buy thread from them (Local Agent Interview, Executive Manager, 2013d). In general, it is clear that throughout the managed links of the supply chain, they believe that the traceability is as high as it needs to be, which in turn can be related to the high degree of trust due to the long-term business relationships. They believe that a higher traceability is possible, but would only be necessary to strive for if it is something that their customers demand (Local Agent Interview, Production Controller, 2013d).

5.3 Non-managed processes

This part seeks to explain the structure, the characteristics, and the current situation of the part of the supply chain that the focal company does not have a direct control of. This part we label the non-managed processes, as it includes actors that Filippa K cannot control or exercise any real influence on, actors that are further away from the focal company, accordingly it is mainly the part of the supply chain that belong to the suppliers' suppliers.

5.3.1 Structure of the non-managed supply chain

The structure of the non-managed supply chain is harder to explain, as it includes several intricate and almost unidentifiable actors. In the fashion supply chain, these mainly consist of the production in the tiers before the sewing as presented in chapter 4. The main identifiable suppliers are those of raw cotton, the spinning and weaving factories, and the factories for washing, dyeing, and finishing. However, this section also includes suppliers of uncountable accessories, such as zippers, buttons, and labels. Due to the complexity of this supply chain, we limited ourselves to only visit the fabric process of the supply chain.

The main part of this supply chain for Filippa K is Factory A, part of a bigger company. The factory is based in Shishi in the Fujian province in China, one of the largest dyeing and finishing factories in the region with 1200 workers. The company has a wide network of different facilities, and in the Fujian province these include their own cotton spinning, weaving, dyeing, printing and finishing plants. Apart from the facilities in Fujian, the company is present across China, but most notably in Fujian, Guangzhou, and Shanghai (Factory A Interview, Sales Manager, 2013a). We had the opportunity to visit all of these facilities in Shishi over several days. The factory is the main Chinese supplier of cotton fabric to Filippa K, and the relationship has been existent for almost a decade. However, it is worth mentioning that Filippa K does not limit them to only using this factory, but orders fabric from several other suppliers. For the silk production, we also visited another factory. Factory D is one of the largest silk factories in China, located in Hangzhou, Zhejiang. The company's production is both in dyeing, printing, finishing, weaving and sewing and employs 3000 people in Hangzhou (Factory D Interview, Production Controller, 2013). However, the production of Filippa K in this factory is still kept at a very low level (Local Agent Interview, Executive Manager, 2013c).

5.3.2 Sustainability strategies

Companies in this part of the supply chain are often bigger actors, and therefore they have more resources to invest on social and environmental concerns (Local Agent Interview, Executive Manager, 2013c). However, these also mean that the customers also have a minor impact on their activities, which can have a negative impact on their environmental work (Filippa K Interview, Sourcing Manager, 2013b).

Generally, it is in this part of the supply chain where the environmental impact of the product is considered to be the direst and most problematic (see chapter 4). These environmental

impacts of this section of the supply chain can be traced mainly to the use of chemicals in the dyeing process as well as the tough impact on nature from the raw cotton production in the fields (Filippa K Interview, CSR Manager, 2013a). The fact that the environmental impact is bigger in these tiers is also obvious when it comes to the concern of the companies, as they do actively work with environmental issues and management. A manager at Factory A clearly states that "…*our heavy use of chemicals does have a negative impact on the environment, so we need to work proactively with this*" and consequently states that it is the chemical use in dyeing that is the most problematic (Factory A Interview, Engineer Manager, 2013b). Both factory A and factory D have ISO 14001 certification and have well-implemented environmental management systems. Factory A has actively worked with ISO implementation since the system was first introduced in China, both for quality management and environmental management (Factory A Interview, Engineer Manager, 2013b). Further, Factory A has its own laboratory for testing of chemicals residues. This is more for their own concern, knowing that everything is in order. They also regularly send samples for testing to the SGS laboratory in Switzerland (Factory A Interview, Engineer Manager, 2013b). This laboratory testing is both a part of their customer's demands but also a part of their internal strategies. They also educate their employees as part of an introduction program on how to reduce the environmental impact through saving electricity, reducing use of water, and maximising efficiency. This program is however a part of a cost savings program, rather than environmental strategies (Factory A Interview, Sales Manager, 2013a). Finally, they have built their own water treatment facility, to be able to reuse all or most of the water used in the washing, dyeing, and finishing process. This was implemented as a way to decrease the dependence on the communal facilities, but has had major impact both on cost programs and the environmental impact (Factory A Interview, Sales Manager, 2013a). It is also worth mentioning that the local agent has a requirement that all factories and suppliers selling them fabrics must have an OEKO-TEX Standard 100 certification and fulfil all requirements on the European REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals) list (Local Agent Interview, Production Controller, 2013d; Factory A Interview, Engineer Manager, 2013b). Factory D also take their sustainability work one step further, and have newly-built and modern facilities, where they work actively with measures to reduce their environmental impact, such as using solar panels to the highest degree possible (Factory D Interview, Production Controller, 2013).

However, the factories on this level have different ways to implement and organise their environmental and sustainability work. Factory A has no individual dedicated solely to environmental issues, but rather includes this work as part of their other duties (Factory A Interview, Engineer Manager, 2013b). Factory D on the other hand has a full team of several individuals devoted only to work with environmental management and sustainability issues (Factory D Interview, Production Controller, 2013). Both companies however feel that the strongest pressure on improving their environmental performance does not come from their customers, but rather from the government (Factory A Interview, Engineer Manager, 2013b; Factory D Interview, Production Controller, 2013).

