Management of Environmental Product Information

By: Angela Billings
Lund University Masters in Environmental
Science (LUMES)
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Chapter 1
Introduction

1.1 Background

One of the most important tasks for any corporation in the 21st century is to communicate well with all of its stakeholders. Companies have increasingly been required to share information with a variety of stakeholder groups about the impacts of their production processes or services on the environment. While some of the debate around environmental issues has died down since the mid 1990's this has not meant that companies can lower their environmental performance. In Europe most firms have at least reached a certain level of environmental performance by becoming ISO 14001 or EMAS certified. This is now often a minimum requirement for many customers to purchase products or services from a particular company.

The paper and pulp industry has long had an image as a dirty industry. The industry in Scandinavia has worked hard to improve its image. There are many advantages to the industry as they use renewable resources. Much work will be needed in the future however, to improve the image of this industry.

Corporations have a wide range of stakeholders and tools for reaching these stakeholders. One of the most important stakeholders for any corporation is its customers. To gain and maintain customers it is very important that the information needs of these customers are met. There has been a great deal of research done on communicating the environmental characteristics of products (see Jönsson, Palm & Windahl or Soler for examples) however; this research has focused on the use of Environmental Product Declarations. There has also been a great deal of research done on communication in general but this has often focused on one-way communication. Customers are aware of environmental issues and are increasingly asking questions which require a great deal of expertise to respond to. In the future it will be important for firms to ensure that these questions are answered in not only a timely manner but also with reliable data. It is very difficult to earn credibility and very easy to lose it through mistakes or misinformation. This thesis attempts to devise solutions to manage the flow of environmental information from the corporation to its stakeholders.

1.2 Purpose

The main objective of this thesis is to examine how a corporation can ensure that the various levels within a corporation are communicating the same message to its stakeholders. To reach this goal a case study was conducted with the Swedish-Finnish paper and pulp company Stora Enso. Environmental information flows within a corporation are often not well defined. Information flows (environmental policies, etc) down from the corporate level to the divisions, production units and sales offices (top-down approach). However, there is very little information flowing up to the corporate level (bottom-up) from the sales offices and production units. If there is information flowing up to the corporate level it is often done very informally. The sales offices and production units have the most contact with customers, which are one of the most important stakeholders of the corporation. This thesis seeks to explore the internal structure for the external communication of environmental information within a corporation and make a proposal for the improvement of the information flows within the corporation. Due to time restrictions the thesis will only focus on environmental information which is directed towards the customer and thus will only look at questions received from customers. It is also only limited to fine paper, packaging board, newsprint and magazine paper.

1.3 Scope and Limitations

The scope of this thesis is to look at how a corporation communicates with its customers. The thesis is limited to communication with customers. This group is one of the most important stakeholder groups of a corporation. Customers were selected because they are one of the most important stakeholder groups of a corporation. They are also the group that steer the policies and measures the company takes. It is hoped that the conclusions and suggestions for improving both internal and external communication will be applicable to more than just customers but due to time constraints this study is limited to customers only.

1.4 Methodology

This thesis is based on a review of relevant literature on environmental communication, branding, data quality and communication.

To gain an insight into how communication flows within a corporation a case study was conducted with Stora Enso. The study is partly an empirical study carried out through personal and telephone interviews and e-mail correspondence with various staff members within Stora Enso. Information about the company was gathered and the goals they have for their communication was studied. A review of the corporate literature, also referred to as communication tools in this thesis, was conducted.

Some relevant examples of questions received and how they have been dealt with in the past is given. These examples point out the areas for improvement and will highlight how the suggested changes this thesis proposes will help to improve the manner in which questions are dealt with in the future.

1.5 Outline

Chapter 2 will begin by introducing some of the key terms relevant for this thesis. It provides an introduction to organizational structures and communication. A background on the theory environmental communication and environmental information is introduced followed by an introduction to the various stakeholders a corporation has as well as the tools used to satisfy the needs of these various stakeholders.

Chapter 3 introduces the case study. Relevant background information on Stora Enso is presented including the organizational structure and communication tools used. A series of interviews was carried out to gain an understanding of how information flows internally. The interviews were also conducted to see what types of questions were coming in from customers and how these questions were being documented and answered.

Chapter 4 attempts to suggest solutions to some of the problems that were highlighted in chapter 3. First a Causal Loop Diagram is presented which shows how the quality of communication can be improved. This followed by the introduction of a model of customer questions should be answered in the future and finally a database is presented which should be used to store the questions that are being received from customers as well as the responses sent out to these questions.

Chapter 2 Environmental Communication

2.1 Introduction and Background

This chapter will introduce communication theory and the structure of corporations/organizations. Next the concepts of environmental communication and environmental information will be introduced and finally the concept of stakeholders will be introduced and the influence that stakeholders can have on a corporation will be presented. Finally, the tools used to communicate environmental information will be presented.

Throughout this thesis the terms corporation, firm and company will be used interchangeably. There are a variety of entities or levels within all corporations. In a thesis conducted by Annica Taprantzi she defines these entities as organizations. She states "the term organization is used to describe a specific context within a corporation, by identifying structural entities and defining the interrelation between such. A structural entity is described by the activities performed and the people performing the activities." (Taprantzi 2001) These various entities can be summarized into the following categories. (Specific for a manufacturing company) The first category is the corporate level. This level includes a variety of functions. The corporate level is most often headed by the Chief Executive Officer (CEO) or President and a Deputy CEO or Vice President. The most common functions within this level are the corporate support functions such as human resources, accounting, legal affairs, finance, IT, communications and environment. In addition to the corporate level most companies have another division, which may either be based on product, divisions or regional categories. This level often acts as a sort of intermediary between the corporate level and the production unit. This leads us to the final level in most corporations the production unit. To gain a better understanding of the structure of the corporation is arranged a general organizational chart is shown in Figure 2.1 below.

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                              ┌─────────────────────┐
                              │        CEO          │
                              │     Deputy CEO      │
                              └─────────────────────┘
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Corporate Support Functions
Human Resources
Accounting
Legal Affairs
Finance
IT
Communications and Investor Relations
Environment

| **Product Categories/Divisions** | **Product Categories/Divisions** | **Product Categories/Divisions** |

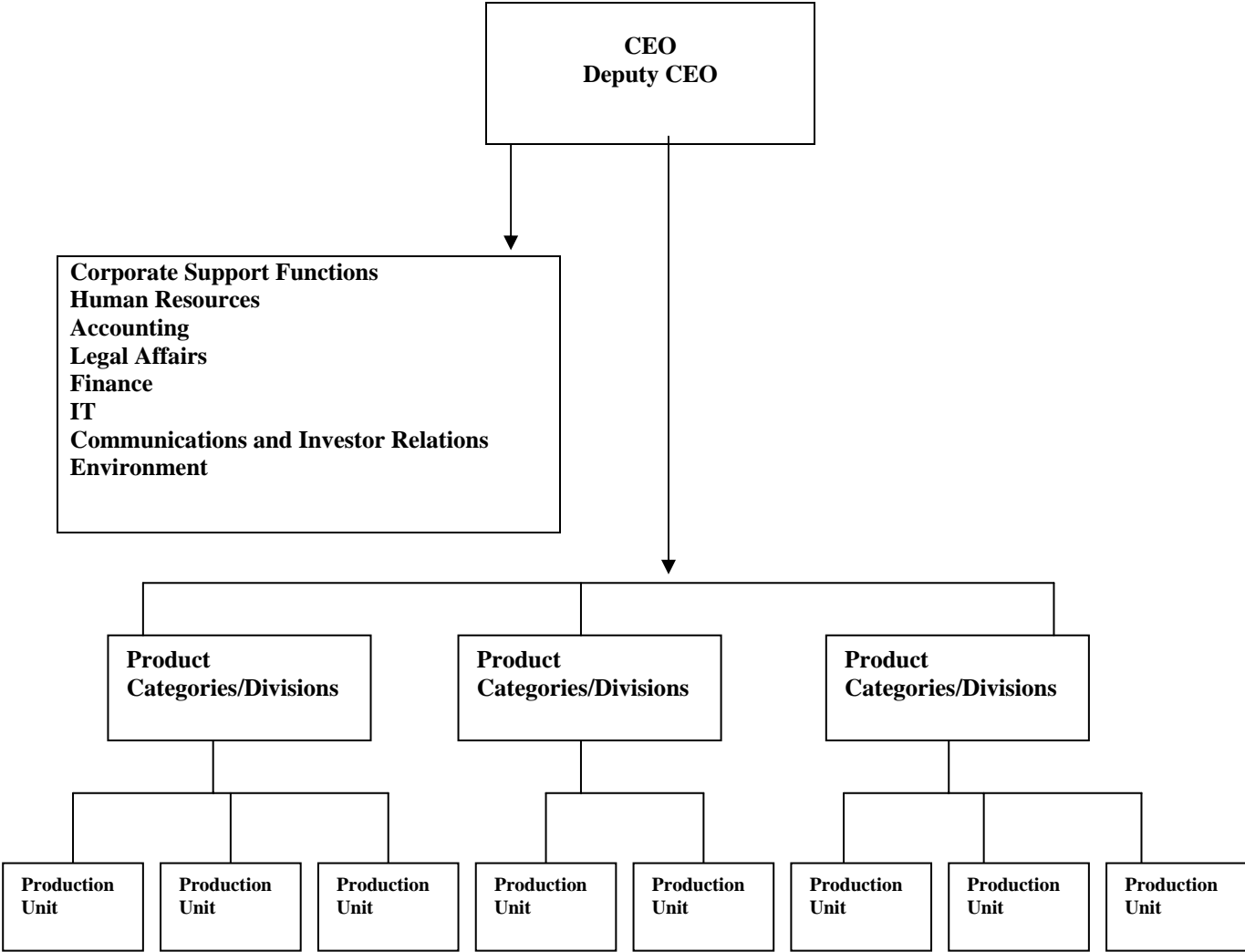| **Production Unit** | **Production Unit** | **Production Unit** | **Production Unit** | **Production Unit** | **Production Unit** | **Production Unit** | **Production Unit** |

