

# **Addressing Environmental and Social Issues In the Supply Chain**

Drivers and Challenges From the Perspective of the Mid-chain Actor  
A Case Study of Alfa Laval

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## **Abstract**

In response to stakeholder expectations, and in line with the life cycle idea, a growing number of corporations are working to influence its suppliers for improved environmental and social performance. The number and diversity of the actors and aspects to consider in global supply chains contributes to the complexity of the task. Most actively engaging in supply chain improvements are companies with end user relations. This is also where most of the research on the topic has been focusing; the challenges for actors positioned further up in the product chain have been less explored.

This thesis explores the drivers and challenges of an industrial actor, operating in a business-to-business context. Through an in-depth case study of Alfa Laval the reality of the company with respect to the management of environmental and social aspects in the supply chain, has been studied. The main objective has been to improve the understanding of the drivers, and associated challenges, perceived by this type of company in relation to the issue. A second objective has been to add to the knowledge of how related efforts are being prioritized.

The study has indicated that both the pressure and the risks perceived by the case company, with respect to environmental and social issues in the supply chain, are limited. External stakeholders, particularly investors and the society, have been identified as key drivers for the company's environmental initiatives. Weak stakeholder signals add to the challenge of deciding what to do, while spending additional resources for taking action is hard to justify internally. With an ambition to meet expectations and take action, the size and diversity of the supply base, lack of internal expertise and perceived limited influential power add to the complexity of balancing demands, potential risks and resources for activities.

**Keywords:** Environmental Supply Chain Management, Stakeholder salience, Corporate Social Responsibility, Life Cycle Management.



## **Executive Summary**

*This thesis explores the challenges of meeting stakeholder expectations and managing a global supply chain for improved environmental and social performance for an industrial actor, operating in a business-to-business context and positioned in the middle of the product chain.*

Large corporations are expected by stakeholders to manage and improve its environmental and social performance. Following from globalization and outsourcing of industrial operations, expectations are not limited to the internal activities; with an increased focus on the life cycle of the products, companies are also held responsible by stakeholders for impacts in the supply chain. The importance of the issue is underlined by findings suggesting 40-60% of an average manufacturing company's carbon footprint to be from its supply chain, with an equally high exposure to human rights and social issues (Ceres, 2010).

In response to the pressure, a growing number of companies are working to influence its suppliers for improved environmental and social performance. This is however a highly complex task. Global firms often have thousands of suppliers, diverse in size, capabilities and geographic spread. The extended supply chain, including customers and suppliers in several tiers, creates a myriad of aspects and relations to manage with respect to the issue. Most proactivity in the field does high-profile firms, positioned close to the end-user show (Seuring, 2008; Preuss, 2005a). This is also where most research on the issue has been focused; the challenges for mid-chain industrial actors have been less explored (Brammer, Hoejmoose & Millington, 2011). From a societal point of view, progressing corporate adoption of a life cycle approach to environmental and social issues is obviously desirable regardless of the particular company's public exposure or position in the product chain.

This study explores the practices and challenges of an industrial actor, operating in a business-to-business context. The aim is to contribute to the knowledge of corporate environmental and social responsibility and life cycle thinking in practice and the related implications for a company positioned in the middle of the product chain. The main objective has been to improve the understanding of *the drivers, and associated challenges, perceived by this type of company* when managing the environmental and social performance in its supply chain. A second objective has been to add to the understanding of *how companies in this position prioritize aspects and efforts* related to the issue.

In order to meet the objectives of the study a qualitative research approach based on three main components was taken; a literature review, a case study and a comparative analysis of four reference cases. The core of the research is an in-depth case study of Alfa Laval, an industrial actor and leading global manufacturer of process machinery equipment. The author spent part time with the company during a two-month period, allowing for a thorough understanding of the organization and the issues pertaining to the topic. Data was collected in semi-structured interviews and through documentation from within the case company and from relevant stakeholders and reference cases. In total over thirty interviews were conducted. As a base for the analysis, particularly related to investigating the drivers, stakeholder salience theory suggested by Mitchell, Agle & Wood (1997) was applied. Taking a stakeholder perspective allowed for observing not only perceptions within the case company, but also what is explicitly expressed, and how, from the stakeholders' point of view.

Alfa Laval has gradually implemented its sustainability strategy in line with stakeholder expectations over the last decade. Environmental issues are considered important due to the firm's tradition of delivering products often environmentally beneficial in the use phase, through energy savings, cleaning capabilities etc. Since more recently, the company is in the process of defining initiatives for influencing suppliers on environmental criteria. However,

the work has been proven difficult. While some activities have been introduced, and with a clear ambition to do *something*, the remaining questions are still: on *what*, and *how*?

The case study revealed how the Alfa Laval management considers the upstream supply chain related issues a relatively limited part of their sustainability strategy; the company is perceived to be in a weak position to influence suppliers in general, and on what is unclear. Assessing the performance of suppliers is difficult in the first place. On the other hand, there is clearly a pressure perceived, albeit vague – the supply chain must not be ignored and reputational risks avoided. The imprecise external signals are transferred to the global purchasing department, where drivers and perceived challenges are of a somewhat different nature. Responsible for implementation in the supply chain, there is a feeling of signals being inconsistent; unclear in intentions towards suppliers and not aligned with neither capabilities (internally and among suppliers), nor the price, quality and delivery criteria purchasing is normally judged on.

The findings related to the drivers for environmental and social initiatives within Alfa Laval, show that *investor pressure has acted as the key driver*. Interesting is also how pressure has been expressed: not only through indirect means (e.g. sustainability ratings) but also through direct dialogues and concrete guidance. Less tangible, the *societal pressure has been identified as a second key driver*. The company wants to safeguard its reputation and live up to what is expected from a global firm through the public debate. *Customers have thus far had limited influence* on the company's environmental and social work. A subtle trend points towards more attention paid to the issues, but it varies in how expressed and between customer segments. *Employees have not been identified as a particularly strong driver* more than through certain individuals within management, acting in response to the external pressure.

Four key challenges as perceived by the case company have been identified. Of strategic nature and following from the vague external signals is the problem of *interpreting the stakeholder demands and translating these into own objectives and activities*. Related is the challenge of *applying the appropriate set of requirements to place on suppliers*. This is problematic because of 1) suppliers' size and capabilities; small ones might not understand requirements while large ones tend to ignore requests, and 2) a shortage of own knowledge limiting the ability to support suppliers. Another key challenge related to the characteristics of the supply chain is to *decide which suppliers to focus on and find appropriate measures for respective supplier type*. Finally, factors of organizational nature pose significant challenges to the work of *integrating the environmental issues to be a natural part of the purchasing practices*. Relevant knowledge and skills are lacking and few internal champions of the cause exist.

The study has found that *few tools or more sophisticated methods for prioritizing aspects, suppliers and efforts are applied* within the case company related to environmental and social initiatives in the supply chain. Prioritizations are made in line with the company's perceived responsibility based on what stakeholders expect. Input from investors, customers and the general discussions in industry and the public spheres provide the base for decisions made by Alfa Laval management. The findings from the comparative analysis did not indicate the case company's approach to differ significantly from the reference cases. Common themes were that *prioritizations take risks into account in some form* and that activities are *focusing on key suppliers*.

On a fundamental level this study has shown the case company to be operating under conditions with limited pressure, and where the perceived challenges associated with the issue are considerable. It has been revealed how prioritizations on a strategic level focus on stakeholders. Attention is primarily paid to interpreting stakeholder signals rather than analyzing detailed environmental aspects. Weak, unspecific signals and a limited perception of being rewarded for answering to them, help explaining why prioritizations in the next step, on operational level, are so difficult. First, it gives limited guidance on how to focus, and second,



necessary resources for the issue are hard to justify internally. Additional root causes to the perceived challenges relate to factors such as the characteristics of the supply base, internal and external capabilities, lack of tools and access to expertise as well as the status of the environmental issues internally.

While this case only represents *one* example and does not allow for any far-reaching generalizations, it is reasonable to believe that the reality of the case company resembles the reality of many other similar companies. A reality where few sophisticated methods and tools are applied and where managers are largely occupied by finding feasible solutions to rather fundamental problems. Where the ability to influence is perceived as limited and the approach to address the issue is surrounded by confusion. If the societal ambition is to make all companies managing life cycle impacts from its operations, an important learning from this case is that understanding the drivers is one thing, but an equally or even bigger challenge lies in the details of the practices. This is where a significant part of the barriers are found.

From a societal perspective a crucial question then arises: What would make this type of company to place the environmental issues in the supply chain higher on the agenda? With few clear answers, the general issue is about making the perceived benefits exceeding the efforts. Either the pressure for doing so has to be increased, or the barriers lowered. Pressure can be about investors demanding actions and transparency, or media giving non-consumer brands increased attention. Lowered barriers could be about further development and introduction of international standards for assessing the environmental performance of processes and products. Also providing support around audits and industry-wide cooperation could help avoid inefficient efforts due to misalignments between actors.

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## **Abbreviations**

AL	Alfa Laval
CEO	Chief Executive Officer
CoC	Code of Conduct
CSR	Corporate Social Responsibility
B2B	Business-to-business
B2C	Business-to-consumer
EMAS	Eco Management and Audit Scheme
EMS	Environmental Management System
GHG	Greenhouse Gas
GRI	Global Reporting Initiative
GSCM	Green Supply Chain Management
ISO	International Organization for Standardization
KPI	Key Performance Indicator
LCA	Life Cycle Assessment
NGO	Non-governmental Organization
OECD	Organisation for Economic Co-operation and Development
SCM	Supply Chain Management
SSCM	Sustainable Supply Chain Management
UNEP	United Nations Environment Programme
WWF	World Wide Fund for Nature

# **1 Introduction**

Global businesses are under pressure from stakeholders to deliver on environmental and social performance. Demands are imposed not only by regulators, but also by among others investors, customers, media and employees. With an increased awareness of the impact from products in all stages of its life span – from raw materials, through processing and production to use and final disposal – companies are expected not only to improve their own operations, but are increasingly also held responsible for the performance of their suppliers and partners (Seuring et al., 2008). For businesses to manage the impact of products throughout their life, concepts such as life cycle thinking and corporate environmental and social responsibility has been suggested and are increasingly being adopted (UNEP, 2007).

Boosted by globalization and continued outsourcing of industrial activities, a major part of the environmental impacts and risks associated with the upstream activities in the supply chain. In The Carbon Disclosure Project's "Supply Chain Report 2011", it is estimated that more than 50% of an average corporation's carbon emissions typically originates from the supply chain (CDP, 2011, p. ii). When multinational sports equipment brand Puma recently, as the first corporation, published estimates on the cost of its impacts on the environment, more than 85% was related to the company's suppliers (PwC, 2011). The approaches for improving the performance in the supply chain and the perceived pressure for doing so differ vastly depending on the business' operating context (Bowen et al. 2001a; Kovács, 2006; Preuss, 2005a; Seuring & Müller, 2008). This can be related to the characteristics of a particular industry sector and the maturity in the view on environmental matters, but also the individual organization's position in relation to stakeholders and other actors in the value chain. A general perception is that companies more directly linked to end users, such as retailers and consumer brands, spend more efforts and have come further in its environmental aspirations reaching outside its own practices (Seuring et al., 2008).

Alfa Laval is a globally leading process equipment manufacturer, delivering mainly to industrial customers. During the last number of years the company has launched a series of initiatives within the framework of its sustainability strategy, taking responsibility for its products and operations in line with what is expected from stakeholders. As the work has advanced the level of complexity has as well, particularly when looking outside its own operations. A more recent initiative targets the suppliers and aims at including environmental considerations in purchasing decisions with the purpose of influencing and following up on the company's suppliers for improved environmental performance. Being in the process of finding the right formula for managing this issue, Alfa Laval invited the author to study the process, which resulted in the conceptualization of this thesis project.

## **1.1 Problematization**

The problem addressed in this thesis is related to the challenge of managing a global supply chain for improved environmental and social performance for the individual company, particularly when positioned in the middle of the product chain.

Although this study is made from the view of one company, the background of the problem should be understood from a larger systems perspective. The company under study has more than 2,000 suppliers and tens of thousands of customers of varying type, size and geographic location. In the same "industry sector system", their competitors are likely to be in similar positions. If the societal ambition were to improve the overall environmental performance of this system, it would ideally involve all the different actors, aligning their practices and efforts. If we understand more about the opportunities and challenges perceived by one actor, and how it interacts with others, it can contribute to the further development of the whole.

Large corporations are often positioned to act as positive forces, and a growing number of companies are taking measures to address sustainability issues related to the life cycle of their products. In some cases the reasons for proactivity are obvious, e.g. consumer brands responding to being scandalized in media. However, the societal ambition is not limited to those discrete incidents; the issue is how to make it common practice for corporations at all stages of the chain. It is desirable that all companies, regardless of its level of public exposure, actively take measures for progressing the environmental and social standards within their sphere of influence. The remaining problem is to make more companies to do so.

Most research on environmental and social issues in the supply chain has been focused around companies with direct end user relations; the challenges for mid-chain industrial actors have been less explored (Brammer, Hoejmose & Millington, 2011). As the need for action involves the entire chain, more in depth analysis of the challenges perceived by this type of company is needed. Understanding what motivates them and how expectations are expressed, interpreted and inform prioritizations internally is valuable knowledge for both researchers and practitioners. This allows for advancing the understanding of how the life cycle idea and demands for responsible practices are influencing a company and related signals diffuse throughout the supply chain. It enables the development of better tools to support the process of implementing sustainable supply chain practices for individual companies or entire sectors showing evidence of immaturity in the field today.

Alfa Laval, the company under study in this thesis, illustrates the challenges for the individual company. With the intention of influencing the environmental and social performance of its products throughout the chain, their strategy for doing so has gradually been implemented during the last years. In this process a number of issues have been indicated. A general feeling is that they are being “stuck in the middle” in relation to other actors – in size, environmental ambitions and what is practically feasible. One problem is how to interpret the diverse range of signals in the chain and prioritize efforts to improve of the environmental performance in line with business goals. This issue has become particularly apparent when trying to influence suppliers (Ford, personal communication, 2011; Karlsson, personal communication, 2011).

## 1.2 Objectives and Research Questions

By looking at the case company, Alfa Laval, an industrial actor operating in a business-to-business context, this study aims to contribute to the knowledge of corporate environmental and social responsibility and life cycle thinking in practice and the implications associated with adopting this approach for a company positioned in the middle of the product chain. The main objective of this thesis is to improve the understanding of *the drivers, and associated challenges, perceived by this type of company* when managing the environmental and social performance in its supply chain.

Analyzing how drivers and signals are interpreted and managed within the case company, a second objective is to improve the understanding of *how companies in this position prioritize their efforts* related to the issue, with emphasis on activities in the upstream supply chain.

In order to address the objectives the following research questions have been developed:

RQ 1. What drivers can be identified for the case company to consider and manage the environmental and social aspects along the product chain, with particular focus on initiatives in the supply chain?

- RQ 2. What are the challenges that the case company perceives in relation to the issue of responsibility for environmental and social aspects that arise or are determined in the supply chain, and what is the nature of these challenges?
- RQ 3. How does the case company prioritize its efforts in the supply chain concerning environmental and social aspects?

### 1.3 Methodology

The research questions addressed in this thesis are approached using qualitative research methods. The two main elements of the study are a literature review and an in-depth study of a case company, including interviews with essential external stakeholders, and complemented with a review of a number of reference cases relevant to the topic and the contextual environment of the case company, see Figure 1-1. The purpose of the literature review is to provide an overview of the topic and related concepts, an insight into previous research in the field and a theoretical framework for the analysis and discussion. The case study provides the main body of primary data.

The empirical data retrieved through the case study was analyzed and discussed within the theoretical context based on existing research identified in the literature review and supported by the findings from the reference cases.

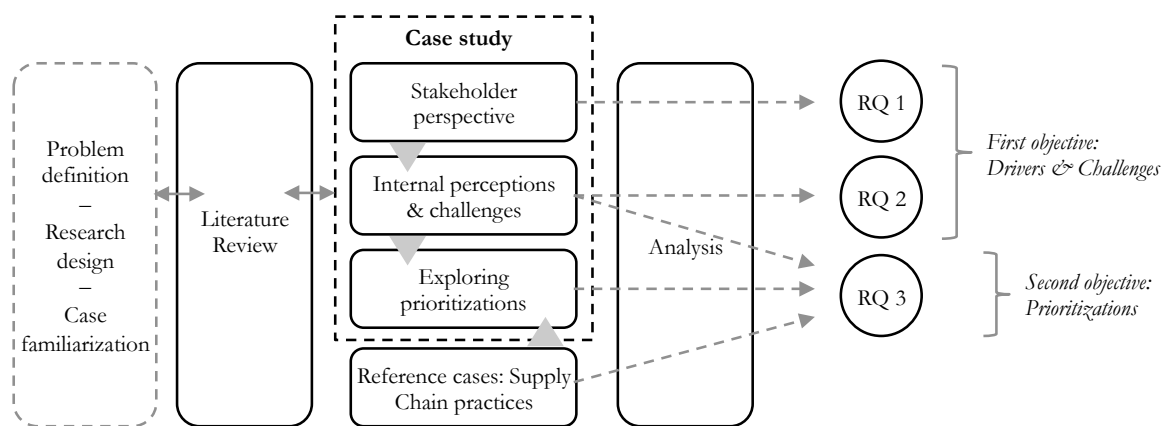


Figure 1-1 Structural overview of the research

The research was conducted through analyzing qualitative data, primarily taking an inductive approach. Rather than testing a specific hypothesis the analysis is done bottom-up in order to derive themes and patterns relevant to the research objectives from exploring a wide set of data and observations (primarily from within the case company), consistent with Thomas’ (2006) view on inductive analysis. This approach requires, as suggested by the author, “...to establish clear links between the research objectives and the summary findings derived from the raw data and to ensure that these links are both transparent (able to be demonstrated to others) and defensible (justifiable given the objectives of the research)” (Thomas 2006, p. 238).

#### 1.3.1 Research Logic

An overview of the approach taken for the research, including groups of informants and data sources consulted and how these relate to the research questions can be found in Appendix 1.

### **Addressing RQ 1**

*Taking a stakeholder perspective – why is the case company taking action?* In order to understand the drivers behind and the way forward for any environmental or social initiative within the case company it has to be clarified what is expected and demanded from stakeholders, and how these expectations are expressed. From the case company's point of view, a clear picture of the rationale for taking initiatives has to be established and is necessary to be able to set the ambition, prioritize and take appropriate actions.

The research approach in this step is to gather data from both internal and external key stakeholders through semi-structured interviews. Selection of which stakeholders to approach is based on the case company's knowledge and its perception of who the key stakeholders are, typically investors, customers, suppliers, employees and the society in general. In addition, relevant documentation from the case company and literature will be reviewed.

### **Addressing RQ 2**

*Perceived challenges and their nature – looking for patterns in the case company's story:* The challenges perceived by the case company might be contextual, related to specific initiatives or of more general nature. They may also be changing over time as the process of responding to stakeholder demands evolves. Issues and their perceived urgency may well be differ between individuals and corporate functions.

The challenges related to the case company's environmental and social work are derived primarily from interviews and documentation within the case company and cross-examined with findings in existing research and related literature.

### **Addressing RQ 3**

*Exploring prioritizations, methods & tools:* The purpose of this stage is to understand the process of translating stakeholder pressure into prioritized areas of focus and supply chain practices. Priorities can relate to both specific issues and environmental aspects addressed, as well as which actors that are being targeted. The analysis will explore what initiatives have been taken, how these are associated with stakeholder demands and to what extent input from external stakeholders has informed this process.

In addition to reviewing existing research and relevant literature, data will be produced through interviews within the case company as well as with stakeholder representatives. This stage of the research will also be complemented with empirical data from a number of reference cases, i.e. other industrial companies operating under similar conditions as the case company. The reason for taking this approach is 1) to broaden the picture of the practices in relation to the supply chain adding to the validity of the case study, and 2) to be able to provide the case company with information on recognized practices which adds to their learning process.

## **1.3.2 The Case Study Approach**

The core of the research is a case study concentrating on one case company, Alfa Laval. Using the case study as method is useful when exploring and understanding the characteristics of events and managerial processes within for example organizations (Yin, 2009). In this case it allows for a detailed understanding of the process of approaching environmental and social issues as perceived by the case company and its stakeholders. The idea is to get a more complete picture of the issue and a thorough understanding for the reality of supply chain related corporate environmental and social protection and the related challenges. Yin states,



“...you would use the case study method because you wanted to understand a real-life phenomenon in depth, but such understanding encompasses important contextual conditions” (Yin, p. 18, 2009). In line with this view and given the exploratory nature of this research, the case study was selected as a suitable method.

There are both pros and cons with using a single-case study. Yin (2009) points out the uniqueness and the representativeness of the case among the rationales for the single-case, but also points to the risk of misinterpretations and not having sufficient access to data. In order to mitigate these risks it was ensured early on in the design of the study that key information should be available and as far as possible through multiple sources. The author spent part-time at the case company during a two-month period, allowing not only for formal data collection, but also a close familiarization with the organization and its practices.

Alfa Laval was chosen as a case company since they 1) match the criteria of a mid-chain industrial company operating in a business-to-business context as suggested by the problem discussion, 2) are consequently facing related challenges as they are in the process of incorporating environmental considerations in the supply chain and establishing related practices, 3) had expressed a need for a deeper understanding of how to prioritize environmental efforts in the supply chain, 4) were willing to grant access to internal information and support and 5) are located in Lund, Sweden, making the research practically feasible for the author. A detailed introduction to the case company is provided in chapter 3.1.

Yin (2009) proposes four criteria for judging the quality of case study research design. The first is *Construct validity*; failing to establish the correct operational measures for the concepts being studied might lead to use of subjective data. Therefore Yin recommends the use of multiple sources, to establish chains of evidence and have key informants review the draft report. *Internal validity* refers to the difficulty in establishing causal relationships and clear links between events. When analyzing data, recommended tactics to avoid “spurious effects” include pattern matching, explanation building, addressing rival explanations and the use of logic models. Inadequate *External validity* poses problems in generalizing beyond the single case and can be limited through proper use of theory and replication logic. The fourth criterion is *Reliability* and aims to ensure that the study can be replicated and to avoid bias.