5.3.3 Integration and collaboration

The level of collaboration and transparency in the supply chain is significantly lower among non-managed processes. Reasons for this are that the factories are significantly bigger, the suppliers in the different tiers are more abundant, and the commercial interests limit the transparency (Local Agent Interview, Executive Manager, 2013b). The possibility for a relatively small customer such as Filippa K to have a clear influence or impact on the environmental performance of a company in tier 3-6 is much lower. However, Factory A uses different suppliers and methods for different customers, as most international customers require higher (environmental) standards than domestic, mainly on the chemicals used. Normally, for each customer they get a guideline of the chemicals not to be used in their dyeing process (Factory A Interview, Engineer Manager, 2013b). Still, there are several similarities in the demands and standards that are put forward by the customers, and if each customer would be treated individually, this would be too costly for the company. Consequently, they use a similar process for almost all customers, and only change if there are demands that are very rigorous or out of the ordinary (Factory A Interview, Sales Manager, 2013a). The companies are also aware of the different customers' requirements when it comes to social issues, and they have read and signed the Filippa K Partner Code of Conduct. They state that Filippa K has higher requirements of the quality compared to the average customer and therefore Factory A need to put more effort in finding good quality fabrics for them. They are aware of the requirements of Filippa K but do not really take it into consideration. When we asked about the Code of Conduct, one manager laughed and said "… *well yes we have seen it but if we will follow the code we will never be able to keep the price we have now. Maybe the office follows it but the machines never stop*." (Factory A Interview, Sales Manager, 2013a).

Factory A has, as previously stated, an ISO certified EMS reporting procedures. However, this system is only for internal use and they do not share this information with their customers or other external actors (Factory A Interview, Engineer Manager, 2013b). The same thing is true for Factory D, where they consider this to be irrelevant information for the customers (Factory D Interview, Production Controller, 2013). Instead, they state that the customers are welcome to visit the factories and facilities to make their own judgement. Filippa K has so far only visited Factory A a single time, further indicating a relatively low degree of integration and collaboration on environmental issues (Filippa K Interview, Sourcing Manager, 2013f). As part of this, it is worth mentioning that even though the focal company is a small customer for Factory A, the factory is a large supplier to the focal company (Local Agent Interview, Executive Manager, 2013a).

5.3.4 Trust, traceability, transparency

The traceability and transparency of the supply chain is said to be one of the major problems to achieve true sustainability in the fashion industry (Filippa K Interview, CSR-manager, 2013a). This is partly very obvious when looking at the non-managed process links that are the furthest away from the focal company. Very few people in the supply chain have knowledge of the origin of their products, even though there are some measures taken to identify it (Factory A Interview, Sales Manager, 2013a). There are often systems to identify the origin of a material when moving from one tier to the next one, but for each step forward, the information is lost (Filippa K Interview, Sourcing Manager, 2013f). One of the issues is that very few customers actually ask for the origin of the grayage (plain fabric), the yarn, or the cotton, but the information is said to be easily accessible if asked for (Factory A Interview, Sales Manager, 2013a). Concerning the origin of the raw cotton, we were during the visit in the spinning factory allowed to inspect the real raw cotton, and Factory A reports that they know of the origin when the raw cotton arrives in the spinning factory.

Looking at the suppliers of the suppliers, Factory A has standards and requirements. For example, all of the suppliers Factory A uses for its dyeing chemicals are ISO 14000 certified. But for common and basic products used in production they only use suppliers based on costs. Factory D uses around 300 suppliers and they are aware of the origin of the silk "…*you are always when considering silk*" (Factory C Interview, Manager, 2013). When they buy themselves they ask the supplier but not when the customer is buying the fabric (Factory D Interview, Production Controller, 2013). Like all parts of the supply chain, trust and

experience is the main aspect being considered when evaluating the current partners (Factory A Interview, Engineer Manager, 2013b).

5.4 An example - from raw cotton to chinos – a complex process

Chinos are part of the basic collection of Filippa K and represent a large amount of the orders to the local agent in China (Filippa K Interview, Sourcing Manager, 2013b). However, the quantity which Filippa K orders is not large enough for the dyeing supplier (Factory A), and in order to avoid the minimum quantity order; the local agent has arranged for a specific procedure of the chinos production, instead of fabric dyeing, garment dyeing is used.

5.4.1 Order placement and sample

An initial order is placed from Filippa K to the local agent; the inquiry contains information about the quality (price, treatment of fabric and minimum quantity order). The local agent confirm the request and place an order for colour cards to the supplier, from this the supplier send back colour dips to the local agent who in turn send them to Filippa K for confirmation (Local Agent Interview, Executive Manager, 2013a). For the basic collection of Filippa K there are fewer steps involved as the design and outline of the garment is already decided. In the case of the basic collection there is a pre-production sample which is sent to Filippa K for confirmation. The normal collection also includes earlier steps such as prototype, counter-sample and cell tests. All samples are sent by air to Filippa K's headquarter in Stockholm, by UPS (Filippa K Interview, Sourcing Manager, 2013b).

5.4.2 Production

As the Chinos are dyed as garment there is high requirement of the quality of the cotton thread (twinned yarn) used to weave the fabric. Nevertheless, Factory A does not themselves produce the quality needed to produce the Chinos and therefore they buy the fabric from an unspecified supplier. The fabric is sent to Factory B by truck for sewing. In the sewing part, the local agent orders a top quality thread from a supplier in India "…*as it does not exists a thread strong enough in the domestic market*" (Local Agent Interview, Executive Manager, 2013a). The manager of the Local Agent has himself visited the Indian supplier and factory and he told us about rather bad circumstances and that the owner of the factory does not care about neither environmental nor social standard (Local Agent Interview, Executive Manager, 2013c). After sewing the pants, the hook and the zipper are fastened. In order for the hook and zipper to manage the dyeing process the material must be of steel. The hook of the Chinos is ordered from a Japanese supplier in order to secure the quality. The zipper is made of the

supplier YKK in China. The label is ordered from a Danish supplier called A-TEX and the label is fastened on the pants before the dyeing, but for the label should not be coloured in the dyeing process a small plastic bag is placed over (Local Agent Interview, Executive Manager, 2013a). After the sewing process, the pants are sent back to Factory A for dyeing and finishing. Again, the pants are sent back to Factory B for buttons to be fastened and final packaging.