Figure 2.1 General Organization Chart

Corporations do not however, work independently. There are several actors that affect the day-to-day operations of the corporation. Every corporation produces a product whether it is a manufactured product or a service. It is this product or service that forces the corporation to interact with a variety of stakeholders or actors. One approach that examines the influence that these actors have on one another is called the product chain approach. Heiskanen et al define the product chain approach as "an approach focusing on actors at various stages of a product's life cycle. These actors include, for example, raw material producers, manufacturers of finished goods, the wholesale and retail trade, consumers and waste management operators." (Heiskanen, 1998) They go on to say that these various actors in the product chain

are interesting because of the way that they are able to affect and influence each other in the following ways:

- ➢ they can control the physical substance and energy flow at different stages of the chain;
- ➢ the product range offered
- ➢ the information that they provide on their products;
- ➢ through their purchasing requirements and decisions.

This approach or way of thinking is important to this thesis because of its focus on the chain of stakeholders and the information and demands that they place on each other. It is recognized that there are several important actors in the supply chain, however this thesis will only look at the relationship between the producer and the consumer. Other important actors in the chain are suppliers to the manufacturers, and end consumers as the consumer dealing directly with the manufacturer is often not the end consumer. This thesis will look at how two very important actors in the product chain communicate with one another.

2.2. Communication Theory

To begin to understand environmental communication it is important to first understand communication in general. In his book entitled "Communication" Denis McQuail defined human communication as "the sending from one person to another of meaningful messages." (McQuail 1975) This is quite a basic definition of communication and does not go into detail on how communication takes place.

Figure 2.1 below shows a model of communication. The terms within the model have been borrowed from communication theory (see Shannon-Weaver and McQuail), which uses the terms sender, receiver and message to describe the process of communication. The model has also been created to show messages that are being communicated to an external receiver, however, it should be noted that the same process does occur within the same organization as well. The model begins with a creator. The creator is responsible for developing the message(s) which is going to be communicated to a receiver. Within a corporation there are several different levels responsible for creating messages. They may not however, be responsible for ensuring that this message reaches the receiver. The message may first be sent

to another individual within the firm who then transmits the message to the receiver. A link back to the sender from the receiver has been added to show that there is a connection between the sender and the receiver. The message that is developed by the sender is often based on the perceived information needs of the receiver. It can also of course be based on the actual needs if the sender is responding to a question posed by the sender.
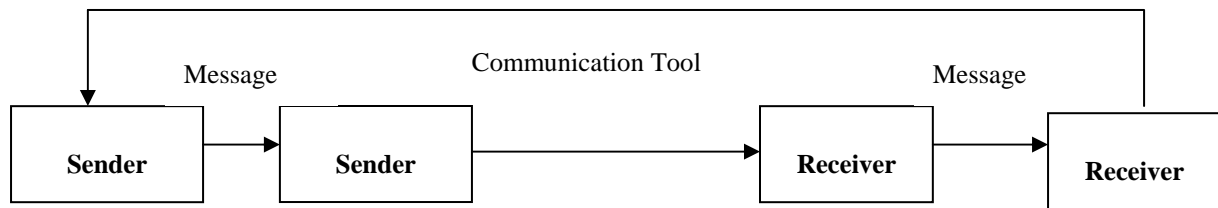

Figure 2.2 Communication Model

2.3 Environmental Communication

2.3.1 What is it?

Like other forms of communication environmental communication can be defined as the transfer of environmental information to all stakeholders. The communication of environmental information can be done both internally and externally. This environmental information can either be related to the product, the production unit or the corporation.

Naturvårdsverket, the Swedish Environmental Protection Agency published a report in 1999 on the Manufacturers responsibility for the environmental impact of products. (Naturvårdsverket, 1999) The report states that environmental information should be made up of the following four parts:

➢ Information on the products contents with the focus being on the contents with the strongest impact on the environment or substances harmful to human health;
➢ Information on the products environmental performance from a life-cycle approach;
➢ Information on how the product should be used in an environmentally friendly manner;
➢ Information on how the product can be recycled or disposed of.

The report goes on to say that there are four types of users of environmental information. The first is information between the suppliers of materials and the corporation. The second is information to the consumer. The third type of information is information to the market and finally information to the actors responsible for the used products. Environmental information provided to each of these groups must be adapted to suit the needs of the target group.

There is however, one common bond, the data on which the environmental information is based on needs to meet certain standards. The data should be reliable, accessible, relevant, transparent, stringent and reproducible.

The way that a firm communicates can be done in one of two ways. The first method is to be proactive. This requires a commitment from the sales and production unit staff to provide customers with environmental information. Charter says "it is important that sales personnel are able to articulate the company's environmental achievements and the facts behind them to the customers with sufficient credibility. If the chain of communication is long, the importance of training increases dramatically." (Charter 1999) The advantages of being proactive are many. This is the case on communicating both good and bad performance. Credibility is the key word in the statement by Charter. Credibility needs to be built up and one of the most important ways to do that is by being proactive in the information given to consumers.

Another form of communication is reactive. By this it is meant that the corporation does not actively provide information rather reacts to questions received. It is very important to respond to questions on a timely manner and to ensure that the questions are answered properly. It should however, be noted that a balance needs to be found between being proactive and being reactive. Both of these methods will be discussed in further detail in the following chapter.

2.3.2 Why Communicate?

       2.3.2.1 Voluntary

One important reason for this increased transparency is that many firms are investing and have invested a lot of financial and human capital into improving their environmental performance. Environmental performance has become a marketing tool. Consumer's preferences have changed as well and value is placed on the environmental characteristics and performance of not only the products but also the corporation. "Consumers are now better and more accurately informed and the criteria for buying products is increasingly being based on social and environmental criteria as well as traditional characteristics such as price, delivery and quality." (Welford & Gouldson 1993)

Another reason that firms are communicating with their stakeholders is due to pressure to "keep up" with their competitors. Competitors are actually one of the most attentive stakeholders as they are interested in what other firms are doing. It is important to not look "worse" than your competitor in terms of your commitment or performance. It is likely that if one firm decides to share more information or implement a new technique or technology that has environmental benefits that other firms will follow suit.

As stated above consumers are increasingly becoming more aware of environmental issues and they are putting pressure on firms to share information, which is very sensitive in many cases. Detailed product information is being shared through the use of methods such as Life cycle assessment. Life cycle assessments. In recent years much attention has been given to the impact of products on the environment. The LCA approach is one tool that is being used to evaluate the environmental burdens associated with a product throughout its entire life cycle. The Nordic Guidelines on LCA states that LCA is "the assessment of the entire life cycle of the product or activity, encompassing extracting and processing raw materials; manufacturing; distribution; use, re-use, maintenance; recycling and final disposal; and all transportation involved." (Nordic Council of Ministers 1995) LCA is still a voluntary tool, however, many large corporations have started to do LCA's on their products in the event that this will become a mandatory requirement in the future. It is thought that LCA's should be used to improve the environmental performance of products in the future.

2.3.2.2 Mandatory

There are also regulatory requirements that have forced corporations to report more information. The use of environmental management systems such as ISO 14001 and EMAS has spread quickly through out Europe. EMAS requires that an environmental report be published on an annual basis.

There are also of course mandatory requirements to report certain data to the regulatory authorities to ensure that emissions limits are being met.