Measures to meet the criteria of quality in this case study include:

- Internal and external triangulation: OECD/DAC defines triangulation as “The use of three or more theories, sources or types of information, or types of analysis to verify and substantiate an assessment” (Sida, p. 30, 2007). For case critical issues, multiple interviewees within the company were approached and supplementary sources of information as far as possible used. Also, external stakeholders and reference cases provided additional verification.
- A comprehensive interview base, relevant to the issues under study, was consulted, including respondents within the case company, stakeholders, reference companies, external practitioners and researchers.
- The case study design, execution and analysis use and refer to theory and established analytical frameworks.
- A protocol outlining the case study, the plan for data collection and the use of theory was created. It was at an early stage complemented by interview guides, an outline of the report and strategy for the analysis, allowing for review and replication.
- The data collection was continuously documented; field notes taken and interviews were with a few exceptions recorded.

- Spending time within the case company allowed for informal follow-ups and double-checking of details with company representatives, and external interviews were in a few cases summarized in writing and sent for review.

Even with these measures taken, the difficulty of achieving full reliability and validity is acknowledged from the author's side. The single-case study clearly has an inherent weakness of being hard to generalize. And working alone did not allow for multiple reviews divided between the researchers in a team and obviously constitute a risk in the author unintentionally disregarding important factors and events. Personal bias, both among interviewees and from the author's side, even if limited through the structuring of the work, the use of theory and multiple sources, is an always-present risk among individuals with particular experiences, backgrounds and interests.

### **1.3.3 Data Collection and Analysis**

#### ***Primary Data***

Primary data has been collected in semi-structured interviews and through examination of documents, notes, presentations and other information in printed and digital form provided by the case company and by interviewees. Digital and written sources include the case company intranet, internal procedural documentation, instructions and presentations. Interviews have been conducted with employees from the case company, external stakeholders, and relevant experts.

Informants within the case company have been selected in order to provide a relevant representation of corporate functions with adequate insights into the issues under study. Employees on different managerial levels with relevant expertise have been interviewed. To provide a picture as complete and reliable as possible, multiple informants have been approached for each key issue of the research, even if not always belonging to the same corporate function. For example, when collecting information about *demands from customers*, both sales & marketing representatives as well as external communications and quality assurance functions have been consulted.

External informants include representatives from key stakeholders as pointed out by the case company and in the literature: Investors, customers, suppliers and NGOs. The investors and customers consulted have been selected based on their potential to influence the case company; investment funds Swedbank Robur and Folksam are both among the top ten largest shareholders, while Tetra Pak is the single most prominent customer (Alfa Laval 2011). Suppliers are selected to represent a wide span of characteristics in terms of size, geographic location and resources. While not among the primary stakeholders, the external view was also complemented by the NGO sphere, represented by WWF, known for being active in influencing global production and consumption patterns and practices through corporate collaborations (Cedstrand, 2005).

In addition, representatives from a number of large industrial companies have been interviewed as reference cases; Trelleborg, Sony Ericsson, Tetra Pak Processing Systems, Alfdex. These companies have been selected because their operations show similarities with the case company, their position in the product chain is similar, and/or their initiatives regarding environmental and social issues in relation to suppliers can be considered ambitious (or are claimed to be).

#### ***Secondary Data***

Secondary data has been collected from the literature including books, articles, research and conference papers and public reports from industry organizations, research institutes and public authorities. Sources include the Lund University library directories Lovisa and LibHub and the EBSCOhost, SciVerse Hub and Web of Knowledge research databases, as well as the public Internet. Search techniques included advanced searches with relevant key words and “snowballing” where references in articles led to new sources. Three main objectives have guided the literature review:

1. *Provide a conceptual context and an overview of existing knowledge related to the topic.* Information around key themes relevant to the research have been targeted: Supply Chain Management, Purchasing and how associated with Environmental Management and Life cycle thinking. In particular knowledge relevant to understanding the issues surrounding the research questions have been identified.
2. *Provide a theoretical base, structure and framework for the analysis.* Key areas explored include the concept and theory of stakeholder salience and classification of challenges associated with environmental and social considerations in the supply chain.
3. *Provide information about corporate practices, and related the prioritizations, when including environmental considerations in the buyer-supplier relation.* Particularly, practices for including environmental requirements in purchasing decisions and tools for prioritizing environmental aspects and which suppliers to target have been examined.

## **Analysis**

The analysis of data related to drivers for the case company to take environmental and social responsibility, gathered in interviews, documentation and literature, is primarily based on stakeholder theory and existing frameworks for assessing stakeholder attributes and salience (Mitchell, Agle & Wood, 1997). As the study includes data from both internal and external stakeholder, it allows for analyzing and understanding the two-pronged nature of this phenomenon – both what can be observed within the case company and its *perception* of stakeholder expectations and what expectations and demands are *actually expressed* by stakeholder representatives. Stakeholder theory is widely used in relation to corporate management and decision-making involving aspects going beyond the direct influence of companies and is considered an important framework when discussing corporate responsibility (Branco & Rodrigues 2007).

The understanding of the related challenges perceived by the case company, aiming to answer research question 2, is explored by tracing patterns and reoccurring themes from the data and by categorizing issues according to their nature. No strict framework is used but categorization is supported and guided by relevant findings in the literature, among others the generic challenges associated with upstream Corporate Social Responsibility identified by Kogg (2009).

Practices for prioritizations within the case company, pertaining to research question 3, are analyzed in relation to data retrieved from the reference cases. No particular framework is applied but primary data from the reference cases is structured in a comparative review, allowing for tracing of similarities and major differences in the approaches taken.

### **1.3.4 Interview Design**

Interviews have primarily been semi-structured, concentrated around a number of key themes. The questions have been designed as a mix of set questions aiming for collection of facts, and open-ended questions allowing for respondents to elaborate. In line with the semi-structured

manner the exact wording, order and use of the questions were adapted to the respondent's previous answers and to fit with the story told (Kvale & Brinkmann, 2009).

Specific interview guides adapted to the informant's role, or function in relation to the case company, were developed. In most cases this resulted in specific interview guides for each occasion, since the interviewees provided specific information around his or her area of expertise. All interview guides were prepared around the key themes, of which certain were general for all interviews (e.g. information about the informant, role in the organization and general reflections) and other specific to the role/function of the informant and the corresponding data to be extracted. Table 1-1 provides an overview of the informants and the structure of the interviews.

Table 1-1 Overview of informants and the structure of interviews

About the informant			No. of interviews	Key interview themes specific for informants
Type	Function	Role		
Internal	Purchasing	Management Strategy Operational	6	<ul style="list-style-type: none"> <li>• Supply chain facts</li> <li>• Supplier relations and development</li> <li>• Supplier requirements and auditing</li> <li>• Supply chain impacts and risks</li> <li>• Supply chain issues and challenges</li> </ul>
Internal	Sales & Marketing	Management Strategy Intelligence	4	<ul style="list-style-type: none"> <li>• The market and customer relations</li> <li>• Customer demands</li> <li>• Signals and trends</li> </ul>
Internal	Environmental Management & CSR	Group Management Management Strategy Coordination	5	<ul style="list-style-type: none"> <li>• Drivers, attention and challenges</li> <li>• Development and decision process</li> <li>• Aspects, impacts and risks</li> <li>• Practices and programs</li> </ul>
Internal	Product Development	Management Operational	2	<ul style="list-style-type: none"> <li>• Environmental considerations</li> <li>• Life Cycle Assessments</li> </ul>
Internal	Quality	Management	1	<ul style="list-style-type: none"> <li>• Customer demands</li> <li>• Customer audits</li> </ul>
Internal	Communication	Group Management Internal/external	1	<ul style="list-style-type: none"> <li>• Market communication</li> <li>• Customer demands</li> <li>• Signals and trends</li> <li>• Internal and external perceptions</li> </ul>
External	Investor (Swedbank Robur, Folksam)	Management Analysts	2	<ul style="list-style-type: none"> <li>• Analysis and assessments</li> <li>• Expectations and demands</li> <li>• Exercising influence</li> </ul>
External	Customer (Tetra Pak)	Supply Mgmt Environment	1	<ul style="list-style-type: none"> <li>• Supplier requirements</li> <li>• Supplier selection and auditing</li> <li>• Exercising influence</li> </ul>
External	Supplier (CEPA, Gislaved, Super Engineering)	Management Environment	4	<ul style="list-style-type: none"> <li>• Supplier-buyer relationship</li> <li>• Environmental practices</li> <li>• Customer requirements and signals</li> </ul>
External	NGO (WWF)	Management	1	<ul style="list-style-type: none"> <li>• Expecting from industrial actors</li> <li>• Exercising influence</li> <li>• Practices and programs</li> </ul>
External	Reference company (Trelleborg, Sony Ericsson, Tetra Pak, Alfdex)	CSR Sourcing Communication	4	<ul style="list-style-type: none"> <li>• Supply chain practices regarding environmental and social issues</li> <li>• Prioritizations and tools</li> </ul>

An example interview guide is provided in Appendix 2. Interviews were conducted in person or by telephone. The informants were given a general introduction to the research project and

information about the key themes of the questions prior to the interview. The interviews were conducted in Swedish or English and formal interviews lasted 45-60 minutes and were with a few exceptions recorded.

The formal interviews within the case company were complemented with a smaller number of informal interviews with the purpose of 1) follow-up on and verify already stated information in formal interviews, 2) taking the opportunity to meeting with case company representatives outside of what was feasible to schedule, and 3) getting a general feeling for the company culture and the perception of the company's environmental profile and practices among employees.

## **1.4 Scope and Limitations**

This study is focusing on the management of environmental and social aspects in the upstream supply chain within the operating context of an industrial actor. Internal and downstream initiatives are discussed as well, but primarily to provide the context for and relation to the supply chain efforts. The study investigates the flow of signals from stakeholders and the translation and prioritization of these signals into efforts in the supply chain, but is not intended to provide a full picture of the implementation and details on how to go about in the next step. For example, the study is not looking at supplier auditing schemes or development programs. Furthermore, the purpose of the study is not to build a business case for environmental improvements. It looks at the drivers and associated challenges related to the company's ambitions to minimize the environmental impact, assuming that the company is willing to spend certain resources, even though limited, for handling these issues.

While the study includes the case company's environmental and social initiatives, it should be noted that the main focus is put on environmental issues. This is related to 1) what was proposed by the case company; emphasizing environmental issues as this is where the least progress has been made, and 2) the limited access to data on social issues; much of the relevant information would require interaction with local purchasing organizations outside the main scope of the study and difficult to access for the author.

The theoretical context is not restricted to a specific industry; however, the data collection, case study and discussions are conducted within the context of the industrial manufacturing industry in general, and Alfa Laval in particular. Within the case company the organizational focus is primarily the functions for sustainability issues on a corporate level and the global purchasing organization. The scope is global in the sense that the case company has widespread international practices, but the contextual scope in terms of stakeholder pressure relate to Swedish conditions. The main part of the study has been conducted at the case company's headquarter and main facility in Lund and to a smaller part in Stockholm.

Apart from the issue of bias discussed in section 1.3.2, a key limitation is the access to information, particularly from stakeholders external to the case company. This relates both to the willingness to participate, but also to share potentially sensitive information. While the case company in general has been open to share data, certain information has not been accessed due to company disclosure restrictions. Also, being a very large organization, all possible interviewees within the case company have not been approached or may not have been identified by the author.

The intended audience is practitioners and researchers within the field of strategic corporate environmental and social work with a focus on supply chain related issues, interested in the real-life experiences from addressing these issues.

## 1.5 Disposition

- Chapter 2* Provides the contextual background and current knowledge in the field of sustainable supply chain management in the literature. Particular findings related to the focus areas of the study are highlighted and reflected on. The selected theoretical framework used for the analysis is described.
- Chapter 3* Introduces the case company and its operating context. The evolution of its sustainability work with particular attention to the activities in the supply chain is described.
- Chapter 4* Presents the findings from the case study focusing on data relevant to address the research questions. Includes both the view of the case company and actors external to it.
- Chapter 5* Based on the theoretical framework and typologies identified in the literature, the empirical findings from the case study are analyzed. Findings are discussed in relation to the context of the case company and the literature.
- Chapter 6* Referring to the initial research questions, the findings are concluded. Final reflections related to the overall purpose of the study and suggestions for further research are provided.

## 2 Literature Overview

*This chapter covers the findings from the literature review. The first section explains the conceptual background and provides an overview of where within the operational business context the issues under study belong. The next section presents theory specifically related to the research questions; drivers, barriers and prioritizations. In order to provide an understanding for how environmental and social supply chain work is practiced a third section connects to a suggested best practice. The last section describes the theory of stakeholder salience and the framework used for analyzing the findings related to the drivers for environmental and social initiatives within the case company.*

### 2.1 Conceptual Background

#### 2.1.1 Thinking Along the Life Cycle

Life cycle thinking refers to the idea of taking all life cycle stages of a product or service into account when assessing its environmental and social impact: “The main goals of life cycle thinking are to reduce a product’s resource use and emissions to the environment as well as improve its socio-economic performance throughout its life cycle” (UNEP, 2007, p. 12). Only by considering all stages, beginning from raw material extraction, via manufacturing and distribution, throughout the use, possible re-use and recycling to final disposal, products can be duly compared and overall improvements achieved.

For a customer this ideally means having access to information about the impacts a product or component have had in earlier phases, and for a producer taking into account what will happen to the product after it has left its facilities. It is also understood from the concept that the burden of an environmental impact should not be shifted from one stage to another, or moved between geographic areas, at the expense of the life cycle performance (European Commission, 2010).

For corporations, life cycle thinking implies looking beyond its own operations. The firm can actively seek to develop products with lowered impacts when used and disposed of, and source materials produced under non-harmful circumstances. In these ambitions companies are today using a number of tools and concepts, including Life Cycle Assessments, eco design, eco labeling, Corporate Social Responsibility, Sustainability Reporting and Environmental Management Systems. Taking a responsibility for its products outside its direct control and adopting a life cycle approach, actively managing the *supply chain* potentially plays an important role in this process, e.g. through collaboration with customers and suppliers (UNEP, 2007). The supply chain refers to the series, or network, of companies involved in the upstream (supply) and downstream (distribution) flows of products, services and information, ranging from extraction of raw materials through various processing stages to the distribution of the final product to the end user (Mentzer et al., 2001).

#### **Tools for Life Cycle Management**

The *Life Cycle Assessment* (LCA) seeks to quantify and provide a complete picture of the environmental burden associated with a product or service throughout its life span. It looks at all relevant inputs (e.g. natural resources, energy) and outputs (e.g. emissions to air, solid wastes) at all stages, including transports and energy used in intermediary stages (European Commission, 2010; UNEP, 2003). Hence it can be used for assessing the effects (in terms of impact on the environment) of changing the design of a particular product or to provide information about in which life cycle stage the major impacts occur. The LCA potentially provides a comprehensive picture of the impacts associated with a product, but has also been

criticized for being complex and time consuming and being sensitive to subjectivity in terms of definition of scope of the study and in its interpretations (Moberg, 1999).

The use of an *Environmental Management System* (EMS) aims at securing compliance with all legal requirements and adopting a systematic approach to the management of the company's environmental work. A key feature of the EMS is its focus on continual improvements based on a clear policy and through an iterative process of reviewing the environmental impacts, setting of goals, implementation of programs for achieving these goals and continuous follow-up of results. Basically it is about acknowledging and understanding the firm's direct and indirect impacts on the environment and dealing with these in a structured and consistent manner with the overarching aim of improving the environmental performance (Brorson & Larsson, 2006).

The International Organization for Standardization (ISO) provides the most widely spread standardized structure for an EMS (ISO 14001), which can be third party audited and certified. Based on the same structure the European Union provides a similar standard (Eco Management and Audit Scheme, EMAS). While an EMS does neither necessarily provide information about a company's absolute environmental performance, nor requires inclusion of external parties, it does provide management and external stakeholders assurance of a firm's control over processes a plan for improvements (ISO, 2011). In this sense the EMS can function as a legitimate "proof" of performance and bearer of information along the chain (Nawrocka, Brorson, & Lindhqvist, 2009) and has been indicated instrumental in reducing environmental impacts in the supply chain (Darnall, Jolley, & Handfield, 2008).

*Corporate Social Responsibility* (CSR) refers to the idea of corporations addressing environmental, social and economic issues in line with societal needs beyond regulatory requirements. By integrating environmental and social concerns in its operations companies embrace its responsibility for its actions and in relation to its stakeholders (European Commission, 2006). The corporate rationale of the concept relates to living up to the norms in society as well as managing reputational risks and seeking opportunities for differentiation based on ethical values. In order to provide consistency to the concept and guidance to organizations in its related practices, the ISO 26000 standard has recently been introduced.

*Sustainability Reporting* refers to the disclosure of information on CSR activities and their performance, complementing the financial reporting mandatory to businesses. Being transparent towards stakeholders gives credibility to the activities and pre-empts stakeholder inquiries. In order to assist companies, assuring consistency and allowing for comparison between actors, global standards for sustainability reporting such as the Global Reporting Initiative (GRI) have been introduced (UNEP, 2007).

## **2.1.2 Supply Chain Management**

Life cycle thinking and its ambitions to reduce the environmental impact within the context of business operations, is closely related to the concept of Supply Chain Management (Preuss, 2005b). So, what is Supply Chain Management?

"In essence, supply chain management integrates supply and demand management within and across companies" (CSCMP, Supply Chain Management Definitions, 2011). Supply Chain Management (SCM) can be described as the planning and management of all activities related to sourcing and procurement, product refinement and logistics and encompasses in addition to internal operations, coordination and collaboration with partners throughout the chain; suppliers, intermediaries, service providers and customers (CSCMP, 2011). A model of Supply Chain Management is depicted in Figure 2-1.



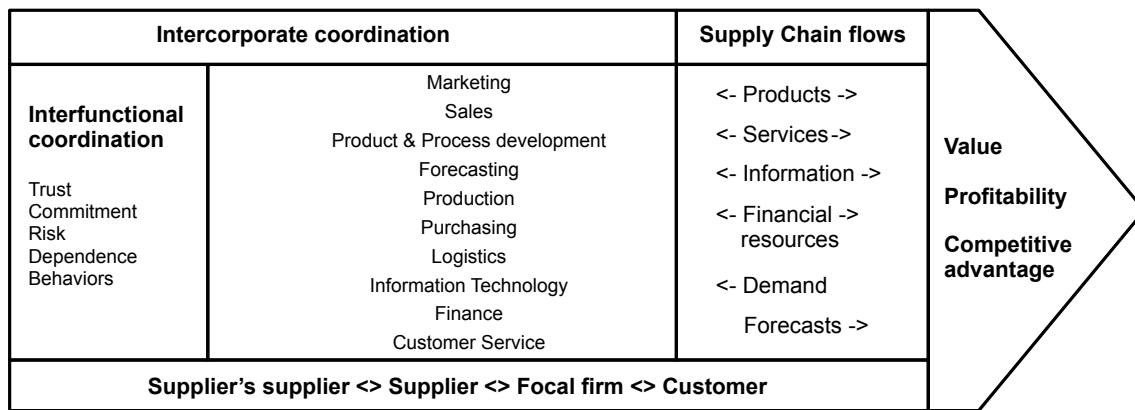


Figure 2-1 A model of Supply Chain Management

Source: Adapted from Mentzer 2004, p. 27

Three key elements of SCM can be distinguished and relate to the management of: 1) flows and transformation of materials, 2) related information flows and 3) relations throughout the chain (Handfield & Nichols, 1999). The fundamental idea is to take a holistic perspective and making subsequent trade-offs for improved overall efficiency and effectiveness while avoiding sub optimizations in each stage. It aims at a better strategic positioning for the firm and lowered total cost. Bowersox, Closs and Cooper (2009) point out total integration, customer focus and demand management, lowered cost and lead times as well as globalization as key drivers for the approach.

Being this cross-function approach to managing the complex network of businesses surrounding the firm, it is easy to realize SCM's importance to environmental initiatives, within and across organizations. Preuss (2005a) describes the SCM function as the “gatekeeper of the organisation” (p.52), making its involvement necessary and crucial when managing life cycle impacts in manufacturing companies.

### The Role of Purchasing

The foundation of supply management is *purchasing* and the upstream activities of acquiring products and services from suppliers. The main focus of the corporate function of purchasing entails the following five generic areas:

1. *Secure supply* of all products and services needed for the firm's activities and ability to deliver to its customers by identifying and maintaining appropriate relations with suppliers.
2. *Timely replenishment* of products in order to maintain service levels and to avoid capital costs due to excessive stock keeping or wasting of perishable goods.
3. *Secure quality* of products and continuously improve quality and processes in line with expected standards regarding products, environmental requirements, safety etc.
4. *Development of supplier relations* through cooperation, information exchange and long-term perspectives in order to improve efficiency, cut costs and reduce financial, legal and environmental risks.
5. *Ensure lowest possible Total Cost of Ownership* of products or services including (in addition to the purchasing price), search costs, transaction costs, costs of flawed products, verification of compliance etc. (Bowersox, Closs, & Cooper, 2009).

Along with globalization and a growing economic importance of supply chain management, the purchasing organization's strategic contribution to the firm is today considerable. The

ability to safeguard supply chain competence, manage supplier relationships and develop new forms of partnerships is crucial to a firm's success (Preuss, 2005a). From initially having been treated as a routine operation, purchasing has been developed into a strategically important function within organizations, as early suggested by among others Kraljic (1983). This change in perspective is described in his often-cited "Purchasing must become supply management" article, where the author suggests a model for strategic decision-making in purchasing based on the two dimensions *importance* and *risks* related to the purchased components and suppliers.

### **Types of Relationships**

An integral part of supply management is about handling the multiple relationships between the firms involved in the chain. According to Mentzer (2004), these relationships can be understood in terms of the *type of structure* and the *intensity*. The author describes the structure type as the way in which the relationship is governed and the level of control the members of the chain mutually exercise, ranging from arm's lengths to integrated approaches. The relationships vary depending on among other things the level of trust, mutual dependence, vision and values, organizational compatibility and frequency in interaction. Burt, Petcavage and Pinkerton (2010) make a similar distinction between different types of relationships. In a *transactional relationship* each deal tends to be independent of previous ones. Little information is shared between the buyer and seller and the mutual learning experience is limited. *Collaborative relationships* or *supply alliances* are categorized by continuous improvements and innovation in an atmosphere of long-term cooperation.