5.4.3 Transportation

When the chinos are finalised, Factory B order a pick up to the warehouse of the freight forwarder Geodis Wilson. Filippa K has worked with Geodis Wilson since 2010 and all of the transportation by sea is handled by Geodis Wilson. The transportation of the Chinos from Shanghai to Gothenburg takes approximately 30 days. When the chinos arrive they are picked up by truck to the central warehouse of Filippa K in Borås from where the distribution to their retailers and stores take place.
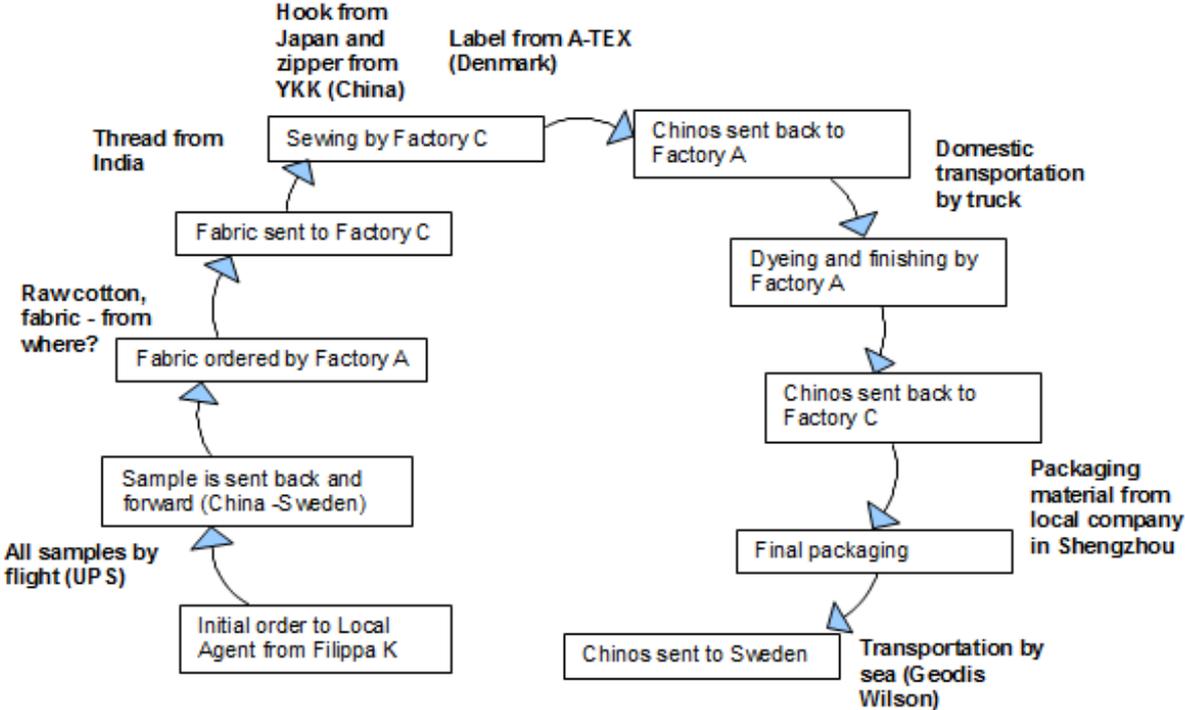

Figure 9. Simplified illustration of the chinos production of Filippa K.

Figure 9 shows simplified steps of Filippa K's chinos production in China. The figure is rather difficult to apprehend and involves several actors along the fabrication of the chinos. This picture is quite suggestive when it comes to textile production and the supply chain of Filippa K's involvements in China.

6. ANALYSIS

In this chapter we will return to our conceptual framework presented in section 2.5 (including figure 4) and use this to discuss and analyse the empirical findings. By examining the characteristics of the processes through a theoretical context, we will evaluate the supply chain of Filippa K from an environmental sustainable perspective.

6.1 Sustainable supply chain approach

First, our study offers empirical evidence when considering how companies should integrate and approach sustainability in to their supply chain. When comparing our literature with our empirical findings we see that the concept of sustainable supply chain management is in conflict with our findings, which will be further elaborated below.

Supply chain management is meant to focus on the entire chain. Seuring and Müller (2008) suggest cooperation among companies along with consideration of customer and stakeholder requirements. Inter-organisational cooperation, internal and external supply chain integration and enhanced information sharing have been reflected as the main requirements for effective green supply chains (de Brito et al., 2008; Vachon and Klassen, 2008; Seuring, 2008). However, our empirical findings advise us differently. There are several factors that limit an integration of sustainability throughout the fashion supply chain. Predominantly, behind the production and trade of cotton stand several international actors with diverse interests. Consequently, one of the key problems is that the mill often does not know where the cotton is produced (WWF, 2005). This is further confirmed by Filippa K themselves who argues that they would never be able to know of the origin of the raw cotton, even if they would try their very best. In addition, as the structure of a fashion supply chain is extremely complex we identify several non-managed processes in the supply chain of Filippa K. There are numerous actors included in this part of the chain, some actors could be identified, but the majority of the actors in the non-managed process are difficult to trace, as there exists sub suppliers to every supplier. In addition, the non-managed processes are often those that have the most extensive environmental impact. The further the tiers are from the focal company the more difficult is it to trace and identify the actual companies and origins. When not having knowledge about initial steps in a supply chain there are obvious conflicts of integration and collaboration throughout the chain. This in turn makes it difficult to integrate sustainability throughout the entire supply chain.