2.4 Stakeholders

There are a variety of stakeholders that all firms must respond to. Figure 2.3 below shows a stakeholder map that is common for many corporations. The arrows depict the flow of information between the stakeholders and the corporation. It is important for the needs of all of these stakeholders to be monitored and met. There is of course a varying degree of importance placed on each of these stakeholders, as some are more important than others to the corporation. It is however, important that the needs of all of these stakeholders are met if the communication strategy of the firm is to be successful.
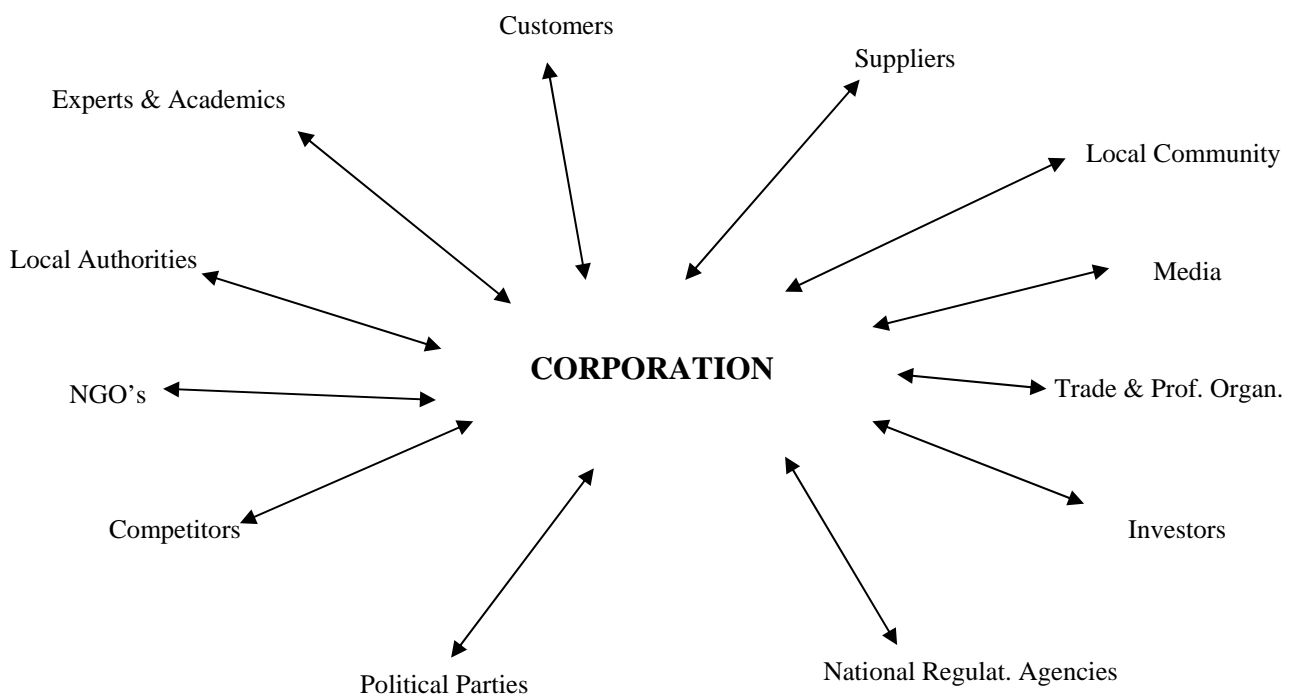

Figure 2.3 Stakeholder Map

As this thesis will focus on only one of the stakeholders of firm, namely customers it is fruitful to discuss the various types of customers that exist. It is important to distinguish between end-consumer, business to business customers and public purchasers. The information of these various customers are varied depending on which type of customer they are. Public purchasers are customers who purchase products for state institutions. This type of customer is a large customer with a great purchasing ability. They are also the customers who place a great deal of pressure on the producer for very detailed environmental information. Many governments have strict requirements on their suppliers. Business to business customers is a term used to describe business customers. Much like public purchasers business-to-business customers have a great deal of purchasing power. They are also likely to request very detailed environmental information from their customers. They are often not the private consumer of the product that they are purchasing. They often sell the product on to a private consumer. Private consumers often do not want detailed environmental information. It is thought that they are unable to understand and use this information.

The stakeholder groups in the above diagram do not work independently. They are of course affected by each other and many of them have contacts with each other. It must be recognized that many of the groups in the diagram are able to affect the views and demands of some of the other groups. For instance the media is an important stakeholder. They are able to affect the issues that the customer wants to know more about. The media has the ability to influence what issues of interest. Various catastrophes such as the outbreak of Mad Cow Disease, which has been heavily covered in the media, can affect industries that do not even have direct connections to the meat industry. Figure 2.4 below shows some of the other stakeholders that may be able to affect the demands for information that the customer may place on the corporation.
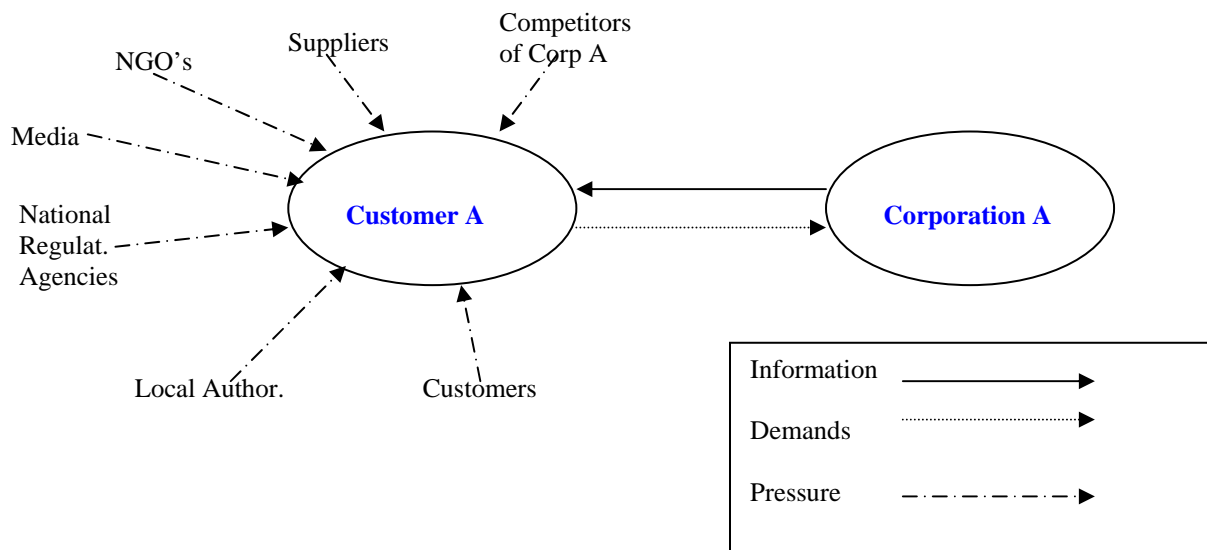
Figure 2.4 Stakeholders affecting Customer's demands for information from the Corporation

Within a corporation there may be discrepancies as well, as to which stakeholders are the most important ones to the various internal entities within the corporation. Each of these units has a variety of stakeholders that they need to reach. If we simplify the organizational chart presented earlier in section 2.1 to broader categories we can look at some of the various communication tools that each level uses and creates. We will merge the CEO, Assistant CEO and the corporate functions and call them the corporate level. The other two levels will still be referred to product division and production unit. To generalize even further we will look at which of the stakeholders in the diagram are likely to be the most important ones for the various levels and in the following section will look at the tools available to reach these groups.

The corporate level is likely to view investors, customers, NGO's experts, national regulatory agencies, media, competitors and experts and academics as their most important stakeholders. While they may find other stakeholder groups important it is likely that the information that they provide to external stakeholders will be geared towards these groups.

The divisional level is likely to have the same stakeholders as the corporate level except for a few exceptions. In addition to the stakeholders listed a being important to the corporate level it is likely that the division will also be interested in reaching the local authorities as they work in a closer relationship with the production units. They will also likely be interested in

reaching their suppliers are likely to be a key go between the production units and some of the larger suppliers. They are probably not as concerned about investors as that group is the main stakeholder of the corporate level.

The production unit's main stakeholder will be customers, local authorities, local community, experts and academics, media, NGO's and suppliers to name a few. It should however be noted that much of the information created on the corporate level is very important to the stakeholders of the production unit or division or regional level as well.

2.5 Communication Tools

There are many different communication tools available for a corporation to use to reach their stakeholders. Some of the most commonly used tools are shown in Table 2.5 below. Many tools are created with the idea in mind that they can be used to satisfy the needs of a variety of stakeholders. Many are directly related to the corporation in general rather than to a specific product that the company produces. Many of the tools are also an invaluable resource for many of the company's internal stakeholders as well since they give a good over-view of the firms various operations. The corporate environmental report, for example, contains information geared towards both an internal and external audience.

Communication Tool	Stakeholder	Level within organisation involved in development	Level within organisation communicating the information to the customer
Corporation Related			
Corporate Environmental Report	All	Corporate, Production unit, Divisions	Production unit, sales office
Web-site	All	Corporate	N/A
Production Site Related			
Mill Environmental Report (EMAS report)	Customer, Local Authorities, Local community	Production unit, Corporate (for guidelines on report)	Sales office, production unit

Product Related			
Nordic Swan label	Customer	Production unit, Corporate (make decisions)	(Products) Sales staff and production unit
Environmental Product Declarations	Customers	Production unit	Sales office
Product Brochures	Customers	Production unit, Corporate (for guidelines)	Sale office, production unit
Special Issues/Tools			
Personal Communication	All	Sales office, Production unit	Sales office, Production unit
Training/Information Sessions	Customer	Production unit, Sales office	Production unit, sales office

Figure 2.5 Communication Tools

2.5.1 Voluntary Product Information

One of the most important product communication tools is eco-labels. There are 3 types of environmental labels referred to as Type I, II and III. There are important differences between these types of labels. Type I and III labels will be discussed in this thesis.

Type I labels are based on ISO standard 14024. It is voluntary to adhere to such schemes. These labels are targeted towards both business customers and the ordinary consumer. These types of labels are awarded by independent third parties that award the label to the top performers in various product categories. (Lindhqvist, 2000) The focus of this thesis will be on the Nordic Swan label that was developed in Scandinavia in 1989.

The Nordic Swan is widely recognized in Scandinavia but it is also widely recognized in other European countries dependent on the product in question. This is in part due to the fact that there are no other labels available for the same use on the European Union level.

The Nordic Swan label is very user friendly. It is very easy for the private consumer to find a product with the label and decide if they want to purchase that product over a similar product without the label. The label also has a certain degree of credibility associated with it. This helps to make it a very good sales and marketing tool. The consumer believes that if they

purchase the labelled product over a product without the label that they are purchasing a product which meets certain environmental criteria and therefor must be better from an environmental point of view. A third party which is independent and sets the criteria for the various product categories certifies the label. There is no need for the customer to interpret any information. They only need to look for the label.