As suggested by Preuss (2005a) the trend within supply management has been towards more collaborative approaches and several benefits following from it has been pointed out. Among these are cost savings (e.g. from sharing of resources), reduced lead times, improved quality and fewer supply disruptions (Burt, Petcavage and Pinkerton, 2010). However, balancing the view of collaboration as a "best practice" approach Cox et al. (2003), argue that relationships differ with the type of supplier and different approaches should accordingly be applied. A key determinant in a buyer-supplier relationship and the differentiation of suppliers is the power relation between the two. Different circumstances of power are decisive for the type of collaboration. Important to note is that power is not necessarily a function of the firms' size, but other factors as well; availability of alternatives, search and switching costs, share of total market of supplier, uniqueness of offer etcetera (Cox, 2004).

## **2.1.3 Sustainable Supply Chain Concepts**

### **Green Supply Chain Management**

With the strategic importance of the supply chain management and purchasing function, it has been proposed as a catalyst for change in the field of environmental and social protection in line with the idea of life cycle thinking (Handfield, Sroufe & Walton, 2005; Linton, Klassen & Jayaraman, 2007; Preuss, 2005a; Zsidisin & Siferd, 2001). The intersection between SCM and management of environmental and social aspects has been discussed and the phenomenon described in the literature under several names and with somewhat different focus.

Environmental Supply Chain Management (ESCM) and Green Supply Chain Management (GSCM) are commonly used terms describing how environmental aspects are taken into consideration when a company is managing its products and relations throughout the chain. Sarkis (2003) describes the major components of GSCM in relation to the value chain; Through *procurement* decisions both material characteristics and the supplier's processes are influenced; purchasers can choose to buy recyclable or already recycled materials, while vendors can be selected based on environmental related risks and assessed through ISO14000 certification. *Production* processes can be designed for the use of materials most beneficial to

the environment and to prevent waste. In relation to *distribution and transportation* the location of distribution centers, mode of transports and logistical optimization should be considered, for outbound as well as reverse logistics. Furthermore, packaging is pointed out as a particular consideration since it is closely related to all stages in the chain. Throughout the chain, alternatives for reduction, reuse, remanufacturing, recycling and disposal should be considered, see Figure 2-2.

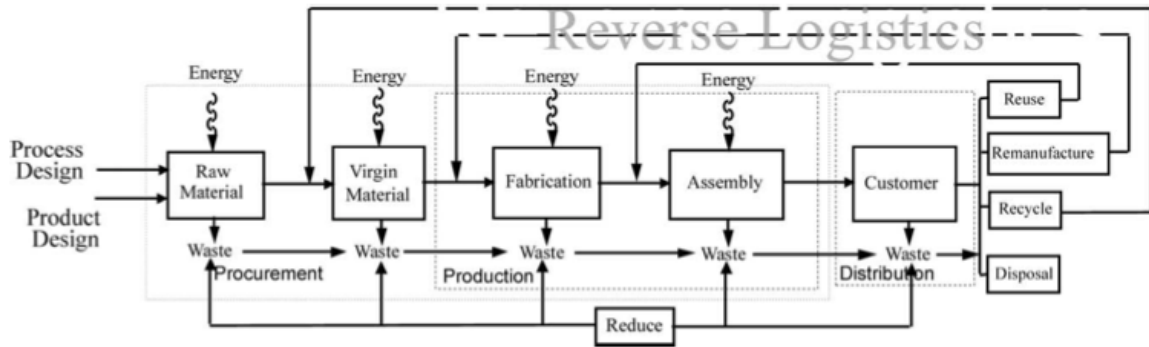


Figure 2-2 A model of a supply chain with environmentally influential practices

Source: Sarkis, 2003, p. 400

Zhu and Sarkis (2004) describe GSCM in a similar but somewhat broader manner: A distinction is made between internal practices (e.g. internal support and EMS certification) and external practices (e.g. cooperation with suppliers and customers), but also activities for investment recovery (sale/reuse of excess or scrap material) and eco-design are pointed out. By looking at inbound, internal and outbound functions, the idea behind GSCM is to promote efficiency and synergy among business partners for improved environmental performance, minimization of waste and reductions of cost (Rao & Holt, 2005).

### Green Purchasing

Green or Environmental purchasing (also referred to as Green supply and Environmental sourcing in the literature) focuses on the incorporation of environmental considerations in upstream activities and in the relations with suppliers. From traditionally primarily focusing on price, product quality and precision in delivery, green purchasing seeks to add the environmental dimension (Preuss, 2005a). While certain definitions of this concept are narrowed to down to specific aspects, such as waste reduction and promotion of recycling (e.g. Min & Galle, 2001), others look more broadly discussing both improvement to the purchased products and the suppliers and supply process as a whole.

Bowen et al. (2001a) propose that improving the *supply process* focuses on inclusion of environmental considerations in the handling of the supplier relationship in order to influence the performance. Suggested activities are e.g. requiring and collecting environmental information from suppliers, assessing the environmental performance and rate them accordingly. Activities related to the changes to the *product* include efforts for waste reduction, recycling and initiatives for reduction of packaging and other by-products (Bowen et al., 2001a). The same authors have in another study also suggested a third type of activity, *advanced green supply*, referring to process-related activities involving close collaboration with suppliers around e.g. clean technology programs and risk- and award-sharing agreements (Bowen et al., 2001b). Also emphasizing both the process and the products, Handfield, Melnyk and Walton (1998) suggest five main categories of supply chain related environmental activities:

- 1) Materials used in product design for the environment;
- 2) Products design process;
- 3) Supplier process improvement;
- 4) Supplier evaluation;
- 5) Inbound logistics processes.

In addition to making a distinction process-product, Kovács (2008), looks at the different type of suppliers, grouping them into three categories: product suppliers (e.g. raw materials and components), process suppliers (supplying technologies and machinery used in manufacturing processes) and others (typically being energy providers in a manufacturing context, but also suppliers of office equipment).

### ***Sustainable Supply Chain Management***

Social aspects are in many cases included in the terminology around Green purchasing (e.g. Carter, Kale, & Grimm, 2000), while in other cases discussed separately (e.g. Carter, 2005). In recent years, the two aspects are commonly referred to jointly in relation to the supply chain termed Sustainable Supply Chain Management (SSCM). The notion of SSCM encompasses the three aspects of the natural environment, society and economic performance and the balance between them in line with the concept of the triple bottom line suggested by Elkington (1998).

Carter and Rogers define SSCM as “the strategic, transparent integration and achievement of an organization’s social, environmental, and economic goals in the systemic coordination of key interorganizational business processes for improving the long-term economic performance of the individual company and its supply chains” (Carter & Rogers, 2008, p. 368). The authors’ view on the conceptual description explicitly refers to the triple bottom line and is supported by four additional aspects of sustainability:

1. *Risk management* refers to dealing with long-term risks associated with for example harmful impacts from products on the environment, securing against resource scarcity and increased energy prices, climate change, worker and public safety, supply disruptions and associated economic losses;
2. *Transparency* and an honest approach are fundamental in the information society of today; by reporting and engaging with stakeholders buy-in and support can be secured, while supply chain coordination enhance traceability and save resources;
3. *Strategy* relates to avoid making sustainability issues stand-alone topics and assure the integration into the overall corporate strategy;
4. *Culture* is about fostering an internal drive for sustainability issues, securing high ethical standards and a corporate mindset focusing on innovation (Carter & Rogers, 2008).

Seuring and Müller’s (2008) discussion around SSCM follow the same lines. Based on an extensive review of the related literature the authors identify two distinct strategies applied by companies: *Supplier management for risks and performance* is focused around the supply process, for example through requirements on suppliers to implement an EMS, inclusion of criteria for minimum environmental and social standards and supplier auditing. *Supply chain management for “sustainable” products* focuses on product characteristics and criteria based on life cycle assessments and management of life cycle impacts related to environmental and social issues.

#### **2.1.4 Reflections Related To the Conceptual Background**

It can be noted from the literature that the concept of Supply Chain Management, with its all-encompassing approach to the management of the network of actors and flows within and surrounding the firm, has become the prescriptive practice for large firms. In its gatekeeping position, the function is inherently also crucial when addressing environmental and social

issues in the supply chain. However, managing the supply chain clearly involves very complex structures in terms of material and information flows as well as in the number and types of relations dealt with. This is also reflected in the suggested conceptual approaches to managing environmental and social issues in the supply chain, covering a range of aspects and activities.

One of the reflections that can be made when trying to match the complexity of the task and possible approaches to managing environmental and social issues in the supply chain is the vast array of circumstances that have to be taken into account. Hence, it is not so much about finding *the one* concept or solution, but rather fitting the initiatives to the particular context of the firm; e.g. the structure of the supply chain and characteristics of the relations, products and problems addressed.

Related, another reflection about the suggested concepts for managing environmental and social aspects in the supply chain, apart from being referred to under a great many terms, is its somewhat descriptive and idealized nature. Proposed approaches such as process or product oriented, or suggested initiatives and aspects to manage, have a tendency of making it sound less complicated than it probably is when putting it into the particular context of a business. As if it was about selecting from a list. Whether related to the limited history of the research field and/or other factors is hard to say, but it indicates additional knowledge about the practices and challenges of companies within different contexts to be valuable.

## 2.2 Environmental and Social Considerations in the Supply Chain

### 2.2.1 Benefits

Green purchasing activities are not only aiming to influence the direct supplier's products and procedures. One of the key contributions of actively working to involve environmental aspect in purchasing decisions is the *ripple effect* this can lead to throughout the extended supply chain (Preuss, 2005a). Putting requirements on and cooperating with a supplier in order to eliminate for example a particular hazardous substance, is can to lead to the corresponding initiative in the second tier of the chain, when the supplier is imposing the same requirements on their suppliers. This chain reaction and related improvements to products and processes, initiated and enabled by the strategic position of the purchasing function, fosters *innovation* and can lead to exploration of *new business opportunities*.

It is clear that the potential positive outcomes of incorporating environmental and social considerations in supply management are related to a wide set of aspects and beneficiaries. Based on a literature study on the topic, Bowen et al. (2001b) divide the potential benefits of green supply into three main categories, including factors according to Table 2-1 below.

Table 2-1 Potential benefits of green supply

Benefits to the...		
<i>Society</i>	<i>Firm</i>	<i>Purchasing and supply process</i>
<ul style="list-style-type: none"> <li>• Diffusion of environmentally sound practices;</li> <li>• Facilitate legislative compliance;</li> <li>• Provide response to public concern;</li> <li>• Reduce demand for environmentally harmful raw materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction of cost;</li> <li>• Management of reputational risks;</li> <li>• Current and future legislative compliance at lower cost;</li> <li>• Improved product or service quality;</li> <li>• Meet market expectations.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting corporate environmental objectives;</li> <li>• Development of co-operative relationships with suppliers;</li> <li>• Reduce direct cost associated with purchasing;</li> <li>• Maintain security of supply;</li> <li>• Improve purchasing's status and strategic importance.</li> </ul>

Source: Adapted from Bowen et al., 2001b

In the 2011 HEC/ECOVADIS European Sustainable Procurement Barometer (Bruehl, Manuet & Thaler, 2011), investigating 80 of Europe's largest corporations (the largest share being manufacturing companies) regarding sustainable procurement, one of the factors explored was the benefit observed by purchasing managers. The highest ranked benefit relates to avoided risk to the company brand associated with bad environmental and social practices of suppliers. Ranked second was the more intangible benefit of enhancing the internal team's motivation and engagement, followed by cost reductions, supplier collaboration, compliance to new regulation and avoidance of supply chain disruptions.

Brammer, Hoejmose and Millington (2011) point out that the research around the benefits of sustainable management of global supply chains is limited and very few attempts of quantifying associated financial or operational performance indicators have been made. However the authors state that "the vast majority of the evidence suggests that, start-up costs notwithstanding, sustainably managing the supply chain can lead to some substantial, if unquantified and in some ways intangible, benefits" (Brammer, Hoejmose & Millington, 2011, p. 31). Benefits shown in their study include employee-related outcomes (e.g. attractiveness of the firm and improved work force motivation), reduction of reputational risks, the maintained or increased attraction to customers and higher probability of meeting regulatory standards.

## 2.2.2 Drivers

### External Drivers

The literature suggests a number of drivers for corporations to engage in environmental and social activities related to the management of the supply chain based on pressure and incentives from external stakeholders and factors. In their study of drivers for supply chain related environmental initiatives, Walker, Di Sisto, & McBain (2008) categorize regulatory pressure, customers, competition, society and suppliers as driving external forces.

- Based on studies of previous research, Seuring & Müller (2008) and Kogg (2009) identify regulatory pressure and compliance with *current and future legislation* as a key driver. Bowen et al. (2001b), however, points out that current legislation is not a guarantee for improved practices but rather the threat of future regulation. This driver is particularly strong for companies with a proactive and innovative approach to regulatory compliance (Walker, Di Sisto, & McBain, 2008).
- A second key driver, again indicated by both Seuring & Müller (2008) and Kogg's (2009) work, is *customer demands*. This finding is also supported in several other studies (e.g. Zhu & Sarkis, 2006; Green, Morton & New, 1996), and particularly in recent research, indicated in a study taking into account findings before and after 2008 (Brammer, Hoejmose & Millington, 2011).
- Pressure from *investors* is reported as an important factor for improvement of the corporate environmental performance in a study of UK industrial companies (Green, Morton & New, 1996). Shareholder pressure is mostly shown present as a driving factor in cases with long-term investors and tends to be focused around the reduction of risks (Welford & Frost, 2006). Dummet's (2006) findings point in a different direction, not showing evidence of shareholders putting any significant pressure on companies regarding environmental responsibility in general.

- Often mentioned, under varying terminology is a driver related to expectations from society. This *public pressure* or moral obligation of the firm, related to general attitudes and concerns and sometimes exercised through NGOs is clearly present but not shown a particularly strong driver (Brammer, Hoejmose & Millington, 2011; Dummet, 2006; Seuring & Müller, 2008).
- Pressure from *competitors* and *suppliers* is rarely pointed out as specific drivers. However, Walker, Di Sisto, & McBain (2009) suggest that competitors can act as a driver in being environmental technology leaders and by setting industry norms, while the role of the supplier can be to provide valuable ideas around environmental projects.

### **Internal and Business Related Drivers**

There is not a clear distinction between what constitutes an internal and an external factor. The internal aspects mentioned here are factors that in one way or another seem to originate from within the company, its people and its business activities.

- A number of *organizational factors* can be pointed as important drivers: Strong personal commitment from both top and middle management as well as general corporate attitudes and values, including the interest and awareness among its personnel (Walker, Di Sisto, & McBain, 2008; Bowen et al., 2001). The role of particular individuals is emphasized as a need for “champions” (who could include the CEO) driving the cause internally. These individuals, are particular important when the work is not fully mandated internally (Dummet, 2006). Bowen et al. (2001) state that “We found a positive relationship between middle managers’ perceptions of corporate environmental proactivity and green supply” (p. 51) indicating that the general approach of the firm to environmental issues shapes the actions on operational level.
- *Cost savings* are commonly referred to as a driver for and strongly associated with green supply chain management. Synergies among business partners and related efficiency gains help minimize waste and save cost (Rao & Holt, 2005). Dummet (2006) points out savings in relation to internal environmental measures in particular, and its relevance for manufacturing companies. However, cost savings also need to be put in relation to time and the overall development of business processes. First, greening the supply process may be costly in the short term, as additional procedures for data collection etcetera might be needed, and second, the potential savings in terms of waste reduction and product improvements may not be considered as related to “environmental” efforts but rather a general process efficiency measure (Bowen et al, 2001a).
- Less emphasized as driver in the literature but also mentioned is the potential of creating a *competitive advantage* in relation to other firms. This advantage is partly associated with other drivers such as cost reduction (a financial advantage) and corporate values (advantage regarding employee attraction and retention) but is also the ability of the firm to develop supply chain capabilities and innovate products (Brammer, Hoejmose & Millington, 2011; Walker, Di Sisto, & McBain, 2008).
- Welford & Frost (2006) identify managing and *reducing risk* as a driver, mainly related to reputational risks and potential harm to corporate brand. Bruel, Manuet & Thaler’s study (2011) support this finding but it has also been indicated that the risk aspect tend to become a less important driver as companies take on more proactive approaches to environmental and social issues in relation SCM than only responding to potential risks (Brammer, Hoejmose & Millington, 2011).

Surveying purchasing managers about key drivers for change towards sustainable purchasing practices, Bruel, Manuet & Thaler (2011) report the top three factors being internal or organizational: 1) obtaining top level support, 2) dedicated team and cross functional governance and 3) training programs on sustainable procurement.

### ***Drivers Related to Contextual Aspects and Supply Chain Characteristics***

Drivers for green supply chain management have also been found related to the composition of the supply chain and particular features in the relations between the actors.

- The *size* of the buying unit is indicated to promote environmental proactivity. This can be related to their relatively larger room for maneuver in terms of resources, or their visibility in society making them take a more active stance (Bowen et al., 2001b).
- *Technological and logistical integration*, e.g. regarding product and process development, technical training and information sharing has also been indicated to promote environmental collaboration in the supply chain (Klassen & Vachon, 2006).
- In the same study Klassen & Vachon also discuss the influence of the *size of the supply base*, finding a smaller supply base to promote more environmental collaboration (Klassen & Vachon, 2006).

### **2.2.3 Barriers**

There is an extremely wide set of challenges for the actors involved and barriers present for incorporating environmental and social considerations in supply chain practices described in the literature. This section points out some of the key challenges, and primarily those arising from the perspective of the focal/buying firm.

When discussing the barriers to change in the supply chain practices in manufacturing companies Preuss (2005a) points out among others the following key aspects:

- *Technical limitations* refer both to the aspect of limitations in alternatives when sourcing materials or component to a product due to technical requirements (imposed by customers), and the limitation in the supply organization's technical skills and capabilities when searching for such alternatives.
- *Introducing and aligning environmental assessment criteria* along with traditional purchasing criteria based on price, quality and delivery conditions are perceived as complex in the supply chain organization. Environmental criteria are both quantitative and qualitative, and understanding, setting and using appropriate metrics can be difficult.
- *The environmental awareness and attitudes among supply chain managers*: Awareness might be lacking and no inspirational sources ("champions") are available in the organization, or awareness might be high on a personal level, but these beliefs are not reflected in their work practices due to a view that environmental initiatives always are costly, rather than representing opportunities.
- *Constraints on the supply chain manager*: Purchasing managers are rarely involved in outlining the strategy and setting the targets for long-term challenges as environmental initiatives. These targets are often imposed on the supply organization, while it is still only measured on financial rather than non-economic criteria – limiting the room for environmental proactivity.



Walker, Di Sisto, & McBain (2008) identify the cost factor in different shapes as a key barrier: Both in terms of actual costs for taking initiatives, but also in terms of how costs for initiatives are perceived; always being a trade-off between ecology and economy. Lacking competence on the issues and clear guidance on how to balance environmental aspects and costs is also pointed out as hindering the implementation of green supply (Bowen et al., 2001a).

Bruel, Manuet & Thaler's (2011) study supports these findings. Purchasing managers ranked *contradictory objectives* (short-term savings vs. qualitative or longer results), *lack of tools* (to support "sustainable" procurement strategy), lack of clear information (from suppliers), lack of metrics (to measure and monitor progress) and *lack of internal expertise* as main challenges for implementation of the firm's sustainable procurement policy.

In a study of the barriers to Corporate Social Responsibility in the supply chain, Faisal (2010) concludes that the strongest inhibitors relate to the lack of consumer concern, lack of regulation and standards and lack of public media interest, and should be treated as root causes to other barriers.

### 2.2.4 Structuring the Challenges

Managing environmental and social aspects in the supply chain is a diverse and complex task. Few all-encompassing rules, guidelines or definitions are applicable and how to approach the issue largely depends on the context surrounding the implementation of strategies and actions (Kogg, 2009). In an attempt to structure the challenges associated with *how to go about* in the work Kogg suggests a typology based on four general tasks, see Figure 2-3. They are not all relevant to all companies, but represent common challenges structured to provide guidance to practitioners, researchers and policy makers.

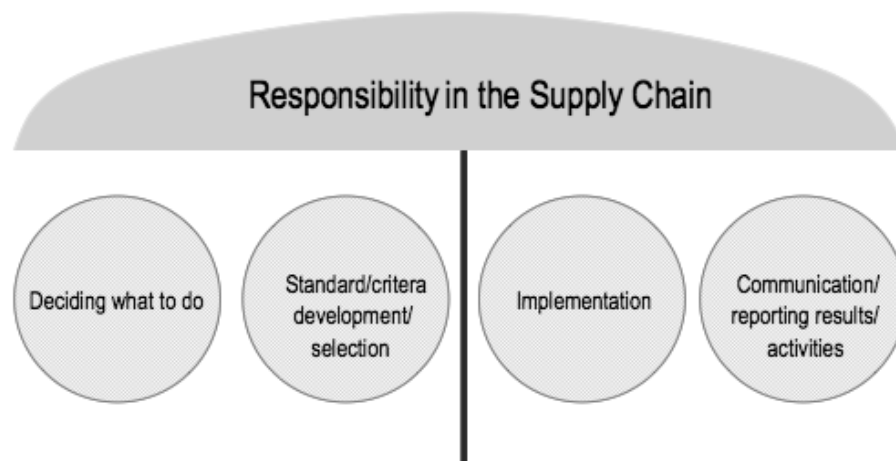


Figure 2-3 Four generic challenges associated with upstream CSR

Source: Kogg, 2009, p. 220

- *Deciding what to do* is about establishing what issues are relevant and the company's objectives – basically defining the firm's responsibility. Closely related to the corporate strategy, the author argues that when deciding what to do it is as much about interpreting the needs and wants of the stakeholders as it is about understanding major impacts.
- *Standard/criteria development/selection* deals with the challenge of determining how to judge the performance of the suppliers or purchased products/materials. In some

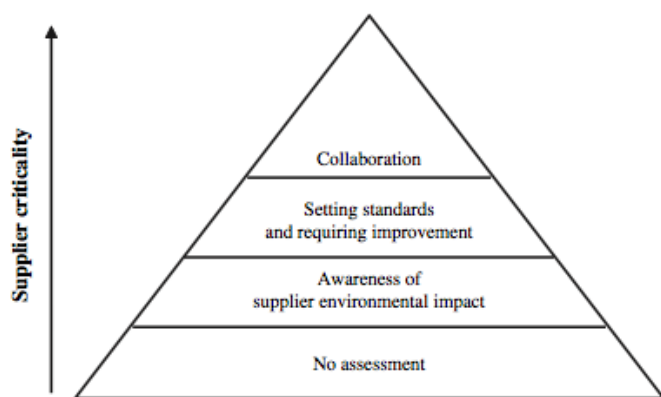
cases industry standards exist requiring selection in accordance with stakeholder opinions and practical considerations, in other cases criteria has to be developed internally.