In contrast to sustainable supply chain literature, supply chain management literature suggests that integration should be focused on key business processes (Lambert and Cooper, 2000; and Gunasekaran and Lai, 2008). Further, Gunasekaran and Lai (2008) find it important to evaluate supply chain elements to decide what parts to coordinate and integrate as key aspects of supply chain management. They find it counterproductive to integrate all of the actors that a company cooperate with; instead, companies should identify the key members of the network, and distinguish between primary and supporting members of the chain (Gunasekaran and Lai, 2008). The approach and reasoning of SCM have come to support our empirical findings, when considering the initial work of including sustainability along the supply chain. Hence, the definition of sustainable supply chain management (Seuring and Müller, 2008) offers guidance for companies when aiming for a fully sustainable supply chain. But yet there are obvious conflicts with the reality, as we observe in the supply chain of Filippa K.

The focus on identifying key actors is applicable to our study, where there are possibilities and incentives to work towards a more sustainable supply chain by initially having a stronger attention on the key suppliers, and thusly adopting a view in line with the more general supply chain management literature. This is not only in line with the SCM literature, but also confirm what Carbone and Moatti (2011) found linked to institutional theory (Di Maggio and Powell, 1983) where they argue that companies have a tendency to assume the same actions as the companies they have inter-organisational ties with. Especially green supply chain initiatives and activities can be analysed as an organisational change (Carbone and Moatti, 2011). Based on the empirical findings, we can also argue that Filippa K needs to clarify their sustainability strategies and adapt their sustainability methods depending on the distance of the tiers. We can see that by turning to tiers closer to the focal company, they can further disperse pressure and actions of sustainability. This is especially true, since the closer tiers are more knowledgeable of the focal company, and since there is more room for further collaboration.

6.2 Distance of tiers in the supply chain

Second, our observations display implications for managers when looking at the method to approach sustainability to different tiers in the supply chain. To be able to apply our framework to the analysed supply chain, there are numerous factors to consider, as mentioned in the previous part. Further, we notice a discrepancy between the managed- and the non-managed-process, namely the size of the companies in the different processes. In the managed process Filippa K works with a relatively small local agent who in turn cooperates with rather small factories (Factory B and C). The dialogue and collaboration within these tiers – focal

company, tier 1 and tier 2 – are considerably more developed than within the more distant tiers. Factory A and D in the non-managed process are larger companies in which Filippa K and hence the local agent has less established discussions with. These differences in structure between managed and non-managed processes naturally lead to implications when integrating sustainability in the supply chain. The distance from the focal company of the tier, the structure of the process, and the unique characteristics of the tier are all factors that affect how the integration should be performed.

6.2.1 Monitoring in the supply chain

One of the vital strategic tools in our literature review is the concept of the internalisation/externalisation framework, which can be used to implement environmental management in the supply chain. Environmental monitoring focuses on the result of environmental efforts made by the suppliers such as collecting and processing supplier information (Vachon and Klassen, 2006). Filippa K uses an extensive guideline when evaluating suppliers and hence suppliers are required to meet certain standards. Monitoring of companies in tiers further away from the focal company is an essential action to increase sustainability in the supply chain. Based on our interviews with both Filippa K and the suppliers, we can state that an increase in monitoring reduces risk of non-compliance with rules and obligations in the supply chain, something that is also discussed by Vachon and Klassen (2006). We therefore argue that stronger measures of monitoring should be used when aiming for increased SSCM, and especially when considering the more distant non-managed processes. Filippa K also intends to use methods to increase monitoring, but in the current situation our study shows that there are clear shortcomings in this usage. Arguably, the use in itself is not sufficient, but it needs to be supplemented with a stronger local presence of the focal company to verify and strengthen the monitoring activities.

Several of the possible monitoring systems are already in place in this supply chain, such as EMS, certifications, standards, and memberships. Filippa K works mainly with existing standards and memberships, such as the Fair Wear Foundation. The reasons for working with existing standards and partnerships are largely because Filippa K is too small and lack the resources and knowledge to develop their own standards to monitor suppliers' sustainability performance at the site of the suppliers' production. The use of third party certifiers offers a guarantee that the settings and quality of production processes and of materials used are in line with environmental requirements. This in turn decreases the responsibility risks for Filippa K if it is discovered that there are problems with sustainability requirements within

their supply chain. Factory A and D both have ISO 14001 certifications and work with issues connected to sustainability. Darnall et al. (2008) are however discussing the impact of such a certification and other environmental management systems, if it has actual improvements in environmental performance of a company, or if it just a way to mainly document their current work. In the case of Factory A it is clear that costs are the greater part of the reason in why they work with reducing the environmental impact. Consequently, our findings are in line and confirm what was discussed by Darnell et al. (2008); actions taken by foremost Factory A, is not challenging the company to actually improve their environmental work.