There are however, several disadvantages to the label as well. There is no possibility to benchmark products. It is very difficult to compare similar products that are labelled. One product may be better from an environmental point of view but as a private consumer I can only see that they both have the label. In addition to this the consumer often does not know what criteria the product must meet to be labelled and it is very difficult to find this information if you so desire. It is also quite expensive to label a product and if any product modifications are taken a new application must be submitted which makes it very costly to modify the product.

Type III labels also referred to as Environmental Product Declarations (EPD's) are based on ISO standard 14025. These types of declarations are also verified by a third party organization but unlike Type I labels they are based on life cycle assessment studies. This means that the study looks at the environmental impacts of the product from the extraction of raw materials to the disposal of the product. This type of reporting provides very detailed information about the product that is based on qualitative data. There are of course advantages as well as disadvantages to this type of label as there are with Type I labels.

The advantages are that this type of label allows for comparison between products. There are no criteria that the product must meet like there are with the Nordic Swan label. Like the Swan, type III labels are certified by an independent third party that gives the information some credibility.

The disadvantages of this type of labelling system is that the information is very detailed and may require a certain level of expertise to interpret. It is geared towards business customers, which makes it very hard for the end-user to use the label. Another disadvantage is that it is very costly to develop such labels. It takes a large financial and time dedication to complete such a study.

In the following chapter a case study will be presented which looked at how a company uses environmental product information in their communication with customers.

Chapter 3
Case Study Stora Enso

3.1 Introduction

The most important type of eco-label currently being used by Stora Enso is the Type I label more specifically the Nordic Swan label. The criticisms that Stora Enso has of these types of labels are similar to the criticisms which were raised in section 2.5.1. Due to this Stora Enso is investing a substantial amount of money per year on developing LCA data. In fact in Stora Enso's environmental report they outline their commitment to providing detailed and complex data to their customers. "The company's business-to-business customers expect comprehensive and often complex data regarding the products environmental performance in order to be able to promote these products and respond to their own customers requirements."

There were two main goals for conducting this case study:

➢ To understand what type of environmental product related information or environmental information in general is requested by customers and to see what information Stora Enso is actually providing.

➢ To describe the current management of environmental information to customers and suggest how it could be improved.

Figure 3.1 shows an outline of what was known before the study began. It was known that there are different levels within Stora Enso such as the corporate, division, production unit and sales offices. In addition to this it was known that customers are asking questions yet it was unknown who they were asking and how the questions were being answered. To carry out these goals interviews were conducted in November and December 2000. The interview questions were devised to be able to look at how questions reach the company, who is asking what, what type of questions are being received, and how the management of these questions is handled internally and then communicated back out to the requester. All in all 18 interviews were done with 22 people. Some were personal interviews, some were done over the telephone and some were performed via e-mail correspondence. See Appendix 1 for the list of interviews conducted for this study. The interviewees include the Environmental Director of Stora Enso, Stora Enso's corporate environmental communications office, a mill communications officer, sales directors from 5 different countries, 3 mill environmental

managers, 4 people dealing with product information at the mills, 4 divisional environmental managers and 1 regional environmental manager were interviewed. Some of the interviews were done in person, while others were done over the telephone and some were performed via e-mail correspondence. See Appendix 1 for the list of interviews conducted for this study. The interviewees include the Environmental Director of Stora Enso, Stora Enso's corporate environmental communications office, a mill communications officer, sales directors from 5 different countries, 3 mill environmental managers, 4 people dealing with product information at the mills, 4 divisional environmental managers and 1 regional environmental manager were interviewed. Through the interviews the connections between the various entities became clear as well as the connections to the customers from these various entities.
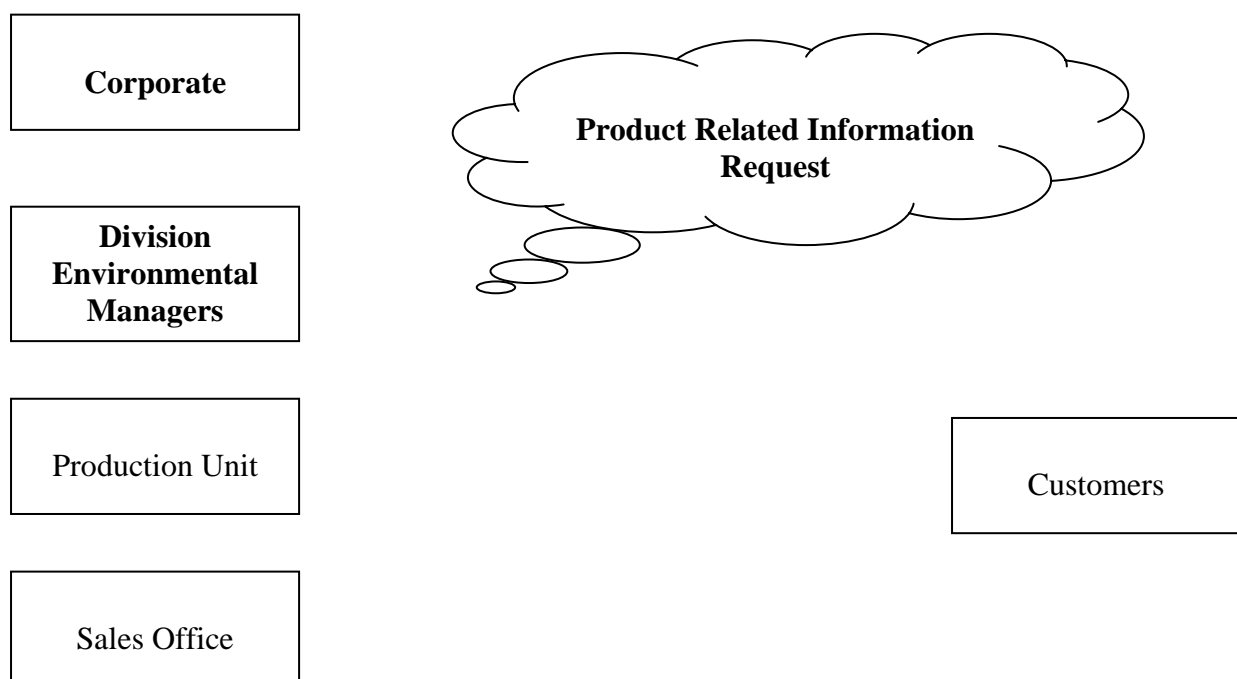
Figure 3.1 Figure of one of the study questions

3.2 Stora Enso

3.2.1 The Company

Stora Enso was formed in 1998 when the Swedish forestry company Stora and the Finnish forestry company Enso merged. This merger has made Stora Enso into one of the world's leading forestry companies. Stora Enso manufactures magazine paper, newsprint, fine paper and packaging board. In addition to this they also own some forestry land and hold several

sawmill operations. Their annual sales for 1999 were approximately 10 billion Euro. Europe has been the prime market, however, in 2000 the North American paper company Consolidated Papers was purchased to give Stora Enso greater access to the North American market. Much work has been dedicated to bringing the corporate cultures of Stora and Enso together. Once again another corporate culture will need to be incorporated into the corporation. This is likely to take a great deal of time and effort over the next few years. All three companies have strong market presence and greater attention will need to be given to branding Stora Enso.

The company produces a variety of different products from Fine paper, Packaging Boards, Newsprint and Magazine Paper to Pulp and Timber. This study only looked at the first four product categories, fine paper, packaging board, newsprint and magazine paper. It is important to understand that there are differences in the various divisions and differences in the importance of environmental information in all of these divisions. This will be discussed later in the following sections.

Stora Enso has been very active in its environmental work. They have published an environmental and social responsibility policy that clearly defines their commitments to sustainability and their stakeholders. They write, "Stora Enso is committed to developing its business towards ecological, social and economic sustainability. These tasks are recognised as shared responsibilities within Stora Enso enabling a continuous improvement of our operations." In addition to this they go on to highlight the importance of maintaining an open dialogue with the corporation's stakeholders. They say "In order to continuously strengthen our operations and develop environmental and social issues in a sustainable way, Stora Enso considers an open discussion and interaction with all stakeholders both governmental and non-governmental, as fundamental." (Stora Enso, 1999) Almost all of Stora Enso's production units in Europe are either ISO 14001 or EMAS compliant. They publish a Corporate Environmental Report (CER) on an annual basis and all of the mills that are EMAS compliant publish an Environmental Report/Statement on an annual basis. Stora Enso is also very active in customer and NGO dialogues on a variety of issues.

3.2.2 Organization of Environmental Work

The organizational chart of Stora Enso looks very similar to the chart presented in Chapter 2. For this case study it is important that some of the various entities or levels within Stora Enso and their functions are further explained. This study has focused on the corporate level mainly on the environmental department, which works as a corporate support function in terms of the environmental work for the entire corporation. They perform a variety of functions mainly focusing on legal issues, environmental management systems, corporate functions and research. It is this level within the organization that is doing research on the development of environmental product declarations.

The next level is the division. Each product category has a division, which has appointed one person to be in charge of environmental issues. It is the responsibility of this person to focus on market related environmental issues. They look at product related laws on a regional level specific for their product categories.

The production units also have environmental managers in each unit. These individuals are responsible for implementing environmental management systems at the unit, environmental technique and local and national laws.

Finally there are the sales offices that need to be informed of the various environmental characteristics of the products they are selling. They have close contacts with the production units for this information.