- *Implementation* refers to the internal and inter-organizational processes that have to be adopted to achieve the objectives. Main challenges are related to identifying and putting the appropriate set of measures in place depending on the circumstances. Determinants in this process are whether suppliers meeting the set standards are available and if this can be verified. This will decide to what extent and how the firm will have to engage with the suppliers to influence their processes and products. Procedures for exercising influence can range from mere supplier selection to actively motivate, enable and monitor suppliers.
- *Communication/reporting results/activities* poses particular challenges related both to the understanding of how to communicate, to whom and about what, but also if the relevant information can be obtained from the suppliers (Kogg, 2009).

## 2.2.5 Prioritizing Efforts and Suppliers

Environmental efforts in the supply chain have to be properly prioritized according to stakeholder expectations and the urgency of the aspects. Ceres (2010) suggests mapping out the firm’s activities and related impacts in relation to the stakeholder’s key areas of concern in a “materiality matrix”, for a high level indication of the materiality of different issues and how efforts should be focused. While the materiality analysis may provide an indication of the importance of a general supply chain focus regarding environmental issues, detailed actions and priority areas within the supply chain have to be prioritized as well: “Strategies and implementation plans should be weighted according to the issues posing the greatest challenges across the supply chain, recognizing regional vulnerabilities, the scarcity of resources, and other prioritized constraints” (Ceres, 2010, p. 57).

As a firm cannot address all issues at once, Handfield, Sroufe & Walton (2005) stress the need to prioritize by proposing the development of a *commodity strategy*. In the first step the strategic and environmental importance of commodities is defined based on three inter-related dimensions: Supply risk, Profit contribution and Environmental risk. A strategy is developed for each commodity group in accordance with this classification, where those with high environmental impact require special attention. Environmental criticality of a commodity is decided by the potential impact of the product itself, as well as from the process to produce it.



Kovács (2008) study on environmental responsibility in the supply chain suggests that implemented measures towards suppliers are commonly based on *supplier criticality*. The approach towards the suppliers follows a continuum ranging from “no assessment” to “collaboration”, where the strategic suppliers are dealt with in a closely cooperative and supportive manner (Figure 2-4). The criticality of the supplier is for example decided by the importance of the components supplied.

Figure 2-4 Levels of environmental demands on suppliers.

Source: Kovács, 2008, p. 1575

Other authors have suggested supplier policies and prioritization of actions with assistance of modified versions of Kraljic's importance-risk based portfolio model (Pagell, Wu & Wasserman, 2010; Arnold & Schmidt, 2010). By adding a third dimension to the model, Stakeholder Impact, Arnold & Schmidt propose different approaches represented by the boxes in Figure 2-5. "Stakeholder impacts" refers to the triple-bottom-line aspects of the natural environment and social issues (the economic dimension is covered under "profit impact"). The dimension's spectrum (low to high) corresponds to the significance of the stakeholder's demands in relation to the firm's purchasing decisions.

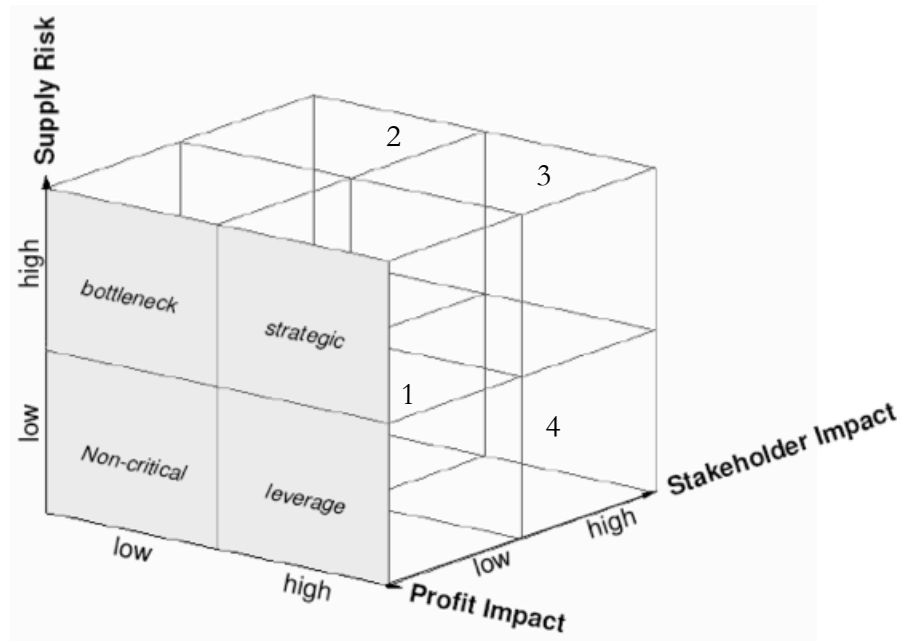


Figure 2-5 Advanced purchasing portfolio approach

Source: Adapted from Arnold & Schmidt, 2010, p. 11

The grey areas relate to Kraljic's (1983) original idea of designing four distinct strategies with the aim of minimizing supply risk and leverage buying power, by identifying non-critical, bottleneck, leverage and strategic items/suppliers. The four boxes indicating high stakeholder impact (1-4 in the figure), result in four strategies to consider for more sustainable purchasing:

1. From a strategic purchasing perspective, transaction costs should be kept to a minimum and product standardization is preferable for *non-critical items*, and no own resources for development should be used. When adding the environmental and social aspects, example approaches include requiring third party certification from suppliers.
2. *Bottleneck items* require volume assurance and secured inventory according to Kraljic's original strategy, which with high stakeholder impact added might require industry wide cooperation (including competitors) for environmental and social improvements.
3. For *leverage items* many suppliers are available and purchasing power should be exploited. Price competition among suppliers should be extended to include environmental and social aspects.
4. For strategic items, where all three dimensions are high, supplier development and long-term focus is essential. Investing resources in eco-innovations and improved

performance on environmental and social issues in collaboration with suppliers is advisable (Arnold & Schmidt, 2010).

A number of authors have suggested applying advanced computing techniques in supplier selection incorporating environmental and social criteria (e.g. Humphreys et al., 2006; Handfield et al., 2002; Shaik & Abdul-Kader, 2011). These logical assessments are forms of multi-criteria decision analysis, for example based on fuzzy logic, analytic hierarchy process and multi-attribute utility theory. The general concept is to aid decision processes by assigning numerical values to criteria used (purchasing criteria including environmental aspects) and the possible alternatives (the available suppliers), and then compute the optimal selection, normally with the assistance of appropriate software.

## 2.2.6 Reflections Related to Drivers and Barriers

### *Are Drivers and Associated Challenges Influenced By the Position in the Chain?*

A number of drivers for, and barriers associated with, the adoption of environmental and social practices in the supply chain have been identified in the literature. However, few are pointed out as being directly related to the focal company's position in the product chain. The most obvious example of how a company's position influences its approach and perceptions around the issue is when looking at the pressure perceived for taking actions and from whom. While pressure from customers is identified as a strong driver for initiatives, these findings are also to a large extent based on studies of companies with consumer relations; the closer to the end user, the bigger the pressure. One of the few explicit points made relating to the mid chain actor in the literature reviewed in this study follows this same line of thinking. In his discussion on the degree of public environmental pressure perceived by companies Preuss (2005a) suggests that smaller companies and manufacturers of intermediate products are under considerably less pressure.

A few things can be noted from this. First it shows that, at least for consumer-oriented companies, the pressure from customers and the public is decisive for the level of ambition and likeliness for taking environmental initiatives in the supply chain. Second it indicates that, if the societal ambition is for these initiatives to disseminate throughout the chain, more knowledge around the situation for actors further up the chain is desirable. While Preuss (2005a), in accordance with other authors, points to the (smaller) size of the company as a barrier for taking initiatives, it is important to note that many of the intermediate manufacturers are very large firms. Size is an aspect, but clearly far from the only one.

Yet another thing related to the position is, apart from the strength of the pressure, also its origin. With a different position in the chain, the pressure might come from a different direction; a company's position seem to influence who are perceived as the most important, or *salient stakeholders*. This is likely to be one of the reasons to why different studies point toward different key drivers.

## 2.3 Green Purchasing Practices - How to do it?

Based on an extensive review of the current knowledge base related to practices for achieving more sustainable supply chains, Brammer, Hoejmosé & Millington (2011) propose a baseline model of managerial practices, representing the most commonly used approaches. The most prevalent management practices identified in the study include: the use of Codes of Conduct, supplier auditing, managed processes of supplier selection and requiring third party certification of suppliers.

- The use of *Codes of Conduct* (CoC) (or similar, e.g. Code of Ethics) stipulating the standards expectations that the buying firm has set and that the supplier has to meet. These documents normally reflect areas that the buying firm consider most important, based on potential problems arising and risks related to the operation. CoCs was identified as the far most prevalent management practice.
- In addition to the stated expectation of the CoC, it is often demanded of suppliers that they possess third party *certification* according to international standards regarding management of environmental (e.g. ISO 14001) and/or social (e.g. SA8000) issues.
- Set expectations according to the CoC and requesting adherence to international standards, provide a base for the buying firm's *process of selecting suppliers*, additional to the regular supplier selection process related to price, quality and delivery performance.
- To verify that the suppliers have the capabilities and willingness to live up to what is expected from them, buying firms perform *supplier audits*. This evaluation process include different means of data collection indicating the supplier's performance, e.g. through public records, supplier questionnaires and formal on-site inspections.

The detailed design of the practices is dependent on the conditions facilitating them within the buying organization and in the buyer-supplier relation. Distinct organizational factors to consider before implementation are: 1) the purpose of the practices (e.g. how well aligned with the commercial strategy), 2) the clarity and guidance of practices in terms of internal policies and 3) the actions, values and commitment of the people within the firm, from top managements down. Important inter-organizational factors are the extent of industry-level collaboration for development of standards, the quality of the relationships with partners, the supportiveness of public policy and power balance between the buyer and supplier (Brammer, Hojmosse & Millington, 2011).

With the base line model as a foundation, the authors suggest a best practice model of sustainable supply, including measures to avoid the command-and-control nature of strictly following an “expect-select-inspect-reject” procedure, see Figure 2-6. For a complete version of the model, see Appendix 3.

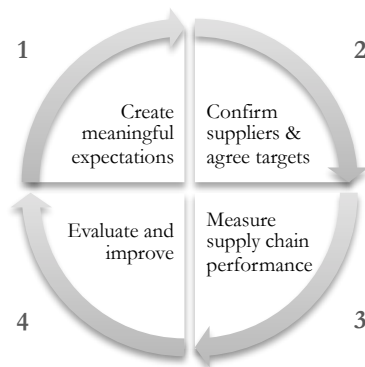


Figure 2-6 Best practice model for sustainable supply

Source: Based on Brammer, Hojmosse & Millington, 2011, p. 45

1. Develop expectations ensuring the right focus in targeted issues, feasibility and legitimacy. This should be based on I) environmental scanning and risk assessments e.g. together with experts (internal, external and local) and through country risk analysis, and II) engagement with stakeholders to develop a mutual understanding of issues, objectives, values, local circumstances and competence needs. The key point is

to focus on the most relevant issue and the practices aim to improve the firm's understanding for emerging issues and secure buy-in.

2. Establish performance metrics based on the defined expectations and agree on targets with suppliers. Adapt according to contextual circumstances (e.g. if new or existing supplier and depending on current performance and risk level) in order to promote step-by-step supplier development process. Specific activities include awareness seminars with suppliers, development of key performance indicators (KPIs), industry benchmarking and development of processes for tracking performance data.
3. Evaluate suppliers with focus on management practices and improvement measures in relation to targets. Rather than policing, the aim is to create incentives for improvements and support the supplier's own development and learning. Specific activities include development of structured action plans for non-compliant suppliers, training of internal and supplier staff, introducing reward programs, fostering long-term relationships, reduction of supplier base and collaborate with suppliers for enhanced data collection of metrics.
4. Learn from the process and communicate achievements and results. Transparency about supply chain compliance data in relation to internal and external stakeholders reinforces commitments and provides a base for the improvement process. Specific activities suggested include reporting, problem sharing with industry actors and establishment of an operational team collaborating with external expertise in reviewing performance and exploring future solutions (Brammer, Hoejmoose & Millington, 2011).

In an industry benchmark study about the tools used in relation to sustainable initiatives in the supply chain, Codes of Conducts (or contract clauses) were pointed out as the by far most practiced instrument, followed by supplier self assessment tools. Other frequently practiced measures include category/country risk models, supplier audit programs, supplier information databases and guidelines for buyers on best practices per commodity (Bruel, Manuet & Thaler's, 2011). Supplier information databases refer to IT based systems for industry exchange of supplier performance data: collection, management, analysis and sharing in a standardized format. An example is UK based non-for-profit organization Sedex.

In the same study purchasing managers were surveyed about the metrics applied to measure implementation of sustainable purchasing practices. The top five most commonly used were shown to be 1) the number of suppliers evaluated/audited, 2) results from supplier's assessments, 3) % of suppliers signing the company charter, 4) the number of buyers trained in concepts and best practices and 5) % of suppliers adhering to international standards (e.g. UN Global Compact participation) (Bruel, Manuet & Thaler's, 2011).

## 2.4 Analytical Framework: Stakeholder Salience

*The previous sections have among other things highlighted drivers for engaging in supply chain improvements and how these are associated with different stakeholders. This section presents how stakeholders and their relevance can be analyzed and understood in greater depth. It describes the theoretical framework applied for the analysis related to the drivers for environmental and social initiatives within the case company.*

In order for managers to understand the relevance of the different stakeholders surrounding the firm, Mitchell, Agle and Wood (1997) proposed the theory of stakeholder salience. Within the framework, various *classes* of stakeholders are identified based on their possession of one or more of three *attributes* – *power*, *legitimacy* and *urgency* – indicating the salience of the stakeholders. The more attributes possessed, the greater the salience. The authors define *salience* as “the degree to which managers give priority to competing stakeholder claims”

(Mitchell, Agle & Wood, 1997, p. 854) and by understanding the attributes the firm's relation to the stakeholders can be established. Apart from being well suited for and applied as support in corporate strategy and management practices (e.g. Magness, 2008; Aaltonen, Jaakko & Tuomas, 2008), the stakeholder salience framework has also provided the basis for the further development of stakeholder management theory as exemplified by Neville & Manguc's (2006) study on the interactions between stakeholders.

Who are stakeholders? This question is not the primary issue in Mitchell, Agle & Wood's article, but several definitions have been suggested in the literature. Generic and often cited, Freeman describes, "A stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization's objectives" (1984, p. 46, as cited in Mitchell, Agle & Wood, 1997, p. 856). Within this wide definition Freeman points out primary stakeholders as customers, suppliers, employees, communities and financiers, as these are the entities most important to the value creation process of an organization, while others (e.g. governments, media, NGOs, interest groups) maybe important as they can affect how value is created for the primary stakeholders (Freeman, n.d.).

The stakeholder attribute of *power* refers to the level a party controls, or can gain access to, resources to influence the firm or "...impose its will in the relationship" (Mitchell, Agle & Wood, 1997, p. 865). Depending on the type of resource used, power is described as coercive (e.g. force, threat, restraints, sabotage), utilitarian (based on material or financial means) or normative (relating to symbolic influences, e.g. social acceptance). The significance of the attribute of power is decided not only by the possession of it, but also by the stakeholder's awareness of the possession and willingness to exercise it. The attribute of *legitimacy* refers to a stakeholder's position in the society, in accordance with "socially accepted and expected structures or behaviors" (p. 866). A legitimate standing in the society, or a legitimate claim on the firm, defines a legitimate stakeholder. The attribute of *urgency* is related to a stakeholder relationship or claim of 1) time-sensitive nature, i.e. the level of delay that can be accepted, and that is 2) critical, indicating the importance to the stakeholder. The authors define urgency as "the degree to which stakeholder claims call for immediate attention" (p. 867).

The framework of stakeholder salience describes the dynamics between the three attributes. An important feature of the theory is that attributes are not steady states or fixed in time. For example, a claim can be legitimate at one point in time but not in another. Or as put by the authors with regard to the transitory nature of power, "it can be acquired as well as lost" (Mitchell, Agle & Wood, 1997, p. 868). Another important point is the interplay and variance in how the possessed attributes are perceived by managers within firms and by stakeholders. Manager's perception of stakeholders is an essential variable when deciding how to respond to stakeholder claims and allocating resources for it – it dictates stakeholder salience.

For the analysis of stakeholder salience Mitchell, Agle & Wood (1997) propose the division of stakeholders in *qualitative classes* based on the possible combinations of the three stakeholder attributes. Each class corresponds to a particular *type* of stakeholder, indicated by one, two or three attributes present, depicted as the areas numbered 1-7 in Figure 2-7. Low salient stakeholder classes ("latent stakeholders") possess only one of the attributes and are found in area 1, 2 and 3. The moderate salient stakeholders ("expectant stakeholders") are identified by their possession of two of the attributes, represented by area 4, 5 and 6. The highly salient stakeholders are found in area 7, possessing all three attributes, while area 8 represent non-stakeholders or potential stakeholders.

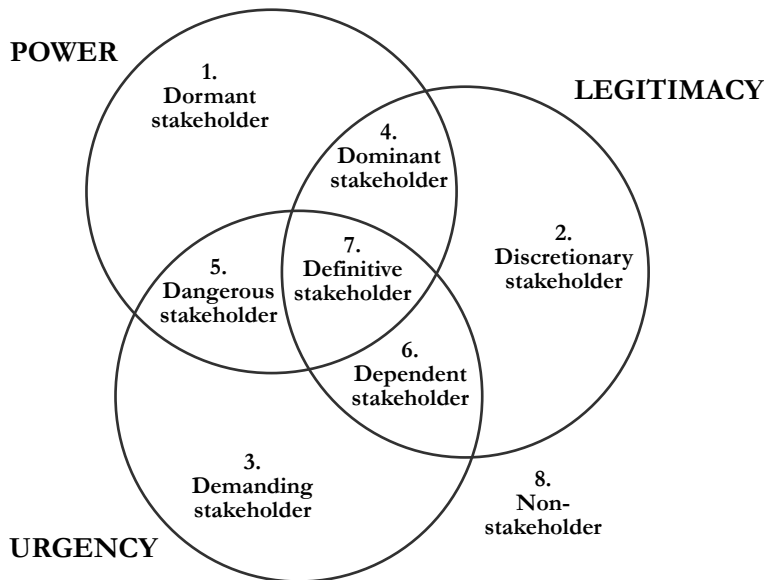


Figure 2-7 Stakeholder types

Source: Mitchell, Agle & Wood, 1997, p. 874

What characterizes different stakeholder types and what are the implications for managers? Stakeholder salience differs over time and with the issue, requiring managers to closely monitor their attributes, how they may change and the interplay between them. Regarding the latent stakeholders, the *dormant* type possesses power, but does not use it unless at least one more attribute is acquired. Even if the interaction often is limited with this stakeholder type, managers need to acknowledge and predicting the events potentially triggering additional attributes. Typical for the *discretionary* stakeholder type, possessing legitimacy is the complete absence of pressure on managers for interaction, unless managers actively choose to. *Demanding* stakeholders are often “noisy” but may have unfounded or irrelevant claims. They perceive their claims to be particularly urgent, but lack the ability to force them through (Mitchell, Agle & Wood, 1997).

More relevant to managers are the expectant stakeholders. Possessing both power and legitimacy the *dominant* stakeholders are often and for good reasons given much attention. This type is typically characterized by having a formal connection to the firm and a mechanism for exercising influence, e.g. through representation in the board of directors or active internal and external communications (in relation to e.g. employees and governmental bodies). The *dependent* stakeholders rely on other’s power to be able to impose its will. Examples include stakeholders referring to the values of the company’s management in exercising influence, e.g. related to environmental issues. Even the environment itself could be considered a dependent stakeholder. Lacking legitimacy but possessing both power and urgency characterize a *dangerous* stakeholder; a stakeholder that may use coercive power and possibly illegal measures. Less obvious, the challenge for managers is to identify this type of stakeholder without acknowledging them. The most relevant stakeholders for managers to pay attention to is the *definitive* type. These are often dominant stakeholders acquiring the attribute of urgency due to specific events, such as disasters or dropping stock values (Mitchell, Agle & Wood, 1997).

A key strength of described theory, as argued by Mitchell, Agle & Wood (1997) is that it allows for systematic explanation of the role and salience of stakeholders and the dynamics in relation to the issue. It provides a means to understand the firm’s position in the society and for efficient management aligned with existing and future expectations on the company.



### 3 Introduction to the Case Study

Chapter 3 & 4 present the case company and the empirical findings from the study. Chapter 3 provides a broad basis for the understanding of the company focusing on factual information about its context, operations and development with respect to environmental and social activities.

#### 3.1 Alfa Laval in Brief

With a history of innovative machinery engineering dating back to 1883, Alfa Laval (AL) is today a leading global supplier of products and solutions within three key technologies: Heat transfer, separation and fluid handling. With representation in almost 100 countries and 30 major production units in Europe, Asia, the US and Latin America, the company employs 12,000 people, of which 1,000 are located at the headquarters in Lund, Sweden. In 2010, net sales amounted SEK 25 billion (Alfa Laval, 2011a).

Above 50% of the group's annual sales are related to *heat transfer*, where the company holds about one third of the world market. Solutions are provided for heating, cooling, freezing, ventilation, evaporation and condensation of fluids in industrial processes and key products are various types of heat exchangers. Almost 25% of yearly sales come from *separation* technologies, used to separate liquids from other liquids or particles from liquids or gases. Key products are high-speed centrifuges, decanters and membrane filtration. Within *fluid handling*, which accounts for a bit more than 10% of yearly sales, key products are various types of pumps, valves and cleaning equipment.

Products are offered directly to industrial customers or through channel partners (e.g. system builders, contracting partners, distributors) and range from standard components to complete systems and related services. The number of customers is huge; tens of thousands, ranging from close collaborations or alliances (e.g. Tetra Pak) to relations of strictly transactional nature. An example of AL's position in the product chain is depicted in Figure 3-1.