Further, Filippa K has implemented a Partner Code of Conduct which clearly states the "must have's" and the "should have's" of all their suppliers in terms of social and environmental responsibility (Filippa K Interview, CSR-manager, 2013a). The limitation with such as code of conduct is however, that is rather difficult to certify that the suppliers are actually implementing the code. The monitoring process could be costly, not only for the focal company but also for the suppliers as they are normally asked to implement codes of conduct by other buying companies. Based on this, one could argue that there is a need for a stronger emphasis on partnerships with peers that face comparable conditions and have similar values as the focal company, as suggested by the framework. Our empirical findings further suggest that the code of conduct is processed differently in the different tiers, implying that a stronger monitoring emphasis is needed. In managed processes the awareness of the code of conduct is high and it is visible for all employees in the factory. But in non-managed tiers there is no compliance of the code of conduct. Mainly due to the size of the company, the companies in these tiers are too large to consider the code of a rather small company, as Filippa K. But also, in the case of Factory A, is clear that they do not consider it to be possible to work with due to cost issues. These observations further strengthen our proposition that implementation of a stronger sustainability focus becomes more difficult with each step further away from the focal company, and that increased monitoring is important to build trust and transparency along the supply chain.

6.2.2 Collaboration in the supply chain

As discussed previously, depending on the level of the tier, different tiers need a different approach of integration of sustainability. In the closer tiers, environmental collaboration requires the focal company to work closer to the suppliers, and possibly even help them, to improve collaborative actions to address environmental problems in the supply chain. Environmental collaboration focuses more on the process by which more environmentally-

sound processes or product could be accomplished and not as much on the direct outcome of the suppliers' environmental efforts as does environmental monitoring (Vachon and Klassen, 2006). Integration and collaboration could be argued as easier and more enhanced when working with smaller companies and companies in tiers closer to the focal company – managed processes.

Collaboration take account of the fact that cross-company strategies should be inclusive, and the actors in the latter part of the supply chain should be involved in the work to develop ways to encompass the sustainability work (Cetinkaya, 2011). The lack of an inclusive behaviour, where actors outside of the company frame are learnt to adopt sustainability values, leads to a failure of challenging the current situation and thusly improving the environmental performance. Our findings show that such incorporation on sustainability is not present today, and this is felt both by the focal company and the suppliers. One of the core values of Filippa K is the focus on production of clothes that are timeless in design and long-lasting in quality. Nevertheless, this is not entirely understood by employees working at the local agent who focuses more on only "making money kind of approach". This suggests that without collaboration of core strategies along the supply chain, especially with closer tiers it is difficult and to some degree impossible to spread the values of the focal company towards the tiers and consequently increase sustainability within the supply chain. This further confirms the reasoning of Cetinkaya (2011) and our theoretical framework.

Conversely, looking at our empirical findings, there is a distinct lack of strategies that emphasise a cross-company approach. The current situation does not have any collaborative action that takes several parties into consideration, and this would indicate that – according to our framework – there is room for improvement in the supply chain of Filippa K.

Nonetheless, we argue that cross-company sustainability strategies are not by itself enough to create better sustainability and environmental performance in a supply chain, but when linked with monitoring the sustainability work could develop. The interviews clearly imply that possibilities for both collaboration and monitoring decrease the more distant a tier is. In order to minimise both the physical and mental distance between the focal company and the more remote tiers, it is necessary to increase monitoring of distant tiers and collaboration with the closer tiers.

6.3 Trust, traceability and transparency

Third, looking at relationships within the supply chain, our empirical data suggest that if lack of the key factors; trust, traceability and transparency; it is difficult to facilitate increased sustainability in the supply chain. The relation between Filippa K and the local agent has developed over quite some time. Nevertheless, Filippa K does not trust the local agent, which was clearly communicated during one of the interviews (Filippa K Interview, Sourcing Manager, 2013b). Further, we observe discrepancies in the answers when comparing the focal company and the local agent. Filippa K is aware of that the local agent from time to time changes supplier without notifying Filippa K about it, and hence Filippa K themselves needs be extra cautious and construct stricter controls. When the local agent is not communicating what suppliers they work with there are limited possibilities for Filippa K to trace their goods and origins of the production inputs. Which in turn affect the upstream chain, i.e. not communicating accurate information to customers of Filippa K. Cetinkaya (2011) suggest that the solutions to this issue is through collaborative and inclusive work, and based on the lack of such activities in the current process (Filippa K Interview, CSR Manager, 2013a), this is highly applicable to our case.

Further, there is lack of trust when considering sustainability as the local agent does not consider it a key factor in the same extent as does Filippa K. Wilson (1995) suggests that trust is an essential relationship advantage that confirms that one relationship partner will perform in the best concern of the other partner. This is however not the case in the partnership of Filippa K and the local agent, our findings confirm what is discussed by Skjoett-Larsen (1999), that when a supply-chain is non-holistic, the (environmental) concerns considered are mainly those that are internal for the focal company or the supplier. This is also consistent with the reasoning in our conceptual framework, proposing that trust is essential when working towards a sustainable supply chain. The organisational change needed, in terms of a more inclusive approach, for transparency-building mechanisms are therefore of key importance when building trust in a sustainability perspective as discussed by Carbone and Moatti (2011).

The trust issues presented in the empirical findings should be addressed by the focal company, and a more collaborative approach to their own sustainability work would clearly focus on these. As suggested by Bai et al. (2012), one possible solution is to adopt stricter business mind-set to the environmental issues, as this could create awareness of environmental concerns among the actors that are not used to this thinking. A long-term and collaborative

approach to sustainability would, as discussed by Skjoett-Larsen (1999), build trust in an efficient manner. Filippa K already adopts a long-term approach, both when it comes to their sustainability work and to their supplier relationship. Nevertheless, the failure to align these two factors we consider being the main reason for the lack of trust among the actors. This trust-building collaborative work would in turn lead to a higher degree of transparency as a natural consequence (Pagell and Wu, 2009). De Brito et al. (2008) also put forward this reasoning, where a wide set of stakeholders should be involved to maximise the efficiency of any campaign trying to work towards improving environmental performance. If the focal company, Filippa K, would try to improve their CSR work through more environmental collaboration, it is also likely that they would come to terms with many of the issues that relate to transparency, trust and maybe even traceability in the most remote tiers. Faisal (2010) focuses on the long-term advantages of an integrated sustainability dimension as the key to success, and argues that all initiatives should be analysed within this setting.