Stora Enso Environment went through an internal restructuring in January 2001. This re-organization has created several new positions. There is a new position that will deal with corporate environmental marketing matters as well as regional operational support in Sweden, Central Europe, Finland and North America.

3.2.3 Current Environmental Communication Tools

Stora Enso uses almost all of the environmental communication tools presented in the previous chapter. They publish a Corporate Environmental Report, all of the production units that are EMAS compliant publish an environmental report, the corporate web-site contains information on the firms environmental performance, product brochures contain some environmental information, and several of the production units in Finland and Sweden meet

the requirements of the Nordic Swan label. In terms of the use of personal communication and training and information sessions this depends on the culture of the sales office, division or production unit. A magazine called Tempus is published on a quarterly basis for customers. Some of the production units and division managers are very proactive in their approach to providing information while others are not.

3.2.4 Stora Enso and Product Related Information

Stora Enso labels approximately 70% of its fine paper with the Nordic Swan label. (Larsson 2001) In the Newsprint and Magazine Paper division they often meet the requirements but do not have the label themselves. Many of their customers would like to be able to label their end product and it is therefore very important that the paper meets the criteria. In the Carton and Packaging Board division there are only a few products that are labelled or meet the requirements for the label. In this division more detailed product information is important.

There are product brochures available which contain some information on the environmental performance of the mill producing the product.

3.4 Case Study Interview Questions

The interview questions were left very general so that the discussion was not steered in any way. The questions were adapted depending on which function the interviewee has in the company. Everyone that was interviewed was told that the focus of this study was to look at environmental product information/communication towards customers. The questions asked can be broken down into 6 broad categories. The first category of questions revolved around the requests for information received. This included the number of questions asked, how the questions/requests are formulated and also the proactive information that the individual provides customers. The second category of questions focused on the requester. This question seeks to determine who was asking the question. This included how many, how the questions/requests are formulated and also the proactive information that the individual provides customers. Along with this questions were asked on which communication tools were used to respond to these questions. The fifth category of questions wanted to see what issues the various individuals thought would be important issues to communicate on in the

future. Finally the respondents were asked for suggestions for improving the request management internally and externally.

3.5 Results

3.5.1 Received Requests

In general most of the questions that customers ask come to the sales office or production unit first. In the fine paper division the majority of the questions received were in regards to eco-labels, mainly about the Nordic Swan label to be exact. One Finnish sales representative interviewed estimated that approximately 99% of the questions he received were in relation to the Nordic Swan. Several of the mills in Sweden record all of the questions that they receive in relation to the environment from customers. In a report from July 2000 it is written, "it can still be seen that the interest for the Nordic Swan is very high as is the number of questions regarding environmental and quality systems." Through the interviews it became very clear that questions about either the Nordic Swan or compliance with environmental and quality systems were the most frequently asked questions. In addition to these issues there were also questions about the amount of Forest Stewardship Council (FSC) certified wood the product contains. Several of the respondents also indicated that they received several questions about emission limits as well.

The respondents from the Newsprint division indicated that the majority of the questions that they received were in relation to the recycled paper content in the product as well as forest procurement and environmental management systems. There was also some indication that there were some questions about the Nordic Swan label though not nearly as many as in the Fine Paper division.

In the Carton and Paperboard division the questions were quite different from Newsprint and Fine paper. In this division the majority of questions were in relation to product safety. The questions received were often about the detailed content of the board. This includes information on the specific toxic and metal content of the board. One of the respondents also indicated that they have received questions about ISO 14001 and EMAS certification.

The corporate environmental communications officer indicated that the majority of the questions that she received were in relation to Stora Enso's position on different environmental issues such as timber procurement or the company's environmental social responsibility. That is to say they were mainly policy issues and not directly product related.

3.5.2 Requester

This study focused on product related questions from customers and the respondents were told ahead of time that this was the main focus of this study. The more detailed questions that they receive are often from larger customers such as Tetra Pak, British Telecom or Xerox to name a few. One sales office representative said that some of these larger customers have begun hiring consulting firms who go through the firm's product and corporate information and devise questions. These questions are often quite detailed and need to be answered very thoroughly and carefully. Some respondents noted that it is often not their customers who request information but rather that it is customers of the customers of Stora Enso who have questions.

3.5.3 Request Management

Through the interviews it became apparent that the majority of requests for information come to either the sales offices or to the production units. The way that the questions are dealt with by the production units was very similar the only difference being that some of the units document the questions received while others do not. In all of the mills it is up to the Environmental Manager of the mill to answer all questions that are received related to the environment. Three of the production units interviewed keep very thorough records of all of the questions that they receive.

The way that the sales offices deal with environmental requests is quite varied. Some of the sales offices (U.K., Finland and Spain) said that there is enough internal expertise to deal with most of the questions that they receive. If they were unable to answer the questions because it was a request for detailed information the question was either forwarded to the production unit or to the division environmental manager.

The sales offices in Sweden said that they always forward the questions received to the production unit producing the product. They also indicated that they try to not get involved in answering questions at all and let the production unit environmental manager correspond with the customer directly. The sales office in Germany said that they forward all customer related questions to the division environmental manager.

As stated above several of the production units in Sweden document all of the questions that they receive. Most of the production unit representatives indicated that they would not have a problem with documenting questions in the future and some even said that they had been considering documenting questions for some time. One of the production units in Sweden produces a report which is distributed to individuals within the production unit as well as to individuals on the division level for their product category.

None of the sales offices interviewed document the questions that they receive. Some of the offices depending on which division they belong to have meetings with the environmental communications officers, sales managers from the various countries, the production unit environmental managers and the divisional environmental managers on a regular basis. At this time they are able to discuss the questions that have been received.

Only one division environmental manager responded to the question of how environmental requests are dealt with. This was the divisional manger for magazine paper. In the magazine paper division the questions most often come into the sales office. The sales office then forwards these questions to the divisional environmental manager who then collects information to answer the question. Once the response has been formulated it is sent to the head of the magazine division for review before it is sent back to the sales office who then write a letter and sends the response back to the requester. The divisional environmental manager never contacts the customer directly to respond to their questions.

3.5.4 Tool Used for Response

There were a variety of tools used to respond to customer's questions. Some of the sales offices are very active in providing information to their customers while others provide very little information. The offices in Finland and Sweden were less proactive than the offices in Germany and Spain.

In Spain the sales office has been very proactive in providing information to their customers. Much of the corporate information is only available in Finnish, Swedish, English and German. The sales manager interviewed for this study said that "in Spain most of our customers are not very good at English so environmental reports and so are not properly understood if not explained or summarized." The Spanish sales office has produced several books and brochures on different environmental issues. One such book is called "144 Questions about Paper and Carton". The book provides answers to commonly asked questions about the environment, Stora Enso, forestry, recycled fiber usage, production of paper and carton and the forestry industry in general and the environment. This book is sent out to all customers. The amount of information reaching the customer is very much dependent on the staff and approach of the sales staff.

Several sales offices interviewed indicated that they never provide any environmental information on Stora Enso when conducting sales meetings or presentations of Stora Enso. The reason given for this was that the customers do not ask for such information and therefore, they do not provide it.

Both the Swedish and Finnish sales offices send out the corporate environmental report to some of their customers and to anyone who requests it. Neither office actively promotes environmental information however. The Swedish office said that they probably receive one question related to the environment per quarter in regards to Fine Paper and Packaging Boards where as the Finnish office said they receive maybe one question per month in regards to Fine Paper and Packaging Board.

3.5.5. Other Results

To see what issues may be important for Stora Enso to respond to in the future one of the questions focused on future issues. The responses to this question were quite similar in the various levels within the corporation. The sales office all thought that eco-labels would be an important issue to discuss in the futures. In addition to this forestry issues and transportation issues were also very important.

The production units also indicated eco-labels and transportation as well as forest certification to be important in the future. There was also a general feel that the future issues would be steered by the media to a great extent.

The divisions brought up a wider range of issues such as the corporation's responsibility in environmental matters. This was not only limited to the firm activities but also to the individual. The climate change issue also arose as an issue as well as forestry and forest certification. The debate around genetically modified organisms was also deemed important as well as eco-labelling issues.

On the corporate level the environmental director believes that climate change and forestry will be important issues to respond to in the future whereas the environmental communications officer thought that issues regarding global responsibility would be important in the future.

3.5.6 Suggestions for the improvement of the management of response

Everyone interviewed was asked if they had any suggestions for improving the internal and external flow of information. Many people were optimistic that the re-organization of the company would help alleviate some of the problems of information flows internally.

The sales offices felt that the company's Intranet could be put to better use in the future. Currently much of the information on the sites for the production units is in the local language mainly Finnish and Swedish with very limited information available in English. This makes it difficult for many of the sales offices to use this information resource. Some of the information that they would like to see would include but not be limited to:

➢ key environmental performance for the mills and products;
➢ information on environmental product declarations for various products;
➢ the environmental labels the product has;
➢ copies of the ISO 14001 or EMAS certificates;
➢ and safety and health issues on the products.

It was suggested that this information should be standardized and available on a per mill and per product basis. This should then be placed on the Intranet and should be accessible to everyone within the company.

3.6 Discussion

Through the case study it became apparent that the majority of product related questions are received at the production unit and sales office level. The interviews showed that in terms of communication with customers it was very rare that environmental product information is ever requested. This may in part be due to the fact that the people that the sales staff are in contact with are not the ones within the customer's company who are interested in such information.