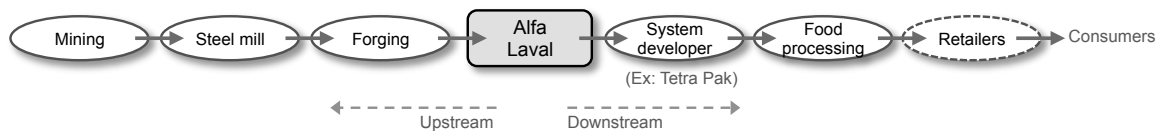


Figure 3-1 Example of AL's position in the simplified product chain

Customers and applications are found within a broad span of areas and industries including food processing, chemicals, pharmaceuticals, pulp & paper, oil & gas, power generation, marine and construction industries, mining, water treatment etc. The demand for the products is increasingly driven by a need for energy efficient solutions, changed living conditions and associated demand for processed food, pharmaceuticals, hygiene equipment etcetera, as well as globalization and related needs for transportation.

The organization follows a complex matrix structure divided in two sales divisions (further divided in ten customer segments) and one operations division (covering ten product groups), which is responsible for procurement, manufacturing and distribution.

#### 3.2 A Wake-up Call From the Investors

In 2002 Alfa Laval was reintroduced on the stock market after more than a decade of private ownership. As a public company, new shareholders scrutinized AL not only based on financial performance, but also regarding environmental and social aspects. Anna Nilsson, head of

sustainability analysis at Swedbank Robur, one of AL's largest investors visited the company headquarters soon after the stock market introduction:

Swedish industrial companies in general have a tradition of fairly good environmental work – Alfa Laval was an interesting exception [...] I went to Lund, expecting a lot from Alfa Laval – but they had hardly started their internal environmental work [...] it does not mean they did not have *any* environmental work, but they were late (Anna Nilsson, personal communication, trans. the author, 28 June, 2011).

Regarding its products, AL already had a history of delivering solutions that inherently contribute to reducing the environmental impacts from industrial activities, e.g. through energy savings and purification technologies, but this had not specifically been communicated within or external to the company.

The pressure from the investors and the identified PR opportunity surrounding its products influenced Alfa Laval to act. However, it was acknowledged that the general environmental performance of the company and the beneficial characteristics of its products were closely related and initiatives had to take the two aspects into account. As pointed out by David Ford, part of the group management and responsible for the sustainability/CSR initiatives at the time, “before promoting the environmental profile of our products, we need to make sure we have our own house in order” (David Ford, personal communication, 31 May, 2011).

Answering to the demands of major shareholders, AL launched a new strategy for its work on sustainability related issues. The base for the work was, and still is, the company's Business Principles introduced in 2003. Covering four core elements; Environment, Social, Business Integrity (ethics) and Transparency, they serve as an internal Code of Conduct summarizing and communicating the company's aspirations. They apply to all AL companies globally and are “actively promoted” when participating in joint ventures and business partnerships. The Business Principles were developed to reflect the United Nations Global Compact as well as the OECD Guidelines for Multinational Companies in consultation with the investors (David Ford, personal communication, 2011; Alfa Laval, 2003).

Following the introduction of the Business Principles and with the expectations from various stakeholders in mind, a number of environmental and social initiatives were launched. Reflecting the pragmatic culture within the company, a holistic view with focus on actual results has been guiding the work. “I could write a glossy sustainability report... but that is not what we are into here is it? – It is about making improvement” (David Ford, personal communication, 13 June, 2011).

### 3.3 The Last Decade's Environmental and Social Journey

Along with a global effort to communicate the Business Principles internally, focus was initially concentrated on implementing environmental management systems at AL's larger facilities. The first ISO14001 certification was achieved in 2004 and in 2006 the main facility in Lund was certified. In 2011, AL reported that 18 out of 28 production sites, representing 96% of delivered value, to be certified according to ISO14001.

Another main initiative in line with the sustainability strategy was related to social issues (specifically working conditions, health and safety) of suppliers in developing countries. In 2005 suppliers in India were evaluated and categorized according to risks involved and the year after the same approach was taken in China and later in Mexico. The main reason for only focusing on social issues initially (rather than environmental) is related to the direct safety

of the workers: “In my view... you have to look after the people that are working, their health and safety first, and then when they have got that to a certain level, then you can start turning your attention to the environment” (David Ford, personal communication, 13 June, 2011).

The introduction of the Business Principles and the early sustainability initiatives were to a large extent the work of one key individual, David Ford, AL’s human resources manager reporting to the CEO. In order to ensure cross-functional coordination and to oversee the policy implementation in the broader line management, the company in 2006 introduced its Environmental Council, chaired by the Executive Vice President of Operations.

The same year a data collection tool for environmental data was purchased, allowing for the first quantifiable environmental performance metrics from own operations in 2007. It was also used for measurements against the newly introduced Black & Grey chemicals list for suppliers, stating prohibited and restricted hazardous substances for suppliers to use in production (as defined by AL). The first set of quantified environmental data was produced in 2007. In line with signals from investors and the public debate in general, focus was primarily set on greenhouse gas (GHG) emissions (based on energy consumption) and hazardous substances (which had also become a compliance issue for AL pushed by REACH).

As the work to improve the social performance of suppliers on social issues had progressed, the first initiatives to introduce environmental aspects in evaluations were taken during 2006 and 2007. However not in a very structured manner, and the main result was limited to putting the issue on the agenda within the purchasing organization. In 2008, a questionnaire was sent out to suppliers representing 80% of the purchased value with the intention to assess the environmental performance and awareness among existing suppliers. In line with the internal approach, the focus towards suppliers was set on reduction of GHG emissions. The results were disappointing, with relatively low response rates and varying quality of feedback. The feeling internally was that the amount of data and the vast diversity made it virtually impossible to process, and few conclusions could be drawn from it.

Another significant initiative related to the environmental performance of AL’s products was the introduction of Life Cycle Assessments. AL experimented with the tool to find the right formula aligned with AL’s intentions in terms of the level of detail in relation to the resources spent on the analysis. Eventually LCAs based on the eco-indicator 99 impact assessment method were included as a step in the new product development process of the company’s largest product groups from 2008 and on. The method is a simplified version of a full scale LCA, performed after the product is designed and introduced into production. The main purpose is comparison between like products (e.g. new product versions replacing old ones), and to raise the general awareness around environmental issues (Daniel Klint; Göran Andersson; Göran Mathiasson, personal communication, 2011).

The development of AL’s environmental and social work is continuously communicated through what the company calls its Business Principle Progress Reports. Each year the main focus areas, initiatives taken and progress is described to inform relevant stakeholders. To provide further details and to follow a global standard, the annual report has been supplemented by a sustainability report on the Internet following the guidelines of the Global Reporting Initiative<sup>1</sup> (GRI) since 2009.

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<sup>1</sup> GRI offers one of the world’s most commonly used standards for sustainability reporting. “GRI’s core goals include the mainstreaming of disclosure on environmental, social and governance performance”.  
<http://www.globalreporting.org/AboutGRI/WhatIsGRI/>

### 3.4 Environmental Management and Organization

AL divides its environmental focus into two areas. *Green processes* refer to the use of its products: by developing technologies and improving its products, AL contributes to improved environmental performance of their customers and enables various environmental protection processes. *Green operations* refer to AL's own performance: by paying attention to environmental aspects in the design, sourcing, manufacturing and marketing of its products, the company is taking responsibility to reduce the environmental impact from its operations. This divide reflects the company's view that its main contribution to reduced environmental impacts is through its products rather through improving its own processes, an aspect commonly stressed in interviews with AL managers involved in the environmental work.

While "green processes" mostly is about acknowledging and communicating positive aspects of the products, "green operations" is about management of the company's interaction with the environment. The work is primarily handled through the EMS on each site. In order to coordinate and reusing the experiences between the sites a group wide environmental management system is applied as well. According to this system, which was initially only looking at own operations, manufacturing sites are graded Bronze/Silver/Gold indicating the level of the environmental work. At bronze level sites have introduced a basic EMS and are meeting the internal standards for control and documentation of environmental aspects, silver implies additional improvement and training plans, while a gold level facility is ISO14001 certified and reports KPIs centrally. In 2008 the ambition was to extend the grading system to include suppliers by requesting information on the level of their environmental work. This turned out to be impractical and hard to administrate, as it was not clear what to require from suppliers from AL's side. The suppliers tended to ignore requests or where overwhelmed with similar demands from not only AL but other customers as well (Alfa Laval, 2005; Alfa Laval, 2008a; Alfa Laval, 2011b; Tommy Karlsson, personal communication, 2011).

AL has identified energy consumption, GHG emissions and the use of chemicals/hazardous substances as the key environmental aspects to manage and focus on. Recently water consumption has been included as an area to monitor but is less prioritized, as the company's consumption is considered to be limited. Interviews and internal documentation indicate that energy consumption and particularly CO<sub>2</sub> emissions have received most attention in terms of more structured projects for reductions and associated reporting. CO<sub>2</sub> emissions have been quantified since 2007<sup>2</sup> and reports for 2010 indicate transports to be the largest contributor (44%) followed by own manufacturing (37%) and business travel (19%) (Alfa Laval, 2011a). A group wide target of 15% reduction of CO<sub>2</sub> emissions is set for the period 2006-2011. Other key metrics used are related to the significant environmental aspects and communicated in the GRI report online. Additional areas of focus currently pointed out are LCAs for new products, the environmental standard of suppliers and the introduction of EMS for sites new to the group following from acquisitions (Alfa Laval, 2011a; Marco Coquinati, personal communication, 2011; Alfa Laval, 2010a).

It is emphasized both internally and in publicly available documentation that the responsibility for implementing environmental initiatives lays on the line organization. The Environmental Council merely coordinates the work and sets the scope and ambitions, while no additional central function for environmental issues exists. A group wide environmental coordinator assists collection of environmental data and local coordinators handle permits and regulatory

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<sup>2</sup> Scope 1 & 2 emissions according to the Greenhouse Gas Protocol have been included in the calculations. Scope 1 emissions refer to direct emissions, i.e. emissions from sources that are controlled by the company. Scope 2 emissions refer to indirect emissions from consumption of purchased electricity, heat or steam. <http://www.ghgprotocol.org/calculation-tools/faq>

compliance issues. Local coordinators are rarely full-time experts; the role is normally assigned to someone in the line organization (Göran Mathiasson, personal communication, 2011).

The Environmental Council meets 3 times per year and performs prioritization of environmental initiatives and main aspects to focus on. Few structured tools are used in the process but input and influences are acquired from external stakeholders, notably investors and analysts, as well as through other industrial companies. In general, “gut feeling” and the common experience of the members of the council provides the most important base for priorities and setting of targets (Göran Mathiasson, personal communications, 21 June, 2011).

### 3.5 Environmental Considerations in the Supply Chain

#### *Alfa Laval’s Global Purchasing Organization and Supply Base*

AL has around 2,500 suppliers globally. Of a total annual purchasing volume of €7-800 million, about 80% is accounted for by about 500 key suppliers. The supply base is characterized by being highly diverse in terms of suppliers’ size, geographic location and type of products supplied.

It is the responsibility of the global purchasing organization to find, evaluate and select suppliers. The central organization sign strategic agreements with global suppliers, according to which forty buying units, located at AL facilities around the world, purchase products and services. The global purchasing organization is divided into six commodity groups.

1. “*Metals*” is the largest commodity group, accounting for 25-30% of the total purchased value. Suppliers are relatively few (about 30) and typically large, located in Europe, USA and Japan and supplying standard commodities including steel (mainly stainless steel), copper, aluminum and titanium. Example suppliers include Nippon Steel and Outokumpu. Even if metals represent the largest part of AL’s purchases (Outokumpu is the single largest supplier in terms of value), the company is still a relatively small buyer in relation to this type of suppliers.
2. “*Casting & Forgings*” represents 5-10% of the total purchased volume and the products supplied are AL designed. The commodity group covers around 150 suppliers, typically relatively small and located in China, India and Europe. The production processes involves several techniques and is in general considered “dirty” and performed under tough working conditions.
3. “*Machining, Forming & Fabrications*” also deals with AL designed products which are being processed and finalized by the supplying firms, representing 20-25% of the total purchasing volume. Not only does the commodity group cover the largest number of suppliers, around 1300, the supplying firms range vastly in size; suppliers can be small, local firms with a handful employees up to relatively large actors with a thousand employees or more. Also the geographic spread is considerable: mostly located in India, China and Eastern Europe, but also Mexico, the US and other countries.
4. “*Electrical, Instrumentation & Flow items*” mostly supply standard components, typically from western European firms, such as ABB. The supply base is more static compared to commodity group 2-3, since AL rely on other (often large) firm’s design and capabilities, with fewer options in terms of supply alternatives and ability to influence where production is located. The group represents 15-20% of total supplied value.
5. “*Seals, Fasteners & Transmissions*”, accounting for 10-15% of the total purchased value, is a highly heterogeneous commodity group. It covers a wide range of materials and

components (e.g. polymeric rubber, transmission details, insulation and bearings), mostly standard components but also produced according to AL specifications. The total number of suppliers is around 300 and largely found in Europe and Asia. Example suppliers include Gislaved Gummi and SKF, but the typical suppliers range from small family businesses to global giants. The commodity group is, similar to group 4, characterized by being more static, leaving less alternatives for AL in terms of finding suppliers and to decide location of production.

6. *“Indirect Material”* covers materials such as packaging, coated tapes, oils, paints, gas etcetera, accounting for about 5% of the total purchasing volume. The suppliers are mainly relatively large, global actors, but given the nature of the products, many smaller local suppliers exist as well (Tommy Karlsson; Claus Møller; Åke Berggren; Mitul Sawjani, personal communication, 2011).

AL has little knowledge about and rarely relations beyond the first tier in the supply chain. A few exceptions exist, mainly related to quality requirements due to the characteristics of certain AL products or when AL is delivering to industries with particular traceability requirements, such as the nuclear industry.

A factor that is influencing and has shaped AL’s supplier base is the long life span of the company’s products. As several components of the products are designed and produced specifically for AL, it has resulted in a very long “tail” of small suppliers still delivering spare parts, even if they are no longer supplying on a regular basis. Another factor is related to the company’s growth strategy; acquisitions have continuously added new suppliers to an already large base of suppliers.

### ***Environmental Purchasing Practices and Supplier Selection***

AL has struggled for a number of years to find the right formula for influencing suppliers on environmental issues. Initiatives have mainly been related to putting minimum requirements on suppliers, both for existing and new ones. No formal auditing has been performed and no supplier development programs specifically targeting environmental issues applied.

Decided on group management level and overseen by the Environmental Council, it has been the responsibility of the purchasing organization to set requirements and implement procedures for selecting and influencing suppliers based on environmental criteria. Focus aspects have followed AL’s general environmental focus: Supplier’s use of an EMS, energy and related CO<sub>2</sub> emissions and chemicals according to the Black & Grey list. In addition, one initiative has targeted packaging materials and lately the Environmental Council has raised water consumption as an issue as well. Transports have also received particular attention as well, but not within the responsibility of the purchasing organization. In the process, primarily David Ford has supported the global purchasing manager, who is not a member of the Environmental Council himself.

The awareness and will to incorporate environmental considerations in the purchasing practices have been established within the purchasing organization but the follow through has been stalled by a feeling of not clearly knowing what to ask from suppliers and how to support them in the process. “The ambition is there... everybody realizes these are important issues... but I don’t quite think we have the knowledge” (Åke Berggren, personal communication, trans. the author, 27 June, 2011). With a perceived complexity of the issue (internally and from suppliers’ side) and due to the disappointing experience from the supplier questionnaire in 2008, the work has been focused on simplifying the process and streamline it into a more “pragmatic approach” (Tommy Karlsson, personal communication, 2011, Alfa Laval, 2010b).

AL's purchasing process consists of three main steps (see overview in Appendix 4): 1) Supplier Identification, where potential suppliers are identified and their capabilities assessed, 2) a Handshake Process, aiming to align commodity strategies with operational and purchasing plans based on input from and agreement between various business functions including global and local purchasing, product management and R&D, and 3) a General Purchase Process, including final screening of suppliers, test ordering and evaluation, agreement finalization and regular procedures for order handling and reception.

For the purpose of evaluating the performance of suppliers a *Supplier Audit Platform* has been developed and included as a support tool in the Supplier Identification and General Purchase Process, see Appendix 5. The Supplier Audit Platform is applicable for qualification of new suppliers, when qualifying new items from existing suppliers and for reviewing existing suppliers. The main focus in the audit platform is on the supplier's ability to meet the required standards regarding product quality, price and delivery. However certain elements of environmental and social parameters have been included in the evaluations as well.

Included in a general self-survey and an on-site visit performed by the purchasing staff, AL's environmental and social requirements are communicated to suppliers (it should be pointed out that the environmental aspects are only side conditions to quality, price and delivery performance). The assessment includes a combined Environment, Health & Safety (EHS) section, referred to as the "EMS audit" and the "Business Principles audit" within AL. Six questions related to environmental issues and seven on social and safety issues are posed to potential suppliers. These questions basically constitute the environmental requirements AL places on its suppliers, in line with "the pragmatic approach":

1. Is your company certified according to ISO 14001?
2. Does your company have a documented Environmental Management System?
3. Does your company calculate its Carbon Dioxide emissions?
4. Has your company published targets to reduce your Carbon Dioxide targets?
5. Does your company have processes to make sure it fulfills all local laws and regulations in respect of handling, labeling, disposal of waste chemicals and hazardous substances?
6. Does your company have a defined process to identify, reduce and eliminate hazardous chemicals such as those identified on Alfa Laval's prohibited and restricted chemical list? (Alfa Laval, 2010c; Markus Ekendahl, personal communication, 2011)

In case a supplier answers yes to the first question, and can show evidence of an EMS certified according to IS14001, no further actions are taken. If the supplier is not certified, an affirmative answer to the following five questions is required. A supplier meeting these requirements is classified as a "Bronze level" supplier. For existing suppliers it is the responsibility of the purchasing organization to decide on further actions, in case the six questions cannot be met. However, no structured process has been developed for the purpose. The overall ambition for AL's purchasing organization is that at least 80% of the company's purchased value shall come from Bronze level suppliers.

## 4 Exploring Drivers, Challenges and Prioritizations

*Chapter 4 presents the empirical findings from the case study, concentrating on the information related to the particular research questions. It also provides a deepened understanding of the views of external stakeholders.*

### 4.1 Pressure Perceived by Alfa Laval

It is clear that several of Alfa Laval's sustainability initiatives have been triggered and influenced by stakeholders external to the firm. Internal stakeholders play important roles as well but are less frequently pointed out as the main source of pressure and original drivers for taking action. So what are the signals reaching AL? What pressure does the company perceive and how does it correspond to what is expressed by the stakeholders?

#### *Explicit Pressure From Investors*

When discussing the issue with current or ex-members of the Group Management, particularly one external stakeholder group is pointed out as the most influential one; *investors* (David Ford; Göran Mathiasson; Peter Thorstensson, personal communication, 2011). It was pressure and from the investors that originally made the company put the environmental and social issues on the internal corporate agenda. Before these issues had been handled within the general operational management in order to assure compliance with regulations, but had not been pinpointed as specific areas that required attention. No policies and structures guiding the work had been put in place. Neither performance indicators or environmental programs were applied, nor were any environmental initiatives and performance communicated.

The signals from the investors were explicit and expressed through for example personal communication, site visits and in environmental ratings. In Folksam's yearly climate rating ("Folksam's klimatindex"), indicating and comparing the environmental performance of Swedish public companies for 2003, AL was given 1 star out of 5 possible (Folksam, 2003). In the beginning the pressure was mostly expressed as a general concern from the investors' side. However, clearly the company was expected to structure its work and show evidence of a plan for dealing with relevant environmental and social aspects. Developing internal policies and to be transparent about impacts and initiatives are basic key expectations (Emilie Westholm, personal communication, 28 June, 2011). As AL initiated its work and the dialogue evolved, investors also proved to be important sources of knowledge.

Various means for investors to influence AL and for the mutual interaction have been indicated through the study. Transparency and disclosure of information has been mentioned, but more interesting is how AL has also turned to investors for more practical directions and advice. Examples include the development of the Business Principles, input on aspects to focus on and which global standards to use. AL's openness and co-cooperativeness have been confirmed in interviews with investor representatives and it is clear from listening to their view on AL's sustainability work, how well the two side's stories match. Even if input from investors has been of strategic nature, it is evident that a continuous dialogue has shaped AL's environmental and social ambitions and initiatives.

#### *Implicit Expectations From Society*

The surrounding world or the *society* is often referred to within AL as a key reason for taking environmental and social actions. Even if a less distinct source of influence than investors, the company wants to be perceived as "responsible" – whether it is about workers' conditions in developing countries or reduction of GHG emissions. In whose eyes are not always clear, but the attention that environmental and social issues receive in the public discussion also sends signals to AL, its management and employees – through media, in internal discussions and in



exchange of experiences with other industry actors. Peter Thorstensson (personal communication, 2011) mentions among others potential employees, students and partners (including customers and suppliers) expecting AL to act as “a good firm”, indicating a perceived reputational risk. The environmental and social standards have to be kept at a certain level and scandals avoided.

NGOs, who have been suggested as representatives for the societal expectations on companies, are however not perceived as exercising any pressure what so ever (David Ford, personal communication, 2011). This is partly confirmed by Swedish WWF, whose cooperative approach towards corporations more typically have involved firms with end consumer relations, and based on initiatives from the companies’ side (Magnus Emfel, personal communication, 2011).

### ***Limited and Diverse Customer Pressure***

It has been indicated in interviews with AL representatives from sales, quality and environmental functions as well with Group Management representatives that *customer demands* related to environmental and social aspects in general are few. Some examples of customers requiring evidence of active environmental management have been identified, typically through AL presenting policies and EMS certification. Documentation show that an environmental audit at AL’s Lund facility performed by Tetra Pak took place several years ago. It states that Tetra Pak according to its environmental policy “encourage” its suppliers to implement an EMS and that environmental demands should be placed on suppliers (Tetra Pak, 2003). It can be noted that this procedure has not been repeated since AL’s ISO14001 certification was obtained. In general very few examples of customers continuously following up or auditing AL’s environmental performance exist.