6.4 Managerial implications

Several focal companies with operations in developing countries have seen their name being blamed and their competitiveness depleted when implementing sustainability with a short-term focus that ignored tiers in the latter parts of the supply chain. We observe that attentiveness regarding sustainable actions is important as it could result in accepting efforts to implement sustainability along the supply chain. Particular, in more distant tiers we find that suppliers are lacking the motivation to implement sustainability actions. Normally, the suppliers in these tiers work on the motivation of reducing costs to their own organisation without taking in to account the whole supply chain success. The assignment of management is therefore to place great concern to the parts that form the principles of sustainability further down the supply chain, in this case the local agent, as they would drive other parties to support sustainable practices across the supply chain.

7. CONCLUSION

This chapter presents our answer to the stated research question and conclusions drawn based on our empirical findings and analysis. Our study offers three important findings; how to approach initial sustainability into the supply chain, the need for different approaches to close (managed) and distant (non-managed) tiers and the need of trust when aiming for traceability and transparency throughout the supply chain. Further, we present suggestions for further research in the area.

7.1 Research question revisited

Our study is focused on sustainable supply chain management and the research question; *how can a fashion company more clearly integrate environmental sustainability throughout their supply chain process?* Our main conclusion of this study is that to efficiently integrate sustainability into the supply chain, the focal company needs to identify the characteristics of the different levels of the chain, i.e. close (managed) and distant (non-managed) processes, and adapt collaborative and monitoring tools accordingly. We have identified three contributions of our study and they will be further developed below.

First, we have concluded that integration of environmental sustainability is challenging in complex structures, nevertheless, the focal company has the main responsibility for its product and therefore needs to work with mapping and structuring of the complete supply chain. The structuring of a supply chain is outlined by finding and defining the managed and non-managed processes. To work proactively with sustainability, the focal company needs to be aware of what implications the structure of their supply chain brings to the integration of environmental sustainability. In the establishment of implementing environmental sustainability into the supply chain, our findings propose that the focus should be on identifying key suppliers. This reasoning is further confirmed what is suggested by supply chain management (e.g. Lambert and Cooper, 2000) and institutional theory (e.g. Carbone and Moatti, 2011). Consequently, our empirical findings suggest differently than the general notion of sustainable supply chain management discussed by Seuring and Müller (2008) and Carter and Rogers (2008), where it is argued that the focus should be on the whole supply chain. We have seen that this widespread view offers restricted guidance when a company ought to begin with implementing sustainability along the supply chain. In addition, initially focusing on key supplier, further allows the knowledge of sustainability to be dispersed to more distant tiers.

Second, based our empirical findings and our literature review we can conclude that cross-company strategies should be collaborated within the supply chain, more specifically with close tiers. We have found that collaboration is easier and more enhanced when working with smaller companies and companies in tiers closer to the focal company. Therefore, focusing on having interchanging communication with all key actors will lead to a more thoroughgoing outcome. The emphasis on the dialogue should be to make sure that those actors in close tiers both understand and are part of the changes and the values that are needed in the sustainability work. Nonetheless, we have also observed that it is problematic to reach and get through to tiers in the non-managed processes, especially larger companies and companies in the latter tiers. Therefore, monitoring works as a tool for controlling and attaining knowledge of suppliers in these tiers. Our findings confirms what Vachon and Klassen (2006) found, increased monitoring minimises the risk of non-compliance with rules and liabilities in the supply chain. Based on this, we can also conclude that implementation of a stronger sustainability focus is harder with each step further away in the supply chain and that increased monitoring and collaboration are important tools when working with integration of environmental sustainability along the supply chain. Thus, this offers important implications for managers – approaching sustainability to different tiers in the supply chain.

Our third contribution of our study relates to trust, traceability and transparency. We have found that an effective way of building a supply chain focused on sustainability is to focus on the concepts of trust, traceability, and transparency. Trust building activities through a collaborative approach should be adopted in the managed processes, as this will lead to a higher degree of transparency and traceability throughout the chain. By working closer to the actors in close tiers, the focal company also moves closer to the distant tiers, and thus gets the chance to exert influence on these parts. Our empirical data suggest that if lack of the key factors; trust, traceability and transparency; it is difficult to facilitate increased sustainability in the supply chain. These findings are further in line and confirmed with the reasoning of Wilson (1995) and Skjoett-Larsen (1999), where it is suggested that trust is needed when a supplier ought to perform in the best concern of its customer.

Finally, although there is a need for adaptive and interchanging approaches depending on the level of the supply chain, a focal company still need to take responsibility for their full supply chain to achieve a high level of sustainability – a company is no more sustainable than the links in its supply chain.

7.2 Contributions and recommendations for further research

Previous research has found that there is a lack of, and a need for, more on-site practical studies in the field of SSCM, especially in Asian perspectives (Seuring, 2008; Carter and Rogers, 2008). To focus on one process using a longitudinal approach contributes with a clear qualitative input. Our research states that a focal company need a whole-sided approach, by clearly identifying and mapping out the specific steps of the supply chain. By doing this, the company can develop cross-company strategies that addresses the issues of trust, transparency, and traceability, all of which are generally overlooked in the textile and fashion industry. This study can in this way help managers to enhance sustainability in their sourcing.