Through the interviews it became clear that there is a structure of how environmental information flows within Stora Enso. This is an informal structure and information flows better between some levels than others. The current system of collecting and communicating environmental information is shown in Figure 3.2. The solid arrows show how environmental information flows through the various levels within Stora Enso. The information to the customer typically flows through the sales office or the unit/mill. The broken arrows flowing from the various levels of Stora Enso also depict what is happening in reality to some extent as well. It should be noted that not all sales offices and unit/mills provide any information on customers concerns to the division or corporate level so this reflects what should be happening in the future as well. There are several reasons why this is not happening. It can in part be due to an unclear organisational structure where some of the sales offices and mills are unsure of whom (in the organization) such information should be provided to. It can also be due to the fact that the sales offices and production units do not believe that anyone within the corporation would be interested in receiving such information. They may not see the importance of communicating this information back up to the corporate or division level. This information can be an invaluable resource however, to the corporate and division level as it will keep them informed on the issues of importance to customers. It may also be the case however, that the corporate level and division level have never asked for this information. and therefore it is not being provided.
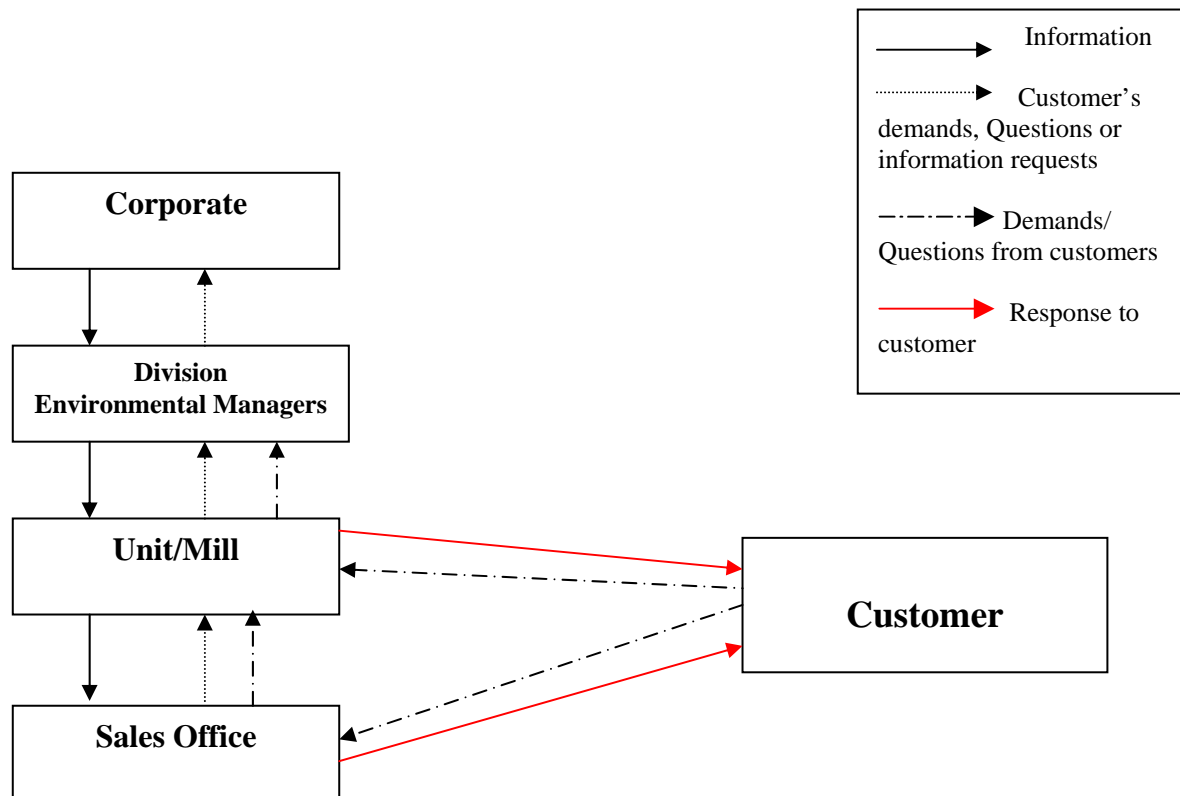
Figure 3.2 Connections between the entities within SE and Customers

There is little or no direct link between Stora Enso Environment (which can be seen as the corporate level in the above figure) and the sales offices. If a question is received by the sales office that would be best dealt with by Stora Enso Environment (SEE) it is likely to go through one of the production units first. The connections between SEE and the production units are much stronger, particularly in Sweden. There is a problem with this information not reaching the corporate level, as it is on this level that various tools such as EPD's are developed. It is therefore important for them to have an understanding of the type of environmental product information customers are requesting. The new organization of SEE with the regional advisor positions could probably also help to ensure that information is shared between the different divisions with Stora Enso more effectively in the future. This could help to promote co-operation between the divisions, sales offices and production units. This would help them to gain a broader picture of Stora Enso's customers and what issues/questions they are interested in.

Many of the respondents felt that eco-labels were the most important environmental communication tool that they had. In addition to this personal communication/contacts and the mill EMAS reports were also seen as being very important.

 The use of environmental product declarations was raised in several of the interviews. In general it became quite clear that the majority of customers are not requesting this type of information. The persons interviewed in the newsprint division felt that EPD's are a good way of presenting product information yet Stora Enso is not providing such labels at this time.

In the fine paper division it was felt that Type III labels might be useful for their larger customers but that this information is likely to only be understood and used by 2 or 3 people within the customer's company. For the smaller purchasers it was thought that Type I labels are more important and when the paper reaches the end user that it is only the Type I label that is important. In the Fine paper division the Nordic Swan is very important. As one person from a Swedish mill said "Most customers only want to know that Stora Enso has the Swan label." In a study conducted by Palm and Windahl (1998) they highlight some of the various interpretations that consumers have of the various eco-labels. They highlight a study carried out by VDN-märkning and Möbelfakta that showed that consumers see eco-labels in themselves as some sort of quality guarantee. This was highlighted in the interviews as well as many sales offices expressed that often customers have no idea what the Nordic Swan stands for or what criteria the product must meet to be labelled. They do feel though that if they purchase a product that is labelled that it must meet certain standards and must be better than a similar product without the label.

There has been much written about the increased environmental awareness of consumers today. Everyone interviewed believed that the only things that are important to their customers is the quality, service and price of the product. As a technical product information specialist at a Swedish mill said "95% of the decision to buy paper from us is based on price. The other 5% may be based on environmental performance and other factors." Many of the mills expressed that customers want them to continually improve their environmental performance, however, they are not willing to pay more for the product due to these improvements. The same person went on to say "It is very unfair that we can make investments to improve our environmental performance without seeing a penny in return for it. We have increased our production while our emissions have decreased and that costs

money. However, if a producer in Russia can sell their paper cheaper than ours while polluting more where is the fairness in that. In the end the customer only cares about price."

In the carton and packaging division even more than in the newsprint and magazine paper division Type III labels were thought to be better than Type I. In this division the contents of the product are very important as the packaging is used for food and liquid packaging. The safety of the product for human health is very important in this category and detailed information about the fiber content and toxic material content are very important.

In the newsprint division Stora Enso does not label their products they meet the requirements so that their customers can label their product. There is still a great importance placed on the label even in this division.

However, it should be noted that not everyone expressed their pleasure with eco-labels. The environmental manager of the packaging division expressed his dislike of environmental labels by saying "labels are useless." He thought that the best tool was performance and communicating this performance through the annual report, the Corporate Environmental report, the EMAS report, the customer magazine, leaflets on the products and the corporation and meetings and exhibitions.

The issue of proactive versus reactive communication also arose quite a bit. The approach taken was fully dependent on the attitude/approach of the staff of the sales office or production unit in question. It is also likely to be dependent on the interest of the customer in environmental information. For instance, Spain is not seen as a country that is at the forefront of the environmental debate yet the Spanish sales office is very proactive in their communication. This is likely due to several different reasons. One reason is of course the approach of the sales staff. Another reason which was explained earlier was the language barriers but another reason was that one of their large customers (Tetra Pak) is very interested in receiving such information.

The interviews showed that in reality customers are relatively uninterested in environmental product information. In fact many respondents indicated that environmental issues rarely come up in sales meetings. This is partly due to the fact that for some product areas environmental information is not important to the customers and is not something that the

sales offices even discusses with its customers. These customers are often small and simply do not have the staff to ensure that their suppliers are environmentally responsible. It is also likely the case that these customers are satisfied just knowing that Stora Enso has a certified environmental management system in place. It can also be due to some of the reasons already discussed above such as varying importance of environmental issues in the different product categories. This does not mean that Stora Enso can ignore their environmental work all together. If this was to happen this could cause problems for Stora Enso in the future.

If Stora Enso is to begin using Environmental Product Declarations rather than the Nordic Swan in the future it will be very important that they actively promote the use of such declarations. Customers would need to be informed of the advantages the use of such a system provides. Today there is a gap between what information Stora Enso is providing and what information the customer wants to receive. Several studies have reached these same results. For instance, studies by Solér and Jönsson show that there is gap between the sender of information (the producer) and the receiver (the customer). As Solér states there is an importance in closing the gap between the supply and demand of environmental information. She continues by saying that there is a need to ensure that both the customers and the producers learn about the EPD system. (Solér 2000) For this to happen there would need to be a great deal of awareness building on the benefits of this system to ensure that customers begin to request such information in the future.