It is however also clear that the attention paid to environmental and social aspects varies significantly between customer segments and between individual customers, largely reflecting AL’s diverse customer base. Customers active in industries being more intensely scrutinized and involving distinctive reputational, environmental or health risks, such as Oil & Gas or companies owning consumer brands (e.g. Unilever, Procter & Gamble), are expressing a higher concern in discussions with AL representatives. So far explicit demands are mainly related to health and safety issues (when using AL products in their own operations and/or safety within AL), but proactive companies like Statoil and Procter & Gamble also show increased interest in environmental matters.

Overall, a subtle but noticeable trend among customers is to pay more attention and increasingly place requirements on AL on environmental issues. But the signals are ambiguous and highly diverse; while a certified EMS tends to become a mainstream requirement, other customers, even if still rare, are asking for detailed CO<sub>2</sub> emission figures broken down per product. The perception from AL’s side is that some requests are made without even the customer knowing the purpose. Also customers confirm the difficulties surrounding requirements and expectations. Recently Tetra Pak, also an industrial actor, announced its new global environmental targets. To achieve a 40% relative cut in CO<sub>2</sub> emissions the company states that this would involve engagement of suppliers (Tetra Pak, 2011). However, when asked, the Tetra Pak representatives could not explain how this affects suppliers (such as AL) or how data would be retrieved. Apparently the same question had been posed internally.

### ***Employee Awareness - an Inherent Organizational Drive?***

In response to the perceived pressure, *AL management* has set the ambitions and acted as an internal driver for the company’s environmental work. Top management have decided on

strategy and actions, supports the process and particular individuals of the management team are closely associated with certain initiatives.

However, when discussing with representatives of the management team how these issues are perceived among *employees* in general, the picture becomes somewhat two-sided. On the one hand, environmental issues are described as important and inherently driven within the organization, as the company's history of developing environmentally beneficial products is strong. On the other hand, employees are not perceived as a particularly strong pressure group that demands environmental proactivity from the company's side (more than being part of an increasingly aware society). The internal organizational drive seems to be more about engineering tradition than an actual value based pressure related to environmental concerns.

Contrasting this management view it is interesting to note from interviews and discussions with various functions and individual employees that there clearly is a general interest for environmental issues. People are proud of the company's products but do not necessarily find the firm's general environmental proactivity to be up to the same standards. This indicates a potential for a broader employee engagement, which could be beneficial to the further improvement of the products as well as to other environmental activities.

### ***Meeting Regulatory Demands Is Self-evident***

Legislative requirements are in interviews rarely explicitly mentioned as a direct driver for AL's environmental work. On the other hand it is obvious that meeting and exceeding *regulatory demands* is taken for granted as part of the company's responsibility, as stated in the Business Principles and other documentation. Apart from legal permits, regulated emission levels etcetera related to the operations and described in the EMS, the only clear evidence of regulation influencing AL is the handling of chemicals associated with the EU regulation REACH and the introduction of the Black & Grey list.

Related to environmental regulations, an interesting example of how this in fact can create new opportunities and drive product development for AL is found within the marine sector. Thanks to tightened regulations on ballast water treatment and pumping for ships due to policies adopted by the International Maritime Organization (IMO), the need for AL's technology has increased significantly (Peter Thorstensson, personal communication, 2011).

### ***Few Specific Demands Regarding the Upstream Supply Chain***

Apart from Tetra Pak's vague (and old) suggestion about environmental demands for suppliers mentioned above, few indications of more precise signals regarding the supply chain have been found within or perceived by AL. However, there is clearly a view that suppliers somehow should be included in the environmental work, but reasons for initiatives are mostly related to the general notion of being perceived as a responsible company.

## **4.2 The Challenges of Meeting Expectations**

### ***The View of Management***

It is clearly acknowledged from AL management's side that the company shall and is expected by external stakeholders to work with its suppliers for improved environmental performance. It is however also clear that this is one of the areas within the sustainability work that is perceived the most difficult and least successful one.

Why are we doing it? We are doing it because are expected to by investors; we need to report about our work with our supply chain. There is a sort of

social requirement on us, society is saying: - You should work with your supply chain. That is without doubt. But how and on what? ...it's such a big subject, such a big number of suppliers (David Ford, personal communication, 13 June, 2011).

A general perception is that AL has limited ability to influence suppliers for improved environmental performance. "The purchasing side is tricky, we have difficulties reaching out to our suppliers... there are suppliers who have refused to fill in [questionnaires]. We don't control them... and it is a learning process for them..." (Göran Mathiasson, personal communication, trans. the author, 21 June, 2011). Mathiasson also compares AL's position to the position of its suppliers: "in the same way we dislike getting customer questionnaires to fill in, the suppliers think the same" (personal communication, trans. the author, 21 June, 2011).

The size of the supplier base, its diverse nature ranging from family-run workshops to global giants and geographic spread are often mentioned as factors hampering the work and influential abilities. David Ford (personal communication, 2011) describes the influence-impact paradox of AL being a large, potentially influential company but at the same time small in relation to the actors in whose supply chains some of the biggest environmental impacts occur (referring to suppliers of resource intense materials such as stainless steel and other metals). Ford also mentions immaturity in the industry in general as a challenge, among customers, competitors and in the supply chain. Being in the middle of it all puts AL in a difficult position; what are the *right* standards? Currently the perception is that every actor is running in its own direction, the result being inefficient and somewhat confused.

Ambitions and initiatives have to be feasible for both AL and its suppliers. Limited resources to spend on the issues, and distribution of resources for largest possible total environmental benefit are also perceived as challenging factors. The latter point is mentioned in relation to the discussion about AL's biggest environmental influence being through the downstream use of its products – the company should focus where the most good can be made, and this might not be in the supply chain.

### ***The View of the Purchasing Organization***

Members of the purchasing organization partly do similar reflections; the sheer size of the supply base adds complexity and several examples of its diversity being perceived as a key problem are found. Large suppliers with well-developed own sustainability work are described as showing a tendency to ignore AL's questions and requests while small ones have difficulties understanding them. Others are described as just being overwhelmed by customer demands in general or should not be disturbed because they are particularly important. Lack of competence and capacity among suppliers is also mentioned. A commonly cited example involves requests to suppliers for CO<sub>2</sub> emission figures which, if responded to at all, often create confusion and questions in return.

This leads to another point made among the purchasing staff; counter-questions and suppliers in need of support are often difficult to deal with. Calculation of CO<sub>2</sub> emissions is one example but also concerning EMS requirements and what this entails. Purchasing representatives express that they do not possess the knowledge and tools needed to provide assistance and feedback to less developed suppliers.

Apart from knowledge, necessary resources are considered to be lacking; a feeling that environmental issues are not allowed costing anything. A mixed message from management's side is described – saying that environmental issues are important, but at the same time that

price and delivery performance should always be the main deciding factors. Limited work time is reserved for the issues and internal incentives and measures disregard environmental efforts.

Assessing the environmental performance of suppliers in the first place is mentioned as difficult. On the other hand it is also pointed out that the organization should be able to handle it – equally well as for quality and delivery issues – if the issue had similar status. But “it is not clear what we want to achieve” (Claus Møller, personal communication, trans. the author, 22 June, 2011). A general perception is that as long as the organization is clear about what should be expected from suppliers, what the key issues are and what AL means when posing requests, at least there would be a basis for progressing. Key aspects have been described as moving targets; first it was EMS, energy and CO<sub>2</sub>, now the issue of water has appeared – “what comes next?” one of the purchasing representatives asks rhetorically.

### ***The View of the Suppliers***

Looking at it from the suppliers’ side few challenges were pointed out. The only clear indication of perceived pressure was related to having an EMS in place. Of the three suppliers interviewed, the largest of them (Gislaved Gummi in Sweden) was already ISO14001 certified, while the two smaller ones (CEPA, in Sweden and Super Engineering in India) were in the process of implementing according to ISO14001 standards (Nina Mauononen; Ronald Fredricks, Peter Nielsen, personal communication, 2011). The general perception among these suppliers was that having a third party certified EMS in place would become a requirement in the future. However, it was also pointed out that only by saying that implementation was planned for, no further questions tended to be asked at this stage.

## **4.3 Prioritization Based On Signals From the Surrounding World**

### ***AL’s Approach***

AL management and the Environmental Council are responsible for and do the prioritization of environmental efforts. Göran Mathiasson, chairman of the Environmental Council describes the prioritizations as a *listening process*, where input from investors, customers and the general discussions in industry and the public spheres provide the base for decisions. No particular methods or tools are applied (personal communication, 2011).

David Ford, describing himself as the “eyes and ears” of Group Management and the Environmental Council on the issue, confirms this picture. No formal risk assessments are performed, but apart from investor input he also mentions how experiences are shared and information acquired from industry colleagues. When asked about the initial environmental and social prioritizations Ford refers to a “crude risk assessment” referring to this type of process where external signals are mixed with internal experiences and common sense for decision making (David Ford, personal communication, 2011). In the AL documentation the company’s environmental risks and opportunities along the value chain are referred to in an appendix to the Business Principles Progress Report, indicating a certain structure around the prioritizations (Alfa Laval, 2008b).

Regarding the supply chain, focus aspects have basically been prioritized according to the ones AL is focusing on internally: EMS, CO<sub>2</sub> and the Black & Grey list. Key suppliers have been prioritized as they represent the major part of the total purchased value, in line with the goal of suppliers representing 80% of the purchased value to meet AL’s requirements.

### ***From the View of the Investor***

So, looking at one of the main external influencers, how does AL's prioritizations match the investor's view of what are important areas for the company? Swedbank Robur assesses this type of company (manufacturing industry) on sustainability in two steps. The first step involves two perspectives. First, *risks along the value chain* are evaluated (e.g. own and suppliers' production). Apart from looking at the products and processes, risks are assessed based on geographic location of activities. Second, *opportunities related to the products* are evaluated. Typical opportunities would be a company manufacturing clean technology products or offering social benefits, e.g. access to medicine (Anna Nilsson, personal communication, 2011).

In the second step the company is assessed based on its abilities to deal with the identified risks; e.g. through the use of an EMS, in product development and in the supply chain. In general Anna Nilsson (personal communication, 2011) points out three key aspects in the analysis of an industrial company: 1) The internal policy/Code of Conduct, 2) How the responsibility for own production and products are dealt with, and 3) How suppliers are evaluated and audited.

Overall, it is interesting to see how AL's prioritizations correspond to the areas of focus in the investor's assessment of this type of company. This observation fit well with how AL describes its prioritization process; outward looking and highly pragmatic. The company is clearly receptive to input from stakeholders. However, on one point AL perceives particular challenges – *how* the suppliers should be dealt with. The following points were described as crucial for AL in the process of assessing, placing requirements, and following up on suppliers in the view of Swedbank Robur:

- Be realistic, everything cannot be done at once. Focus on suppliers with which the company has *direct agreements* (1<sup>st</sup> tier).
- The general approach depends on 1) what *type of products and processes* the supplier is involved in, and 2) the *geographical risk*. This will decide the level of relevancy for working actively with the supplier, and could be represented by a high/medium/low risk grading.
- It is *crucial to base the assessment on the risks involved in the process*. High-risk processes involve (but are not restricted to) surface treatment, casting, machining.
- Other relevant factors for prioritization are: *Size/volume from supplier* and *supply risk* (i.e. whether important supplier/product).
- *Processes with high environmental impact must be audited*.
- The criticality and level of risk in its supply chain *requires AL to possess the competence of environmental auditing* (if not possessed, the competence must be recruited).
- *A certified EMS is a good base for requirements and assessments* of suppliers, but attention should not be dropped only because they have one.
- *A differentiated approach may be applicable* towards suppliers. E.g. according to risk grading: A low/medium risk supplier may not require auditing if they have a certified EMS. A large European company can possibly be followed up on through its public environmental reporting etc.
- The Business Principles should be complemented with a *specific supplier policy* providing concrete guidance to suppliers.
- General remark: AL should *introduce structured environmental risk assessments and audits* (Anna Nilsson, personal communication, 2011).

## 5 Analysis and Discussion

In this chapter the empirical findings from the case study are analyzed with reference to the analytical framework and typology conceptually described in the methodology section and presented in detail in Chapter 2. Results are discussed in relation to the literature and expanded on where particularly relevant to the research.

### 5.1 Understanding the Roles of the Stakeholders

#### 5.1.1 Classifying Stakeholders: Power, Legitimacy and Urgency

The stakeholder approach provides guidance and structure to the operations of the company (Donaldson & Preston, 1995), in this case regarding AL's management of environmental and social issues in the supply chain. In order to better understand the role of the key stakeholders in driving these issues within AL they have been classified and described applying Mitchell, Agle & Wood's (1997) typology of stakeholder salience, see Figure 5-1.

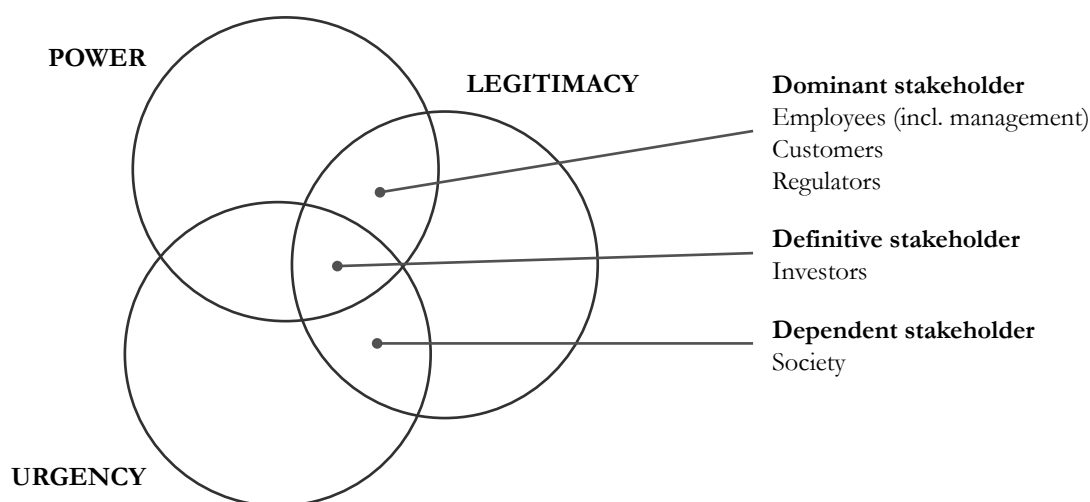


Figure 5-1 Classification of key stakeholders

Source: Based on Mitchell, Agle & Wood, 1997

#### The Definitive Stakeholder

*Investors*, and particularly those owning considerable shares of the company are definitive stakeholders possessing the three attributes power, legitimacy and urgency. Power can be, and is, exercised in several forms; coercive in the sense that withdrawing as an investor might pose a threat to the long-term financing and stability of the company, utilitarian through possessing means and capabilities such as money, knowledge, intelligence and access to management. The investors' legitimacy is earned through its long-term commitment, willingness to share risk and accepted position in society as financiers. Urgency has been shown throughout AL's sustainability journey, being particularly time sensitive initially, but always critical to some of the major investors.

#### The Dominant Stakeholder

The dominant stakeholder possesses the two attributes power and legitimacy. *Customers* possess utilitarian power through its business agreements with, and monetary compensations to AL. This also grants customers and their claims legitimacy as they are closely linked to the very purpose of the business; generate incomes through its sales in order to gain profits to the owners. Customers have thus far however provided limited sense of urgency concerning environmental and social issues.

*Employees* hold normative power based on moral obligations and shared values but in a sense also utilitarian power; people make up the organization and much of the firm's abilities are dependent on them. Potentially they can also hold coercive power, for example by threatening to disclose information or infringe property rights. Being one of the most important assets of the firm the legitimacy of the employees is very clear. However, little evidence of urgency has been indicated among employees through the study. The firm's management holds a special position among the employees, possessing more direct power while equally legitimate. Even if management has initiated and driven the sustainability work, indicating a higher urgency, this has been done in response to demands from primarily investors rather than following from a particular sense of urgency from within management itself.

Having access to coercive, utilitarian and normative means, authorities or *regulators* are also in a position to exercise power and put forward legitimate claims through laws, financial motivations, sanctions and standards.

### ***The Dependent Stakeholder***

*Society* in general is a significant stakeholder in relation to AL but with other characteristics than the previously discussed; it differs in not possessing any direct power over the firm. Societal expectations depend upon others, notably the AL management, to be taken into account. The claims are legitimate as they are based on the general standing in society and indicated as urgent, related to the ongoing public discussion around corporate environmental and social responsibility.

### ***The Role of the Suppliers***

While not indicated as a specific driver for the sustainability initiatives in the supply chain, the suppliers themselves are through its business relation with AL and direct involvement, clearly legitimate stakeholders in relation to the issue. The main explanation to why the suppliers are not among the main drivers is that the efforts spent towards suppliers are not perceived to give equally (or more) benefits in return; it is mainly perceived as a problematic and resource intense activity. Often perceived as difficult to influence, e.g. due to their size and capabilities, suppliers are rather to be considered barriers than drivers.

## **5.1.2 What Does Stakeholder Salience Tell Us?**

First, in line with Mitchell, Agle & Wood's (1997) idea, the stakeholder salience typology *helps explain the role of the stakeholders in influencing AL*. This primarily relates to their importance in AL's view, but also to the characteristics of the relations; what is expected and how is the influence exercised?

Investors expect AL to take a clear stance in the form of policies, to continuously improve in a structured process based on relevant aspects and being transparent with respect to its performance, target and plans. Examples of direct influence (e.g. through votes and questioning at annual general meetings) and indirect (e.g. sustainability ratings) has been shown. The investors can both motivate AL (e.g. through secured financing or threats of sanctions/selling) and act as enablers (e.g. providing guidance). AL has responded with an open, cooperative approach designing strategies based on the signals.

In the example of society's role, the direct means of influence are fewer. The expectations are revolving around the public perception of AL and currently discussed "hot topics", notably GHG emissions and the shift of environmental and social burdens when outsourcing activities to low cost countries. The motivations for action are related to reputational risks and the moral obligations of a global firm, in this case reinforced by the fact that AL provides environmentally beneficial products.

Second, stakeholder attributes are not steady states (Mitchell, Agle & Wood, 1997). The typology helps understand *how the role of stakeholders may change over time* and by analyzing their attributes, shifts and related management implications can be anticipated. Since AL implemented a number of initiatives bringing the company's sustainability work up to standards in the view of the investors, their urgency has consequently decreased. New events, such as the REACH regulation or publically exposed disasters in other companies, have on the other hand increased (even if slowly and moderate) the urgency of customers and society.

Third, it helps to better *understand the interrelations between the different stakeholders* and how this affects AL. Complementing the stakeholder salience framework Neville & Menguc (2006) show how stakeholders are interacting and can do so in both conflicting and cooperative ways. For example the societal pressure perceived by AL is affecting not only its managers and employees, but also the investors and customers. Hence, from a managerial point of view, the observation of pressure perceived by one of AL's stakeholders affects how this stakeholder acts towards AL, as corresponding expectations and demands are passed on.

The fact that most of AL's customers are (like AL itself) industrial actors, placed somewhere in the middle of the product chain, explains the limited customer pressure perceived by AL. Customers with closer end user relations, such as Procter & Gamble, are likely to perceive a higher degree of urgency in its stakeholders relations and hence increasingly raise the issues of the environment and ethics in the relation with AL.

### **5.1.3 What Is an *Environmental Driver*?**

An interesting observation from the case study is that cost reduction is not in a single interview mentioned as a benefit that would drive the environmental initiatives in the supply chain. This is contradicting what is often pointed out in the literature (e.g. Bowen et al., 2001b; Rao & Holt, 2005), and says something about how environmental issues are perceived internally at AL. Cost reducing initiatives (such as resource efficiency and reduced electricity use) are rather described as self-evident improvements that are included in the company's continual process development – it is not about the environment. Partly this is likely to follow from AL's limited history of structured environmental work, but even more from being a pragmatic engineering firm with stringent cost focus in general.

Two things can be learned from this observation. First, environmental issues are not fully integrated as a natural part of the operations at AL. It is rather perceived as a side activity that “has to be taken care of”, and not as an opportunity in itself. Second, it is interesting to note for external observers (the author included) how the notions of “environmental performance” or “proactivity” depend on what you look at and how it is communicated from the firm's side. When looking from the outside at how a company is performing on environmental issues, it may be that some of the environmentally beneficial activities are found outside the explicit “environmental” programs, which arguably does not make them less important.

## **5.2 Key Challenges and Their Nature**

Thus far the reasons *why* AL is working to influence its suppliers on environmental and social issues has been established; answering to external stakeholder pressure and avoiding reputational risks, securing its profile of being a good company partly derived from its environmentally beneficial product portfolio. However, as indicated by the case study, the work to decide on and implement corresponding activities in the supply chain has proven difficult. In order to structure and understand the nature of the perceived problems Kogg's (2009) typology of generic challenges associated with upstream CSR is applied, see Table 5-1.

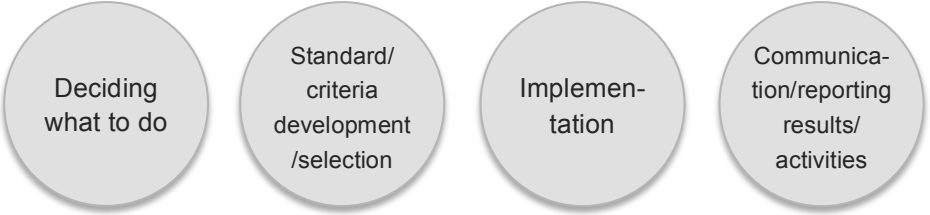


### 5.2.1 Structuring According to Type

#### “Deciding what to do”

The difficulties described, particularly by the purchasing organization, express a sentiment in line with “if we are not clear about what we want ourselves, how can we require from our suppliers to meet our wants”. This in turn is closely related to the difficulty of interpreting external stakeholder expectations. Hence one of the key challenges is *to interpret the stakeholder signals and translate these into own objectives and actual activities*. This is related to the relatively weak and unspecific external pressure for environmental initiatives in the supply chain perceived by AL. Also the resource intensity of the activities and the limited total impact compared to the downstream use of the company’s products act as barriers, limiting the attention paid to the issue internally.