Our study has helped to fill some gaps in academic literature, using an extensive longitudinal case of one supply chain. Hence, it is limited to one process. Comparative studies of additional processes with a more quantitative approach would be of great interest to find more general patterns. Further, this study has focused on a focal company using an intermediary and hence, it does not consider how a direct presence of the focal company in the country of production would influence the integration of environmental sustainability in the supply chain. This would therefore be of interest for further research. There are gaps in the research when looking at how a specific supply chain is affected by the institutional demand and how a focal company decides to integrate sustainability issues based on external stakeholders. Our study has focused mainly on integration of the processes linked to the production, but to get a wider understanding of SSCM, it could be necessary to look at the supply chain and decision-making from a perspective of organisational theory. The research on how pressure is exerted from stakeholders on sustainability issues exists, but not from a clear SSCM perspective. Further, as we have found that the definition of SSCM is conflicting with reality; supplementary applicable studies in this field would be of great interest.

There is also a need to look into how the concepts of circular economy (CE) relates to a fully integrated SSCM concept. CE promotes that economic systems (such as a supply chain) should function consistent with the materials and energy cycling values that sustain natural systems. CE also highlights the recycling of crucial materials and energy as well as the capacity for one entity's wastes to be used as a resource by another entity through self-organisation capacities (Zhu et al., 2011). An adoption of these values into a company's supply chain management can be considered as truly sustainable, and might be the future of SSCM. More research is however needed on this "close the loop"-reasoning in the area of supply chain management.

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APPENDIX

1. List of respondents and interviews

Company	Respondents (15)	Nationality	Interview method	Date(s)	Place	Duration (total)
Factory A	Sales Manager	Chinese	Face-to-face English Interpreter Recorder used	March, 7, 2013	Shishi, Fujian, China	70 min
Factory A	Engineer Manager	Chinese	Face-to-face English Interpreter Recorder used	March, 7, 2013	Shishi, Fujian, China	80 min
Factory B	Manager	Chinese	Face-to-face English Interpreter Recorder used	March, 11, 2013	Shengzhou, Zhejiang, China	90 min
Factory C	Manager	Chinese	Face-to-face English Interpreter Recorder used	March, 11, 2013	Xinchang, Zhejiang, China	90 min
Factory D	Production Controller	Chinese	Face-to-face English Interpreter Recorder used	March, 12, 2013	Hangzhou, Zhejiang, China	40 min
Filippa K	Elin Larsson, CR-manager	Swedish	Face-to-face Swedish Recorder used	February, 19 and April, 12, 2013	Stockholm, Sweden	90 min
Filippa K	Christina Muljadi, Production Manager	Swedish	Face-to-face Swedish Recorder used	February, 19 and April, 12, 2013	Stockholm, Sweden	90 min
Filippa K	Natascha Rusalic, Logistics Coordinator	Swedish	Face-to-face Swedish Recorder used	February, 19, 2013	Stockholm, Sweden	30 min
Filippa K	Ida Lundquist, Purchase- and Production Manager	Swedish	Face-to-face Swedish Recorder used	April, 12, 2013	Stockholm, Sweden	30 min
Filippa K	Madeleine Persson, Store Manager	Swedish	Face-to-face Swedish Recorder used	April, 8, 2013	Gothenburg, Sweden	20 min
GeoDis Wilson	Sandy Zhou, Implementation Manager	Chinese	Face-to-face English Recorder used	March, 17, 2013	Shanghai, Zhejiang, China	45 min
GeoDis Wilson	Carolyn Liu, Sea freight Operation Manager	Chinese	Face-to-face English Recorder used	March, 17, 2013	Shanghai, Zhejiang, China	45 min
GeoDis Wilson	Alexander Höglund, Sustainability coordinator	Swedish	Skype interview Swedish Recorder used	April, 4, 2013	Gothenburg, Sweden	20 min
Local Agent	Executive Manager	Chinese	Face-to-face English Recorder used	March, 6, 8, 19, 2013	Guangzhou, Guangdong, China	160 min
Local Agent	Production Controller	Chinese	Face-to-face English Recorder used	March, 19, 2013	Guangzhou, Guangdong, China	20 min

2. List of waste material generated at each level of cotton textile processing

Process	Air emission	Waste water	Residual wastes
Fibre preparation	Little or no air emissions	Little or no water emissions	Fibre waste, packaging waste, cleaning and processing waste
Yarn spinning	Little or no air emissions	Little or no water emissions	Packaging waste, sized yarn, fibre waste, cleaning and processing waste
Sizing	Volatile organic compounds	BOD, COD, metals, cleaning waste, size	Fibre lint, yarn waste, packaging waste, unused starch-based sizes
Weaving	Little or no air emissions	Little or no water emissions	Packaging waste, yarn and fabric scraps, off-spec fabrics, used oil
Tufting	Little or no air emissions	Little or no water emissions	Packaging waste, yarn and fabric scraps, off-spec fabrics
Desizing	Volatile organic compounds from glycol ethers	BOD from water-soluble sizes, synthetic size, lubricants, biocides, anti-static compounds	Packaging waste, fiber lint, yarn waste, cleaning materials
Scouring	Volatile organic compounds from glycol ethers and scouring solvents	Disinfectants and insecticide residues, NaOH, detergents, fats, oils, pectin, wax, spin finishes, spent solvents	Little or no residuals waste
Bleaching	Little or no air emissions	Hydrogen peroxide, sodium silicate, high PH	Little or no residuals waste
Singeing	Small amounts of exhaust gasses from burners	Little or no water emissions	Little or no residuals waste
Mercerizing	Little or no air emissions	High pH, NaOH	Little or no residuals waste
Heat setting	Volatilizations of spin finish agents	Little or no water emissions	Little or no residuals waste
Dyeing	Volatile organic compounds	Metals, salt, surfactants, toxics, organic processing assistance, cationic materials, colour, BOD, sulphide, acidity/alkalinity solvents	Little or no residuals waste
Printing	Solvents, acetic acid, cumustion gasses, particulate matter	Suspended solids, urea, solvents, colour, metals, heat, BOD, foam	Little or no residuals waste
Finishing	Volatile organic compounds, contaminates, formaldehyde vapor, cumustion gasses, particulate matter	BOD, COD, suspended solids, toxics, spent solvents	Fabric scraps and trimmings, packaging waste,
Product fabrication	Little or no air emissions	Little or no water emissions	Fabric scraps