There is very little product-related information or environmental information in general that is being communicated to customers. This is in part due to the fact that they are not requesting it but it is also due to the fact that they aren't being provided with such information. If companies want customers to begin to request Environmental Product Declarations in the future companies will need to begin supplying customers with such information before they begin to request it. The danger with this however, is that companies may want to drop out of other important labelling schemes that they are currently participating in. This is a very risky move and it is likely that it will be necessary for companies to continue to meet the requirements of the Nordic Swan until ways of communicating the information in EPD's is improved and understood.

In general there are several things that can be done internally to improve the quality of communication within Stora Enso. It is hoped that if the quality of communication is

improved internally that it will also help to improve the information that is being communicated externally as well. Another issue that was highlighted in the case study was that there is no formal structure of how environmental questions should be answered or any standards on the documentation of the questions and responses. This will be the focus of the following chapter.

Chapter 4
Suggestions for Improvements

4.1 Introduction

The previous chapter highlighted some of the problems that a large corporation can have with managing information and communicating that information to its stakeholders. This chapter will attempt to put forth some suggestions on how to improve the flow of information and how to manage product information more effectively. Since environmental product information is not commonly requested today or proactive the suggestions in the following sections are very general and can be used to improve environmental communication in the broader sense.

4.2 Causal Loop Diagram- Improving the Quality of Communication

To begin to get at the core of how to improve the quality of communication and product related information it is useful to create a Causal Loop Diagram (CLD). The CLD allows us to see the various interactions between the variables that affect the system. Through the interviews it became clear that the quality of communication could be improved. Figure 4.1 below attempts to show how the quality of communication could be improved within a corporation. The CLD begins in the top left-hand corner. The more that customers needs are monitored the greater the need for the documentation of their questions becomes. Questions should be monitored through the documentation of these questions in a database. The more their questions are documented the more likely it will be that you will be able to give them the right message. The more personal relationships you have the more likely it is that you will be able to give your stakeholders the right message. The more the right message is given the more customer satisfaction you will have. The better the quality of communication is the more customer satisfaction you will have. (The more customer satisfaction the better the quality of communication will be.) The better the information management is the better the quality of communication will be. The better the data quality is more trustworthy or reliable the information will be. This will improve the quality of the information management. The more that data quality is based on relevant data, reproducibility and transparency the better the quality will be.

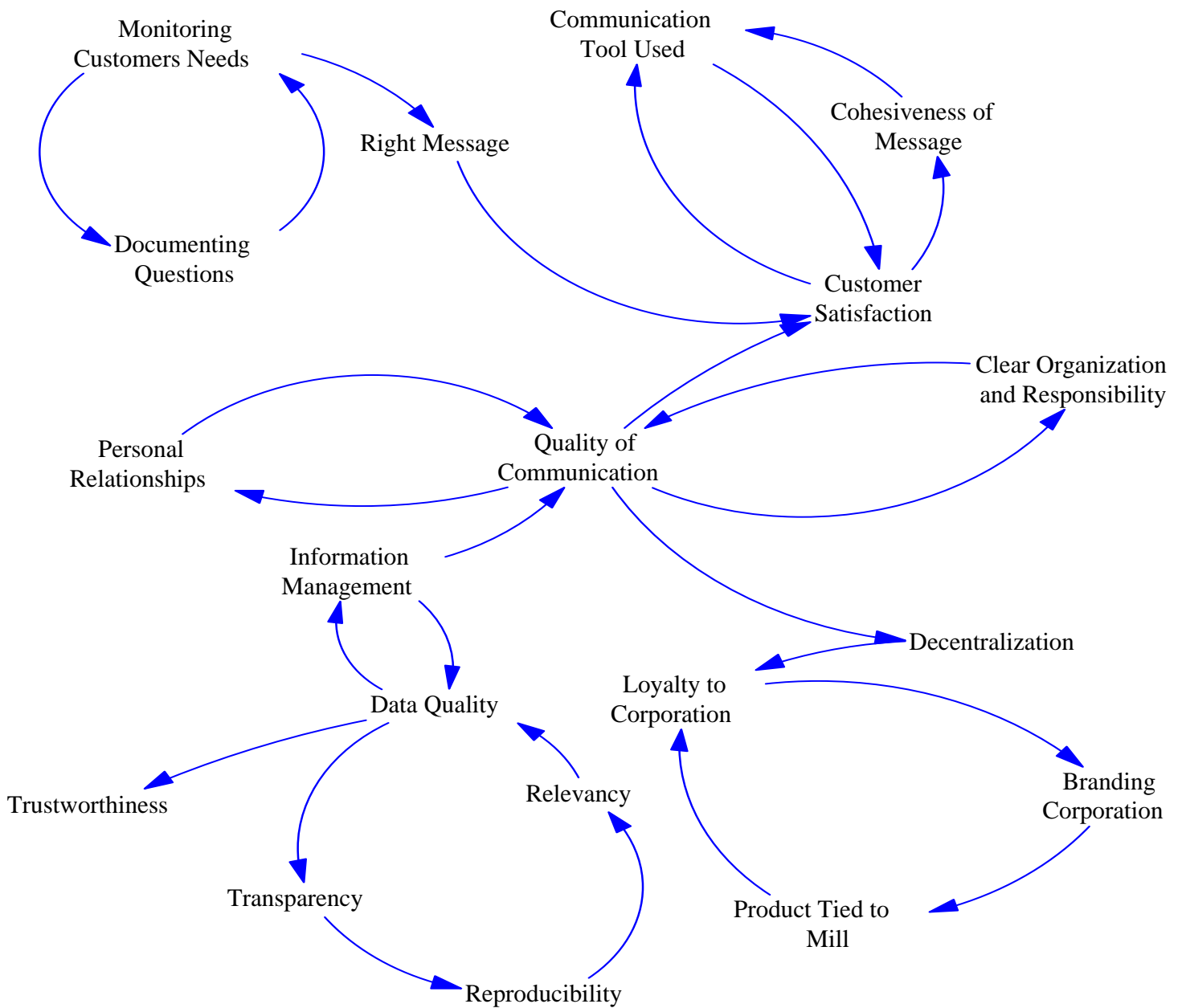Figure 4.1 Causal Loop Diagram of how to improve the quality of communication.

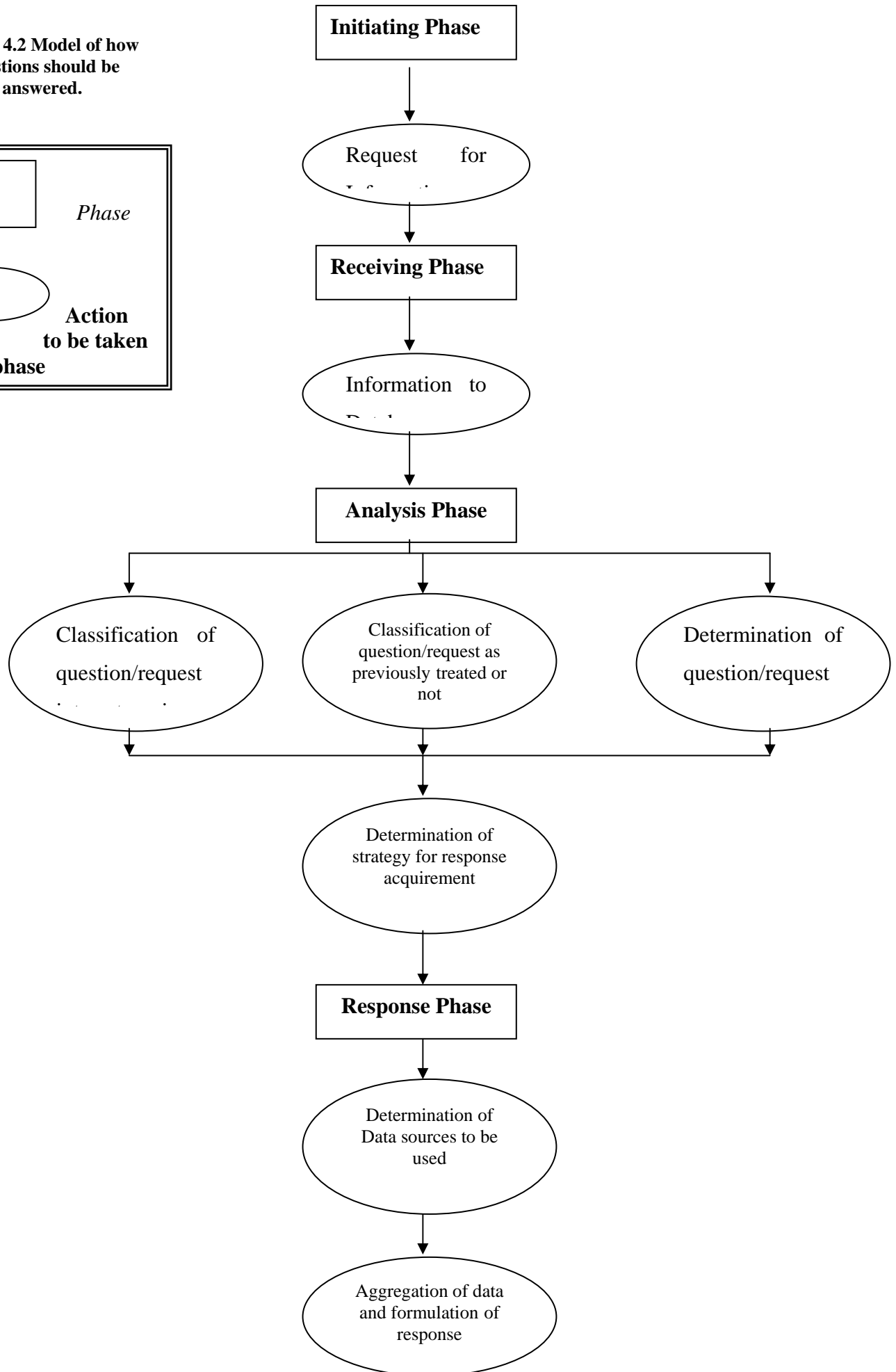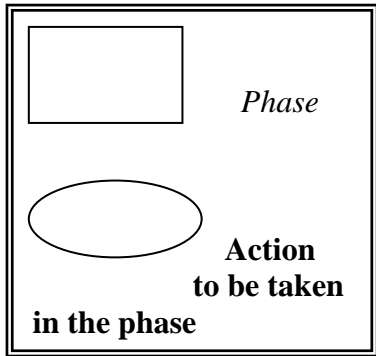## 4.3 Model of How Environmental Product Related Questions Should be Answered