Table 5-1 Structuring the perceived challenges



Short description (Kogg, 2009)	Needs and wants of stakeholders, focus aspects and objectives	Criteria to judge performance	Internal and inter-organizational processes	Gather information and inform stakeholders
Excerpts from interviews and discussions within AL around perceived challenges (not direct quotes)	<p>Focus aspects are like moving targets</p> <p>Own objectives unclear - what do we want to achieve?</p> <p>Seems to be a gap between management and operative implementation</p> <p>How to prioritize efforts and resources: the supply chain vs. other environmental initiatives</p> <p>Stakeholders demand that we work with our suppliers – but how and on what?</p> <p>Immaturity in industry in general sends mixed and unclear signals – no common view</p>	<p>Own knowledge about criteria and standards is limited (e.g. EMS requirements)</p> <p>Demanding and placing requirements is difficult when not fully aware of what it implies</p> <p>How to measure and assess suppliers</p>	<p>Limited competence and targeted training</p> <p>Conflict of resources – limited time and money spent on issues</p> <p>Lacking consistent tools (e.g. CO<sub>2</sub> calculations)</p> <p>Pragmatic, feasible solutions needed</p> <p>Limited power to influence large suppliers</p> <p>Difficult to explain and unclear how to support suppliers</p> <p>Suppliers cannot be disturbed too often</p> <p>Size of supply base</p> <p>Diversity of suppliers; size, relationships, products, geographic and cultural</p>	<p>Low response rate and quality of answers to supplier questionnaire – they didn’t understand</p> <p>Can’t explain to suppliers what is required</p>

Source: Based on Kogg, 2009

### **“Standard/criteria development/selection”**

Another general challenge that can be identified is related to assessing who is a well performing supplier and who is not. This is specifically difficult in terms of *finding and applying the appropriate set of requirements to place on suppliers*. Thus far the Business Principles (including legal requirements), a functioning EMS, the Black & Grey list and CO<sub>2</sub> measurements have been the key requirements. Particularly the CO<sub>2</sub> calculations and the EMS requirement have resulted in problems; several small suppliers have difficulties understanding what the requirements entail. This leads to another related specific challenge: *explaining the meaning and supporting suppliers in the process of meeting requirements*. Purchasing representatives do not possess detailed knowledge on the topic and few tools or internal experts are available.

### **“Implementation”**

The previous point is closely related to a general challenge stemming from contextual factors such as the massive and diverse supplier base and AL's position in relation to suppliers (in terms of power and ability to influence). All sorts of suppliers and relations exist and have to be dealt with. The specific challenge here is to *decide which suppliers to focus on and find appropriate measures for respective supplier type or group*. Depending on the characteristics of the suppliers, the approach for influencing has to be adapted. Current focus is on key suppliers in general, but still the numbers and differences are huge.

All the previous points are closely related to the general challenge of putting necessary measures in place and preparing the organization for the work. A specific challenge here is to *assure that necessary knowledge and competences are available in the organization*. As mentioned, purchasing representatives lack knowledge related to the requirements, but also auditing, supplier training and support etc. requires specific knowledge and skills. This is also closely related to the specific challenge of *integrating the environmental issues to be a natural part of the purchasing practices*. AL's own history of structured environmental work is relatively short. Also, related to values and opinions, the status of the issue is relatively low internally, which limits its priority and the willingness to allocate resources.

### **“Communication/reporting results/activities”**

Challenges associated with the stakeholder communication are mainly related to the evaluation of suppliers and the difficulty of retrieving useful information for the purpose. As indicated in the study this follows both from unclear requirements (basically not knowing what to ask for), and the suppliers not understanding the meaning of requests, as discussed above.

## **5.3 Prioritization of Efforts in the Supply Chain**

The case study shows that AL applies few tools or more sophisticated methods for prioritizing focus aspects, suppliers and efforts related to environmental and social initiatives in the supply chain. *Rather than using systematic methods, prioritizations are made in line with the company's perceived responsibility based on what stakeholders, notably investors and the society, expect*. With stakeholder input in mind the Group Management and, for environmental issues, ultimately the Environmental Council decides on relevant issues and activities to be implemented by the line organization.

### **5.3.1 Comparing Alfa Laval With Four Reference Cases**

Is this a common approach in industry and what additional methods can be applied? Since the AL case study presents few examples of systematic tools for prioritizations it has been complemented with input from four reference companies to investigate this question further. The AL case is compared to what is indicated in interviews with Trelleborg, Sony Ericsson, Tetra Pak Processing Systems and Alfdex, summarized in Table 5-2 below.

Table 5-2 Comparison of practices for prioritizing efforts in the supply chain

Company name	Alfa Laval	Trelleborg	Sony Ericsson	Tetra Pak	Alfdex
<b>Company characteristic</b>	Public company Manufacturing/ outsourcing Industry brand Mid chain	Public company Manufacturing/ outsourcing Industry brand Mid chain	Company owned Mainly outsourcing Consumer brand Sales to retailers	Privately owned Manufacturing/ outsourcing Industry/(consumer) brand Closer to end users than AL	Company owned Manufacturing/ outsourcing Industry brand Mid chain
<b>Annual sales</b>	SEK 25 bn (2010)	SEK 27 bn (2010)	€ 6.3 bn (2010)	€ 8.9 bn (2009)*	Unknown
<b>Focus area of interviewee(s)</b>	CSR, env, purchasing etc.	Corporate responsibility	Social issues	Supply chain & env. issues	Quality & env. in production
<b>General prioritization approach</b>	Stakeholder expectations, experiences & common sense	Stakeholder expectations + annual materiality assessment	Stakeholder expectations + prioritization processes and to some extent cooperation with competitors	Stakeholder expectations	As opportunities are presented, doing what is perceived as feasible
<b>Approach for requirements on suppliers</b>	Business Principles EMS CO2 Haz. substances	Code of Conduct Passing on what is required of themselves, typically EMS and haz. subst.	Supplier Code of Conduct Focus on development rather than requirements	Code of Conduct Legal Chemicals ISO14001/EMS	Code of Conduct Passing on what is required of themselves, typically EMS
<b>Assessment of supplier performance</b>	Self assessment according to six questions but process not in place	Yearly self assessment questionnaire	On site assessments by trained auditors, self assessments only as information to suppliers	Continuous self assessments and audits	No continuous process in place (but included in quality assessment of new suppliers)
<b>Prioritization of how to focus supply chain activities</b>	Key suppliers	Key suppliers Geographic risk according to international standards Influential power	Formal risk assessments on supplier and commodity level	Critical components Risk production Based on purchased value	No active influence exercised

\* Total figure for Tetra Pak. No figures available for Tetra Pak Processing Systems, but a rough estimate = 20% of total.

Sources: Alfa Laval, personal communication with various interviewees, 2011; Alfa Laval 2011a. Trelleborg, Rosman Jabja, personal communication, 2011; Trelleborg, 2011. Sony Ericsson, Tommy Lundström, personal communication 2011; Ericsson, 2011. Tetra Pak, Helene Malmros & Daniel Paci, personal communication, 2010; Tetra Pak, 2010. Alfdex, Lars Schultz, personal communication, 2011.

Apart from what is indicated by Sony Ericsson, the comparison does not show any significant differences in the approach to prioritizations in the supply chain. Sony Ericsson stands out both in how prioritizations are performed and in the actual activities towards suppliers. Even if no details about the specific tools or practices were revealed, the company seems to apply a more structured prioritization process and explicitly describes the work towards suppliers as a supportive improvement process rather than a matter of passive assessment of performance and setting of requirements. To clearly show to suppliers that Sony Ericsson wants to help out

the word “assessment” is in fact used for what is normally referred to as audits, to avoid any signals about policing and merely controlling activities. The somewhat different approach taken by Sony Ericsson is likely to follow from its position as a consumer brand and consequent additional media exposure and reputational risks. Hence, as the perceived benefit of the work is higher the additional resources spent can be justified. Interesting to note is also that a clear “champion” with a strong personal commitment is found in Tommy Lundström.

AL, Trelleborg and Tetra Pak all apply resembling approaches. These companies are also fairly similar in terms of size and positioning in the product chain. However, Trelleborg applies a formalized materiality analysis in order to gather high-level input for prioritizations; a yearly questionnaire to stakeholders provides data on aspects to focus on. A general observation is also that Tetra Pak seems to have come further in its work towards suppliers. Not in terms of prioritization tools, but in terms of auditing practices, internal resources and competences available. This is among other things again probably related to its brand being better known among consumers and the pressure that follows. The smallest company, Alfdex, differs in the opposite direction. Limited by available resources no particular tools are applied and rather than prioritizing efforts based on stakeholder expectation, feasibility is the guiding factor.

The comparative analysis indicates *few sophisticated tools to be applied for prioritizations in the supply chain*. Common themes are that *prioritizations take risks into account in some form* and that activities are *focusing on key suppliers*. Regarding the risk assessments, the level of formality is limited (Sony Ericsson indicates an exception), but Trelleborg refers to global standards as the basis.

### **What is the Prioritization Aiming At?**

Regardless of the exact approach taken by the compared companies, it can be observed that the prioritizations on a strategic level mostly focus on stakeholders. *Attention is primarily paid to interpreting stakeholder signals rather than analyzing detailed environmental aspects*. Weak, unspecific signals and a limited perception of being rewarded for answering to them, help explaining why prioritizations in the next step, on operational level, are so difficult. First, it gives limited guidance on how to focus and second, necessary resources for the issue are hard to justify internally.

## **5.4 Do Actions Match Stakeholder Demands?**

Overall the signals from external actors correspond well with aspects and activities prioritized by AL. The most obvious examples are found when comparing what is observed within AL to what has been expressed by investors. Looking at AL’s sustainability initiatives in general the *matches are striking, both in focus, timing and wording*. Examples include the introduction of the Business Principles, the focus on ISO14001 and environmental and social reporting initiatives. Also the ambition to include environmental considerations in the supply chain practices is in line with investor demands. However, here a higher degree of discrepancy between what has been expressed as necessary measures in investor interviews and the AL approach so far can be noticed. Particularly two things, *structured risk assessments related to production processes in the supply chain* and *structured environmental auditing and related competences* were pointed out as lacking.

So, why are stakeholder signals related to the supply chain not being perceived as clearly by AL? One reason indicated in the study relates to where in the process AL is in its work. It is a relatively new area to the company and little explicit stakeholder dialogue on the issue has been kept. Also, as seen from the perceived challenges, several of the difficulties are related to how to actually go about – deciding what to do, with which tools and based on what competences. Here stakeholder signals are less explicit. Yet another explanation is related to AL’s internal priorities and the resource intensity of the efforts – assessing and influencing the

upstream supply chain is a complex task requiring certain expertise and competences. In AL's case the upstream supply chain efforts and the related environmental benefits are also contrasted by the environmental benefits downstream when the products are in use. In relation to the resources spent, it is easier to justify internally a focus on the products, which is more directly connected to the core business and can be considered to contribute more in terms of absolute environmental benefits. This situation makes the supply chain issues less prioritized in general and hence possibly the organization less receptive to the signals.

## 5.5 Does the Reality Fit With the Learnings From the Literature?

The case study of Alfa Laval has been about understanding the reality of an industrial company trying to work with its supply chain for improved environmental performance. A number of interesting observations have been made of how this process is perceived by the company and the functions and individuals within it. Looking back to the literature, an obvious question is: How well is this reality reflected in the theoretical discussions?

A general reflection from the "Green Supply Chain" literature studied is its focus on the possible *activities*. Suggestions (or listings) of initiatives neatly outline *what* a company can do. There is a tendency to idealize the environmental supply chain work, as if it was mainly about picking activities from a list. The suggested initiatives are of course all highly relevant; many of these have been introduced at AL, whether within environmental programs or the general process development. But what is less emphasized in the literature is the "*how*", the actual *process of getting there*. It is very clear from the study how difficult it can be not only to decide what to do, but finding the right formula for introduction and the continuous management of the issues; a formula that fits with the context, ambitions and capabilities of the company.

Looking at the *drivers*, regulation and customer demands have been suggested as the key factors in the literature (Seuring & Müller, 2008; Kogg, 2009). The findings in this study have indicated investors and the general society among the stakeholders to influence the case company the most. There is obviously no opposition in these findings, but it underlines how drivers depend on the context and the perceptions of the company. For example, in Brammer, Hoejmose & Millington's (2011) study, most of the cases were B2C actors, which makes the finding of consumers putting the most pressure natural. The company in this case is an industrial B2B actor. This and other less obvious factors, such as having a history of manufacturing environmentally beneficial products, being newly reintroduced on the stock market, internal values etcetera all influence what is perceived as drivers for the company. What also should be noted is that sources of external pressure can change over time related to particular incidents, interactions between and the characteristics of stakeholders or general changes in the context. In addition, as in the case with AL's view on cost reductions, drivers for *environmental* initiatives depend on how they are being labeled.

Regarding the perceived *challenges* many of the findings in this case clearly correspond to what has been discussed in the literature; resource conflicts, lack of internal capabilities, available tools etc. This is among other things shown by how well Kogg's (2009) typology for general challenges could act as a supporting frame when analyzing the challenges perceived by the case company. Interesting to see from the study is how much of the challenges are related to understanding the signals from stakeholders, and how this interpretation is influencing what initiatives are taken and how. This finding relates to Kogg's (2009) discussion on the difficulty of deciding what to do: "the challenge here is as much about understanding, and possibly predicting, the needs and wants of relevant stakeholders, as it is about understanding where major impacts are" (p. 221). This issue is clearly reflecting the reality of AL where external pressure is not only driving but also influencing the more specific design of initiatives.

How external signals are being passed on internally also show interesting patterns. Within the AL purchasing function a perception of the issue being “dumped on their desks” can be noticed. Limited internal support or additional resources for dealing with it are provided. The result is a conflict between the environmental and the price/delivery performance criteria according to which purchasing is normally judged. This situation relates to what Preuss (2005a) refers to as “Constraints on a supply chain manager” (p. 123). The author points out how purchasing managers tend to be left without room for maneuvering or incentives to deal with environmental issues. In line with what is suggested by the author, the AL purchasing organization is responsible for handling the issues but is neither part of deciding high-level strategies, nor rewarded for the work. This type of situation can be explained, the author argues, by the generally low status of purchasing within industrial companies. Adding to this discussion, the AL case indicates the generally low status of environmental issues to be an important factor. Throughout the organization, particularly on management level, the view on environmental issues being costly side activities (rather than opportunities) can be noticed.

A distinction that is commonly referred to in the literature is whether companies are aiming to improve the suppliers’ general environmental performance, “the process”, or the characteristics of “the product” supplied (Bowen et al., 2001a; Handfield, Melnyk & Walton, 1998; Seuring & Müller, 2008). In the AL case focus is primarily on the process, for example through requiring a functioning EMS of suppliers. What is interesting to note is that this is not so much related to an active choice between strategies, but rather about responding to stakeholder signals, feasibility and whether a necessary standard according to which verification could be made is available. A supplier’s EMS, even if difficult for AL to assess in itself, at least provides some form of proof, indicating legal compliance, acknowledgement of relevant impacts and a structure for improvements. This corresponds to what has been pointed out by Nawrocka, Brorson, & Lindhqvist (2009), and underlines the importance of commonly accepted and verifiable standards.

Contrary to what is suggested by Bowen et al. (2001b), that the size of the buying firm would promote environmental proactivity, this has not been shown in the case study. Even for AL, a relatively large buying unit, the perception is that the power for influencing the supply chain is often limited. This is more in line with Cox’ (2004) discussion on power relations; the interdependency is not necessarily related to the supplier’s size and the volumes, but to other factors as well. The risk and impact of losing a supplier, AL’s total share of the supplier’s sales, the uniqueness of supplied products, the supplier’s environmental capabilities etc. These are all factors that can act as barriers when trying to influence suppliers on environmental criteria.

On the other hand, the discussion around the relative power may also “shoot over the target” of the issue, disregarding at which stage the company is in and what problems are most imminent. When turning back to the reality of AL a reflection is that the main focus is not on the detailed means for inter-organizational management based on power relations but more fundamental issues such as what to do, what to require of suppliers and the challenge of building necessary internal capabilities.

Would any of the tools suggested in the literature for the purpose of *prioritizing* in the supply chain help AL in the process? More advanced computing methods based on environmental criteria, as suggested by e.g. Humphreys et al. (2006) and Shaik & Abdul-Kader (2011) seem very far from the reality of AL (and also for the reference companies). It lacks the stakeholder perspective and requires a different level of competence and focus regarding detailed environmental aspects. The use of a risk-importance matrix as suggested by e.g. Handfield, Sroufe & Walton (2005) and Arnold & Schmidt (2010) might be more useful. The approach is in line with the few prioritization criteria indicated to be used in the case study (including the

comparative study) – risks and the importance of the suppliers. It builds on sourcing strategy tools well known to purchasers and focuses on resource efficiency – only spending efforts where it is needed and makes sense. This kind of tool could be useful for practitioners in making fundamental, pragmatic and structured prioritizations.

## 5.6 In Alfa Laval's Position and Role

### *Looking From the Outside*

AL's activities in relation to the environmental performance in the supply chain have thus far been limited. Apparently the perceived pressure has not been enough to justify more attention to the issue internally. From a societal perspective this could be perceived as a good thing, because it may imply the environmental problems in the supply chain to be few, risks to be limited or already being dealt with. On the other hand, it could also be perceived as a bad thing because it indicates that a company in this position does not have to pay much attention to the issue; with limited public attention, no one is thanking them if they do and no one is blaming them if they do not. The study indicates that the reality of AL is somewhere in-between this good and bad picture; the immediate risks are relatively low, and hence the company's attention to the issue.

On the other hand, it is also important to note *where in the process* AL is in its work. From having started its structured ambitions relatively late, the company is now steadily progressing its sustainability work. For good reasons the activities in the supply chain were not among the first initiatives and the work is still in an early phase. There is nothing in the study indicating that AL would be less ambitious than other similar firms. Rather the opposite. In discussions with other companies during the study (e.g. the reference cases) it has been interesting to notice how well the problems perceived by AL correspond to the problems they are facing. What has been seen within AL is a reality that appears to be similar for many other large industrial companies operating in a Swedish context.

So, how is AL's position in the product chain influencing what have been observed in the study? In terms of drivers, clearly AL fits into the common picture that *the farther away from end consumers and public exposure the company is found, the lower the pressure and drive*. The type of customers the company has makes a significant difference to the pressure they put regarding environmental issues. This has been indicated by the varying (even if overall limited) attention paid to the issues among AL's customers where certain industries and well-known brands are being the most proactive. The AL case instead show how investors play a significant role and have a bigger impact than what is generally indicated in the literature. This obviously depends on a number of factors, such as ownership structure, being a public company etcetera, but indirectly, to whom attention is paid and *who influences the company the most on environmental issues* is influenced by its position in the chain. Another aspect, typical but not unique to the mid-chain actor, is *the complexity of the supply chain*.

It should be noted that while AL is not under any significant pressure for influencing its supply chain, the company is still clearly *receptive* to pressure. As shown in the study, both the explicit signals from investors and the more ambiguous signals from society are among the key drivers for action. There is no reason to believe that reputational risks are less important to AL than for other (e.g. consumer focused) companies, the risk is just not perceived as high.

From a societal perspective a crucial question then arises: What would make this type of company to place the environmental issues in the supply chain higher on the agenda? With few clear answers, the general issue is about making the perceived benefits exceeding the efforts. Either the pressure for doing so has to be increased, or the barriers lowered. Pressure

can as we have seen be about investors demanding actions and transparency, or media giving non-consumer brands increased attention. Lowered barriers could be about further development and introduction of international standards for assessing the environmental performance of processes and products. Also providing support around audits and industry-wide cooperation could help avoid inefficient efforts due to misalignments between actors.

### ***Looking From Inside the Company***

Even if AL acknowledges a responsibility to take environmental initiatives towards its suppliers the work has been stalled. More specific signals of what is expected and how to go about have not been picked up and finding the appropriate level for the work in order to make it feasible for the organization has been difficult. Meanwhile the issue in itself is complex and highly resource intense, it is also new to the organization. Limited internal expertise and support is available. In addition, environmental issues as a specific area does not hold a very strong position in the firm in terms of status and historical focus, more than what follows from the inherent benefits from the use of its products.

So, what should a company do when the signals for what is expected are weak or ambiguous? First, as we have seen examples of from AL's side, a more direct interaction with stakeholders might help; basically *asking for directions*, through personal contacts or structured broader questionnaires (cf. the Trelleborg materiality analysis). However, stakeholders might not be clearly distinguishable or not provide enough details. Also, meanwhile it is important to listen to the stakeholders, taking this approach too far can be problematic. As we have seen, stakeholder positions might change, and the company risk ending up in a situation where continuous adaptation affects the own strategy. Indications of such a situation have been seen within AL, e.g. regarding the environmental aspect of water. The purchasing organization perceives it being "thrown in" last minute, only to add confusion to the implementation.

Another way to handle weak stakeholder signals might be to *look at it as an opportunity*, if stakeholders are not telling you what to do, it opens up for designing your own strategy. This is in line with what has been indicated as the basic requirement on AL from investors – *a structured approach with clear policies and plans* based on risk assessment, communicated and followed-up against for improvements. A related anecdote is how Anna Nilsson at Swedbank Robur (personal communication, 2011) describes AL's approach to the Business Principles as somewhat unique – and this was appreciated because it shows that AL seeks its own solutions and adapts to its particular context and needs. So instead of following every little stakeholder signal it might be more useful (and appreciated) to develop your own approach. It could be stepwise implemented or be a mix of approaches, as long as it is relevant and structured.

When designing the strategy, weak signals might also call for *applying more structured tools or methods*. Examples include structured risk assessments as suggested by investors. These can be based on international standards for geographic risks, process related risks or risks pertaining to particular environmental aspects. Apart from giving guidance for priorities and actions, it can be a way to clearly communicate, internally and externally, the ambitions and the approach taken. If different approaches are used towards different suppliers, a decision tool can provide the logic for the differentiation, supporting both implementation and communication. Other tools can involve measurements and collection of data, allowing for benchmarks. Again, being clear and well prepared towards stakeholders is fundamental in meeting expectations. Being a "good company" is not necessarily (or only) about absolute results in the supply chain, but also about the efforts made and the step-by-step improvements.



## 6 Conclusions

*This thesis has been exploring how a global industrial company works with environmental and social issues related to its upstream supply chain. The aim has been to contribute to the understanding of how a company operating in a business-to-business context and positioned in the middle of the product chain approaches these issues. Through an in-depth case study of Alfa Laval the reality of this type of company has been explored and an insight into the practices and the difficulties surrounding them provided. The main objective has been to improve the understanding of the drivers and associated challenges, while a second objective has been to add to the understanding of how related prioritizations are being made. This section presents the key findings.*

### 6.1 Returning to the Research Questions

RQ 1. What drivers can be identified for the case company to consider and manage the environmental and social aspects along the product chain, with particular focus on initiatives in the supply chain?