Source: (Ramesh et al. 2007).

3. Interview Guide Focal Company - Swedish

1. Introduktion/Allmänt

- Har hållbarhetsarbete alltid varit en del av Filippa K?
- När började ni arbeta med det?
- Hur ser ditt personliga arbete och ansvar ut för miljöarbete och kontakten med Kina?
- Hur stor andel ekologisk bomull används i era kollektioner idag?

2. Leverantörskedjan

- Hur ser er leverantörskedja ut? Kan du beskriva processen från bomullsplanta till färdig tröja i butik?
- Kan ni följa hela processen? Hur långt?
- Vet ni exakt vart er bomull kommer ifrån? Vilket land? Vilket fält?
- Beskriv samarbetet med er mellanhand i Kina.
- Har er logistikkedja förändrats över tiden beroende på hållbarhetsarbete?

3. Strategi

- Existerar det några uttalade hållbarhetsstrategier och mål?
  - På företagsnivå? Över företagsgränserna?
- Har ni några samarbeten med andra aktörer som inte ingår i er leverantörskedja?
- På vilket sätt integrerar ni hållbarhetsstrategin i er organisation?
- Hur är den en del av er dagliga verksamhet

4. Kontroll och samarbete

- Vad använder ni er av för kontrollverktyg och uppföljningssystem?
  - Använder ni stickprovskontroller? Vilka är närvarande vid en sådan kontroll?
  - Vilka certifieringar och standards använder ni?
  - Existerar *Environmental Management Systems* eller *Key Performance Indicators*? ISO 14001?
- Sätter ni själva press på leverantörer?
- Hur ingriper ni om leverantörer inte följer era riktlinjer?
- Hur sker rapporteringen av hålbarhetsarbetet?

5. Motivation

- Vilken är den största "motivationen" till ert miljöarbete?
- Hur arbetar era konkurrenter/övriga företag?
- Hur förhåller ni er till det?

4. Interview Guide Agent and Suppliers - English

1. Introduction

- Tell us about this company? (History, ownership, employees, business idea)
- Do you have a specific division or person taking care of environmental and social issues?
- Does the company have any forms of strategy or goals when it comes to sustainability?
- What are the greatest factors explaining why the company work with sustainability

2. Relation with Focal Company

- How long have you worked with Filippa K?
- Does Filippa K communicate the importance of sustainability with you? For how long have they done this?
- What kind of demands does Filippa K put on you?
- Do you feel that their work towards sustainability impact your work?

3. Logistics/supply chain

- How does your supply chain look like? Can you describe the process from cotton field to the textile is shipped to Sweden?
- Can you trace the whole process? How far?
- With whom/what company do you have the most contact (what tier)?

4. Product and material

Tell us about the product?

- What is the environmental impact that you are aware of?
- Where does the material come from, and how do you know this?
- Do you have any knowledge of the other members in the supply chain?
- Do you test your products for chemical remains (before or after sewing/dyeing)?
- Which standards do you use (national, European)?
- How do you handle your waste?

5. Suppliers

Tell us some about your suppliers.

- In what countries/regions are they located? What size are they?
- Approximately, how many suppliers do you have?
- What information regarding chemicals or other environmental concerns do you get from your suppliers?
- What information do you ask for?
- Is the information relevant and easy to understand?

- What demands regarding chemicals or other environmental concerns do you set on your suppliers? What are the bases for you to make these demands?
- What do the suppliers think about your demands?
- How do you make sure that the suppliers follow your demands?

6. Customers

Tell us about your customers:

- How many are they? Is the majority foreign or Chinese?
- Do they put pressure on the chemicals used in the process and the final substances of the product?
- Do different customers have different demands regarding chemicals and other environmental concerns (i.e. water usage)?
- How do you handle the demand from customers? Do you separate them or use the highest demands for the whole production and all products?
- Do your customers require risk information about your products?
- How do you communicate the information with them?

7. Control

- Do you use any control measurements?
- Do you do any random sample controls of your suppliers in order to control environmental checks and social issues? If yes, who are present at such a control?
- How does the report of such a work happen?

8. Education and other

- Are the workers and/or management in any way educated to further understand the environmental impact of their activities?
- What kind of information regarding chemicals and more environmental sustainable processes do you get from the government?

9. Chemicals

- Does it exist goals or policies concerning chemical use in your factory?
- Where do your chemicals come from? What company?
- Do you have a list of chemicals that should *not* be used? (i.e. REACH)
- Are some chemicals more prioritised than others?

10. Cooperation on environmental issues

- Do you believe there is room for more cooperation between supplier and customer?
- What improvements and changes does your company believe needs to be done to improve environmental performance?
- Who do you think should be responsible for minimising the environmental impact of the product?