Alfa Laval's work on environmental and social issues in the supply chain has been initiated and managed as a response to external stakeholder pressure and to avoid reputational risks. The company wants to secure its profile of being a "good company", partly derived from the nature of its largely environmentally beneficial product portfolio.

- Particularly the *pressure from investors* has been identified as a key driver. It was explicit signals from the investors that initially triggered a structured approach to environmental and social issues. The design of strategies and initiatives has been influenced in a continuous direct dialogue with investor representatives and through indirect means, such as sustainability ratings and related transparency requirements.
- Less tangible, a general *pressure from society* has been identified as a second key driver. The company wants to safeguard its reputation and live up to what is expected from a global company by the general public, including its current and future employees. Less explicit, the pressure has been expressed through the public debate, e.g. related to working conditions at outsourced operations or industry emissions of greenhouse gas.
- Customers have thus far had limited influence on the company's environmental and social work. A subtle trend points towards more attention paid to the issues, but varies in how expressed and between customer segments, largely reflecting a general immaturity in the industry and the diversity of Alfa Laval's customer base.
- Employees have not been identified as a particularly strong driver. The company management has supported the work and certain individuals are closely associated with particular activities. However, this has been in response to the underlying pressure from investors and the society rather than a drive within management itself.

RQ 2. What are the challenges that the case company perceives in relation to the issue of responsibility for environmental and social aspects that arise or are determined in the supply chain, and what is the nature of these challenges?

While social issues have been addressed before, working with the supply chain for improved environmental performance is a relatively new avenue for Alfa Laval. With a highly complex supply chain and limited resources and internal competence available for the issue, it has been difficult to find a way that is both serving its purpose and feasible to handle.

- A key challenge of strategic nature is *to interpret the stakeholder signals and translate these into own objectives and activities within purchasing*. It has been difficult to decide which aspects to focus on and how, leaving the purchasing organization with a feeling of aiming for a moving target in the implementation.
- Related is the challenge of assessing suppliers' performance and *applying the appropriate set of requirements to place on suppliers*. This is problematic because of 1) the diversity of suppliers' size and capabilities; many small suppliers do not understand the meaning of the requirements, and 2) a shortage of own knowledge limiting the ability to support suppliers. E.g. requiring an EMS from a supplier also requires the own organization to be able to specify what this entails.
- Another key challenge related to the implementation and depending on the characteristics of the supply chain is to *decide which suppliers to focus on and find appropriate measures for respective supplier type or group*. The diverse supply base requires different approaches to be applied depending on the suppliers' relative power and capabilities.
- Factors of organizational nature pose significant challenges to the preparation of the work and *integrating the environmental issues to be a natural part of the purchasing practices*. Specific knowledge, tools and skills related to environmental issues are lacking for setting requirements, auditing, executing training etc. But also the status of the issues; environmental demands are conflicting with regular purchasing criteria and initiatives are not rewarded. The few champions of the cause have difficulties reaching out in an organization characterized by a strong engineering tradition and where the history of structured environmental work is relatively short.

RQ 3. How does the case company prioritize its efforts in the supply chain concerning environmental and social aspects?

The case study has shown that AL applies few tools or more sophisticated methods for prioritizing focus aspects, suppliers and efforts related to environmental and social initiatives in the supply chain.

- Rather than using systematic methods, *prioritizations are made in line with the company's perceived responsibility based on what stakeholders, notably investors and the society, expect*. The Group Management and, for environmental issues, ultimately the Environmental Council decides on issues and activities to be implemented by the line organization.
- The main prioritization criterion for activities in the supply chain is to *focus on key suppliers* and targets for coverage are set based on the total purchased value.
- A comparison with four reference cases did not indicate Alfa Laval's approach to differ significantly from the approach taken by other industry actors. Additional prioritization measures suggested by the comparison were a high-level *materiality analysis* to define areas of importance to stakeholders and *assessing supply chain risks based on geographic location and production process characteristics*.

## 6.2 Final Reflections

Among the reasons for looking at Alfa Laval were that it is a large company positioned somewhere in the middle of the product chain. It is a global leader in its field, but still relatively unknown to the general public. Among the intriguing and important aspects about this, when looking from a societal point of view, is how it is (arguably) equally important to us

that *this type of company* takes initiatives to minimize the negative environmental and social impacts from its products and operations, as for any other company. And does so regardless of the company's limited exposure in media.

We have seen that the pressure for taking these initiatives is limited and the challenges, particularly when looking outside its own operations, are considerable. Given the complexity of the issue, it is far from evident how the benefits of working to influence the environmental performance in the supply chain can match the efforts that it takes.

This case only depicts one example and does not allow for any far-reaching generalizations. It is however reasonable to believe that this reality resembles the reality of many other similar companies. A reality where few sophisticated methods and tools are applied and where managers are largely occupied by finding practical solutions to rather fundamental problems. If the societal ambition is to make all companies managing life cycle impacts from its operations, an important learning from this case is that: understanding the drivers is one thing, but an equally or even bigger challenge lies in the nitty-gritty details of the practices. This is where a significant part of the barriers are found. This indicates a need for a broad approach when looking at future "solutions", where industry-wide tools are developed based on what we can learn from the real-life struggles of practitioners in the field. Hopefully this study has helped shed some light on that reality.

### **6.3 Further Research**

In line with the reflections above, a suggested area for further research in a broad sense relates to the understanding of the detailed real-life practices of environmental and social considerations in the supply chain. Looking at other companies, with other characteristics and operating contexts, can help understand not only the particular challenges but also how to transfer experiences from one context or industry to another. Regarding the cross-industry perspective, inspiration for possible future studies can also be found in Kovács' (2008) work on environmental responsibility in the supply chain, where indications of industrial "spillovers" have been detected.

A particular area that deserves further research, as indicated in this study, is the use of tools for prioritizations in the supply chain, e.g. for aspects or suppliers to focus efforts on. Both investigating broadly what tool are being used, but also applying or developing appropriate methods according to actual corporate contexts. Emphasis should be on providing practical guidance through relatively fundamental decision models. An example could be to look into how a basic materiality analysis could be refined and applied for companies like Alfa Laval.

While this study looks at drivers based on a stakeholder perspective, another suggestion would be to do an analysis from a different angle. While external stakeholders are always relevant for the company, more emphasis could be put on organizational factors and the role of the individuals within the organization of concern. This again relates to the discussion above – understanding the actual situation as perceived by corporate practitioners.

As indicated in this case the nature of the drivers are influenced by the characteristics of the company, for example by the type of products manufactured. It would be interesting to explore this more in detail, for example by looking at the relation between products manufactured and requirements and practices used in the supply chain on a broader scale. For example: Are companies who provide typical clean technology products approaching the environmental issues in the supply chain differently than others?

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## List of Interviews

Organization	Name	Position	Means of com.	Date (2011)
Alfa Laval	David Ford	External consultant CSR, Formerly Head of Human Resources and member of the Group Management	Telephone In-person	May 31 June 13
Alfa Laval	Tommy Karlsson	VP Operations, Head of Purchasing	Telephone In-person	May 23 June 10
Alfa Laval	Claus Møller	Global Purchasing Manager	In-person	June 22
Alfa Laval	Åke Berggren	Global Purchasing Manager	In-person	June 27
Alfa Laval	Mitul Sawjani	Global Purchasing Manager	Telephone	July 6
Alfa Laval	Jan Olsson	Purchaser	In-person	June 1
Alfa Laval	Markus Ekendahl	Process Development, Sourcing	In-person	June 20
Alfa Laval	Göran Mathiasson	President Operations Division Member Group Management Chairman Environmental Council	In-person	June 21
Alfa Laval	Peter Thorstensson	VP Corporate Communication Member Group Management	In-person	June 22
Alfa Laval	Erika Nilsson	Environmental Coordinator	In-person	August 12
Alfa Laval	Marco Coquinati	Quality & Environment	Telephone	July 18
Alfa Laval	Jeanette Hasseson	Chemistry & Environment Member Environmental Council	In-person	June 27
Alfa Laval	Mats Eklund	Quality Assurance	In-person	June 15
Alfa Laval	Daniel Klint	Material Specialist	In-person	May 31
Alfa Laval	Magnus Nilsson	R&D Manager	In-person	June 1
Alfa Laval	Göran Andersson	Designer	In-person	June 1
Alfa Laval	Tobias Svensson	Market Unit Manager	In-person	June 17
Alfa Laval	Per-Åke Ohlsson	Market Unit Manager	In-person	July 7
Alfa Laval	Michael Kjær Olesen	Market Intelligence	Telephone	July 12
Alfa Laval	Paolo Dalle Pezze	Product Portfolio Manager	In-person	July 6
Sony Ericsson	Tommy Lundström	CSR Coordinator	In-person	June 22
Tetra Pak	Helene Malmros	Manager Quality & Env. Assurance	In-person	July 5
Tetra Pak	Daniel Paci	Supply Manager	In-person	July 5
Alfdex	Lars Schultz	Production/Quality Manager	Telephone	June 29
Gislaved Gummi	Nina Maunonen	Manager Quality & Environment	Telephone	July 8
Gislaved Gummi	Erik Svensson	Account Manager	Telephone	July 12
Trelleborg	Rosman Jahja	Communications Manager CR	Telephone	June 14
WWF	Magnus Emfel	Klimatinnovationer	Telephone	June 28
Folksam	Emilie Westholm	Senior Analyst Corporate Governance	In-person	June 28
Swedbank Robur	Anna Nilsson	Head of Sustainability Analysis	In-person	June 28
Super Engineering	Ronald Fredricks	Manager	Telephone	July 8
CEPA	Peter Nielsen	Site Manager, Sales	Telephone	August 15



## Appendix 1 – Overview of Data Sources and Study Approach

Question	Informal sub-questions	Approach	Key informants	Key documentation	Key literature
RQ 1 What drivers can be identified for the case company to consider and manage the environmental and social aspects along the product chain, with particular focus on initiatives in the supply chain?	Who are stakeholders? Perceived pressure? How exercised? Exercised pressure? Related business opportunities? Aspects considered? Impacts/risks determined?	<ul style="list-style-type: none"> <li>Semi-structured interviews with stakeholders involved in and relevant to the CSR work at AL</li> <li>Review of internal documentation</li> <li>Review of relevant literature</li> </ul>	<ul style="list-style-type: none"> <li>AL management</li> <li>CSR/Environmental council</li> <li>Purchasing reps</li> <li>Sales reps</li> <li>Product design reps</li> <li>Customers</li> <li>Investors</li> <li>NGOs</li> </ul>	<ul style="list-style-type: none"> <li>Policy documents</li> <li>Process charts</li> <li>Instructions</li> <li>EMS (general review)</li> <li>Organizational charts</li> <li>LCAs</li> <li>Annual reports incl. sustainability</li> </ul>	<ul style="list-style-type: none"> <li>Stakeholder salience (theory and cases)</li> <li>CSR drivers and benefits</li> <li>Life cycle thinking and management</li> </ul>
RQ 2 What are the challenges that the case company perceives in relation to the issue of responsibility for environmental and social aspects that arise or are determined in the supply chain, and what is the nature of these challenges?	Key issues? To whom? How acknowledged? By whom? Related to what areas? (e.g. legal, org, tech, info, ext. relations) How dealt with?	<ul style="list-style-type: none"> <li>Semi-structured interviews with AL reps involved in and relevant to the CSR work at AL</li> <li>Review of internal documentation</li> <li>Review of relevant literature</li> </ul>	<ul style="list-style-type: none"> <li>AL management</li> <li>CSR/Environmental council</li> <li>Purchasing reps</li> <li>Sales reps</li> <li>Product design reps</li> </ul>	<ul style="list-style-type: none"> <li>GRI report</li> <li>Progress reports</li> <li>Requirements and questionnaires from customers</li> <li>Supplier surveys</li> </ul>	<ul style="list-style-type: none"> <li>Typology for generic challenges</li> <li>Industry cases</li> <li>LCM barriers</li> </ul>
RQ 3 How does the case company prioritize its efforts in the supply chain concerning environmental and social aspects?	Initiatives taken? Why? Deciding factors? Tools used?	<ul style="list-style-type: none"> <li>Semi-structured interviews with AL reps involved in the CSR work at AL</li> <li>Interviews with other industrial companies</li> <li>Review of internal documentation</li> <li>Review of relevant literature</li> </ul>	<ul style="list-style-type: none"> <li>AL management</li> <li>CSR/Environmental council</li> <li>Purchasing reps</li> <li>Other industrial companies</li> </ul>	<ul style="list-style-type: none"> <li>LCAs</li> <li>Ongoing programs</li> <li>Decision support docs</li> <li>Meeting notes (if available)</li> </ul>	<ul style="list-style-type: none"> <li>Environmental prioritization in SC</li> </ul>

## Appendix 2 – Example Interview Guide

### Interview guide – semi-structured interview

**Area/function: Purchasing**

**Interviewee:**

**Date:**

Purpose

- Understanding purchasing's role in environmental management at AL (focus RQ 1-3):
  - Facts (purchasing organization, products/commodities, suppliers, volumes etc.)
  - Pressure and drivers ->Why?
  - Processes (formal and informal) -> How does it work? Decision making.
  - Suppliers -> Relations
  - Challenges -> Experiences, perceptions
  - Reflections

Preliminary research questions

1. What drivers can be identified for the case company to consider and manage the environmental and social impact of its products over their life cycle?
2. What are the challenges that the case company perceives in relation to the issue, and what is the nature of these challenges?
3. How does the case company prioritize its efforts in the supply chain concerning environmental and social aspects?

Setting

- Interview in person, about 60 minutes

Checklist

- Understand the purchasing organization
- Overview of the supply chain
- Understanding environmental impacts and how working with
- Understanding of relationships
- Understand their position and the challenges they are facing
- Understand the contextual aspects influencing the environmental work in the SC
- Give opportunity to reflect
- Contact details to specific suppliers

List of questions

**0. About the informant(s) and the company function**

1. Please describe your role in the company?

**I. Facts about commodity group**

1. No of suppliers?
2. Products?
3. Volumes?
  - a. Tons/pieces
  - b. Value
4. Geographic location of suppliers?
5. Purchasing organization?

**II. Suppliers and relations**

6. Can you describe your supply chain?
7. Can you describe your typical suppliers?
8. Can you describe your supplier relations?
  - a. Types; transactional, collaborative
  - b. Typical
  - c. Power relations
9. Do you ever have a relationship reaching beyond the first tier suppliers?
  - a. Why? Why not?

**III. Environmental and social requirements**

10. Can you describe how do you take environmental and social aspects into account in purchasing?
  - a. Procedures
  - b. Criteria
11. What do you consider main environmental aspects/impacts in the supply chain?
  - a. Hazardous substances, Emissions, Energy, Water, Waste, Resources, Climate change... Other?
12. What environmental/social requirements do you apply and place on suppliers?
13. Please describe how you measure suppliers' environmental performance and set targets
  - a. KPIs
14. How do you verify compliance?
15. How do you act if not complying?
16. Can you describe the level of the environmental work at AL vs. at suppliers?
17. What do you consider key challenges with respect to managing environmental issues in the supply chain?
  - a. Knowledge
  - b. Resources
  - c. Internal/external etc.
18. Can you describe your view on how the work should be organized?

**VI. Other**

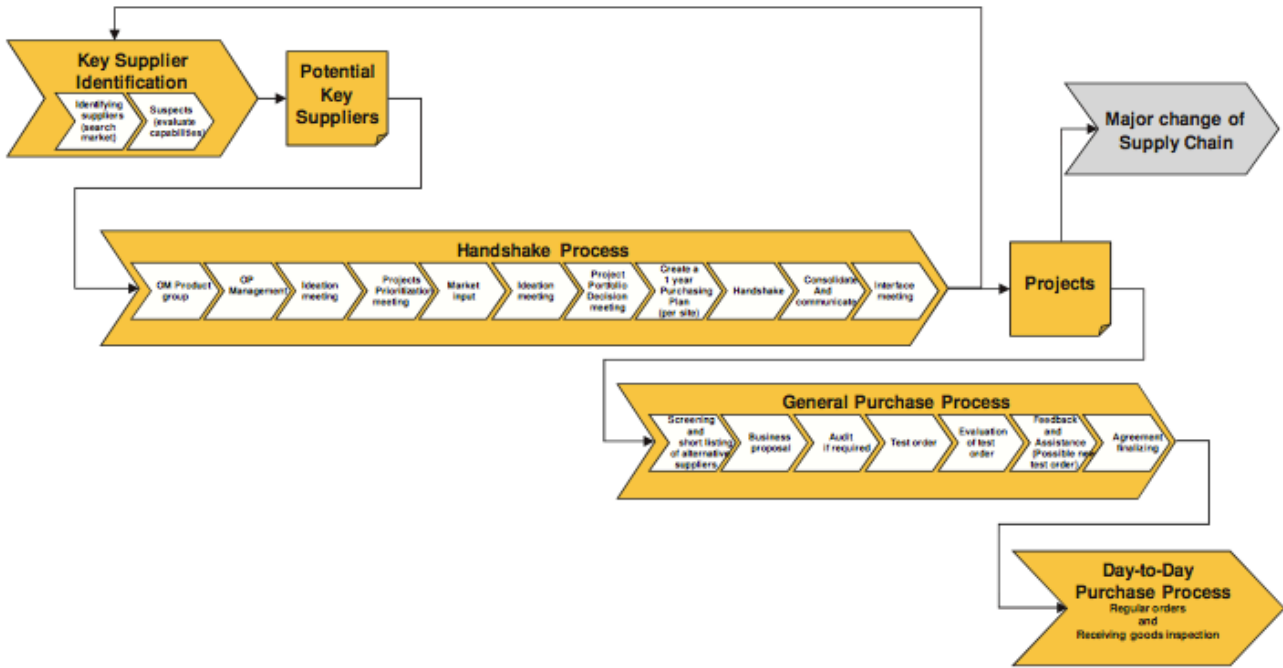
19. What is your personal view on Alfa Laval's environmental work?
  - a. Level
  - b. What should be changed/improved?
20. Contact details to suppliers?

## Appendix 3 – Best Practice Model for Sustainable Supply



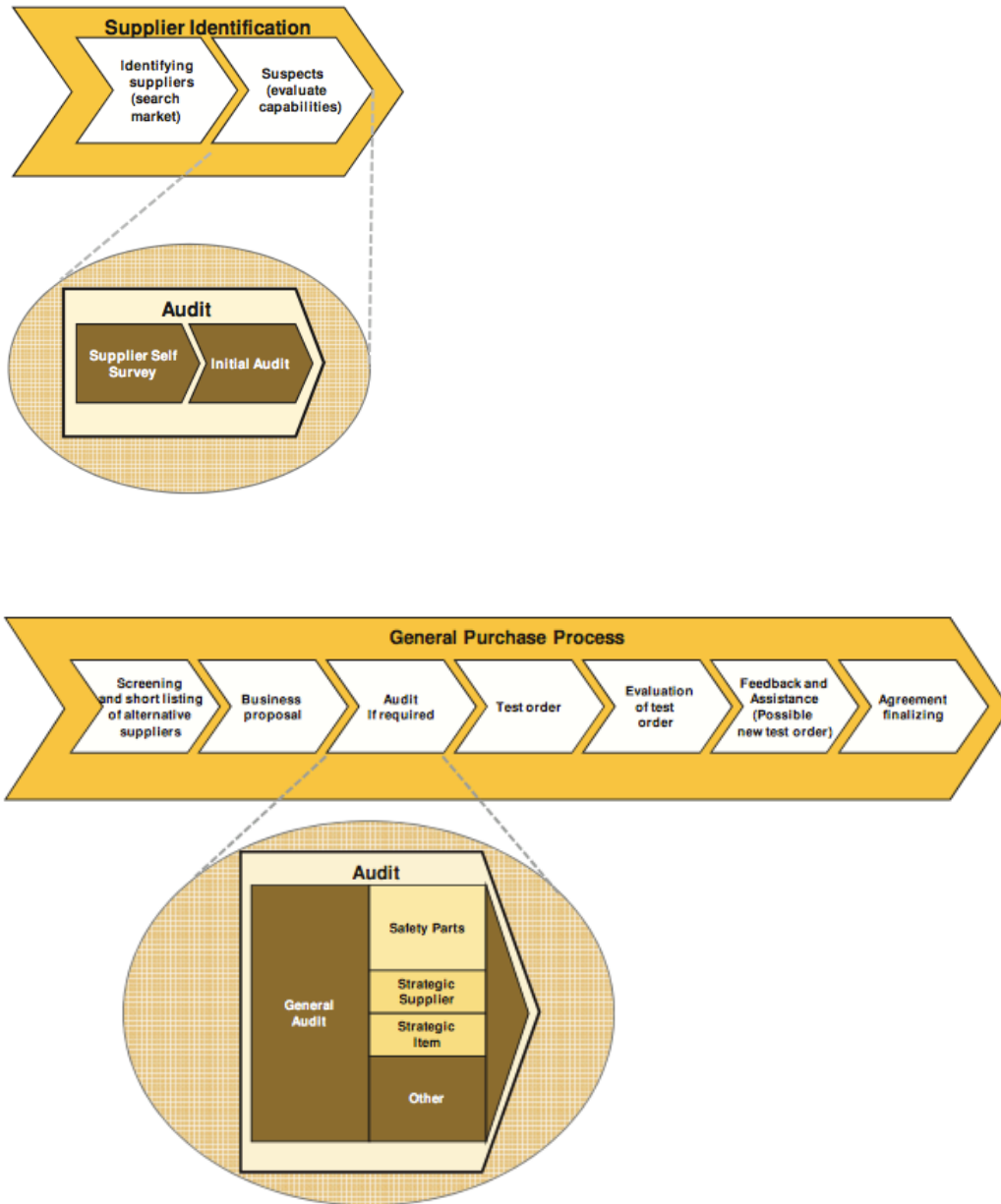
Source: Brammer, Hojmosse & Millington, 2011, p. 45

## Appendix 4 – Overview of the Purchasing Process



Source: Alfa Laval, 2010c

## Appendix 5 – Overview of the Supplier Audit Platform



Source: Alfa Laval, 2010c