This section will build on a model developed by Annica Taprantzi (Taprantzi 2001) which looked at how the communication of environmental inquiries takes place within an organization. Ms. Taprantzi's thesis developed a communication model which would be used
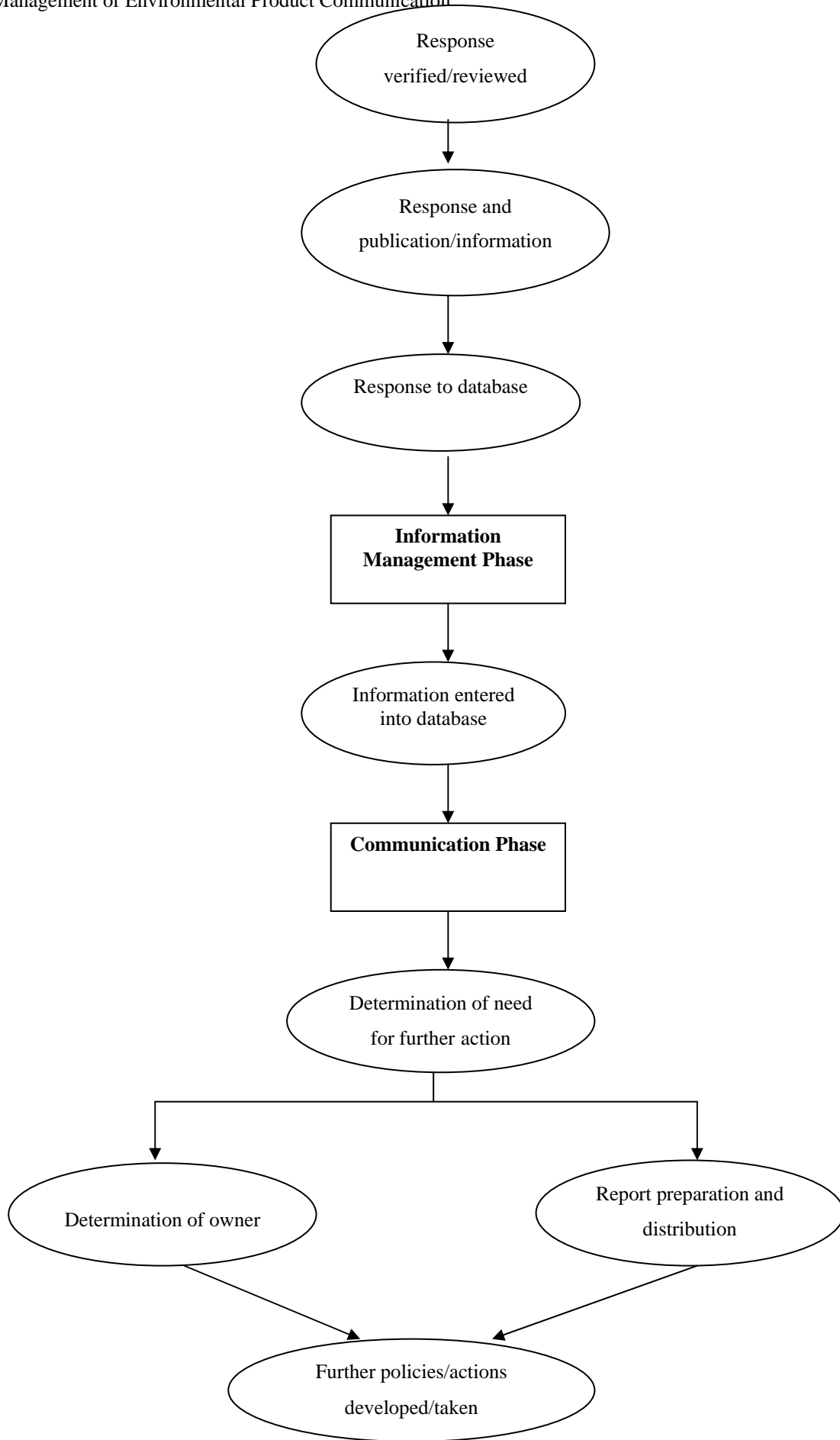
as a methodology to answer the increasing number of requests the corporation is receiving for detailed information from a variety of stakeholders. Ms. Trapantzi's thesis will likely become a part of the Environmental Database that Stora Enso is currently developing. This database will be a verifiable database and the data contained in it will be reproducible, stringent and transparent. (Taprantzi 2001) This database is likely to take time to develop and therefore this thesis presents a suggestion of another database which does not follow the same strict guidelines as the database Stora Enso is developing. The thought behind this model and the database suggested here is that it is relatively simple to create and can be a solution to improve the way in which questions are answered today.

The model presented in this thesis builds upon Ms. Taprantzi's model, however, by adding a key phase called the information management phase. To begin to address the issue of how to improve the flow of information it is important to at first develop a structure or guideline for how external questions will be dealt with internally. Figure 4.2 shows how Stora Enso should handle the response of questions in the future. This model is different from the current approach to dealing with customer's questions in several important ways. The model begins with the initiating phase where the request comes into the company. This is the original impulse that starts the flow. The action in this phase is a request for information. The next phase is the receiving phase. This is the phase where the firm first needs to take action. The action in this phase is to document the question, the requestor, etc into a database. The database will be discussed in further detail in the following section. Once the information has been entered into the database the analysis phase begins. During this phase the question/request needs to be classified into a category. By this it is meant that the question should be placed into various categories. For example if it is about forestry, environmental labels, environmental management systems etc. to name a few. After this is done the next step is to classify the questions as previously treated or not. Once this has been done it must be determined whom the question/request owner should be. Once the strategy has been determined the next phase is the response phase. The first action in this phase is to determine the data sources to be used. Next the data should be aggregated and the formulation of a response should begin. Once the response has been formulated the next step is to have the response verified/reviewed by an appropriate person. Once this has been done the response along with any information and/or publications should be sent to the requester. The next phase is the information management phase. In this phase the response should be entered into the database. During this phase the response as well as information on what material was sent

along with the response should be entered into the database. The final phase is the internal communication phase. This phase is meant to ensure that information on the questions being received is communicated to the various actors within the company. The first action is the determination of the need for further action. If further action it should be determined who will be the owner of this. This may mean that the person who has answered the question may not be the correct person to ensure that further action is taken. A report should also be prepared and distributed every so often to the environmental director, the environmental management team, the environmental communications staff and to everyone responsible for posting information to the database. From here it is up to these people to ensure that further actions/policies are developed and implemented. It is thought that putting some structure to the way that questions are answered will improve environmental communication in general.

**Figure 4.2 Model of how
questions should be
answered.**

Initiating Phase

Request   for
~~Information~~

Receiving Phase

Information   to
~~Database~~

Analysis Phase

Classification   of
question/request
~~....... ....~~

Classification of
question/request as
previously treated or
not

Determination   of
question/request

Determination of
strategy for response
acquirement

Response Phase

Determination of
Data sources to be
used

Aggregation of data
and formulation of
response

Phase

**Action
to be taken
in the phase**

Response
verified/reviewed

Response and
publication/information

Response to database

**Information
Management Phase**

Information entered
into database

Communication Phase

Determination of need
for further action

Determination of owner

Report preparation and
distribution

Further policies/actions
developed/taken

4.4 Management of Environmental Product Related Questions

In the previous section a model was put forth to improve the management of product related questions coming into the firm. The use of information systems such as a database was brought forth as a necessary step in the previous section. The use of information systems can help to manage information and make it easier for this information to be shared with others within the organization. Hawryszkiewycz (1991) says that,

> Information systems aim at supporting users' activities and decisions. To do so, they must establish procedures ensuring that the right people receive the right information at the right time. These procedures determine what is to be done with information as it enters and passes through the system. Along with that, there is the equipment that is used to store data, move it around the organisation and process it.

This section will look at how the database that these questions would be entered into would be structured. Figure 4.3 shows what the database would look like. It should be noted that this database is geared towards product related questions but it is thought that this database could be used to document all environmentally related questions.

4.4.1 The use of Information System to Improve the management of Product Related Questions

The database begins with general information about the person entering the information, the product and the mill the question is in relation to. It then goes on to ask information about the requestor of the information such as what company they are from, their title, etc. The next section is in relation to the actual question being asked. Here the actual question should be entered and the category in which the question is related to should be entered. The next section is in relation to the response. This section will contain information on the actual response sent, what information or publications were sent out along with the response and what data was used to answer the question. This will make the database useful and easy to search. The thought is that it will be easy to see if the company has responded to the question before and how the question was answered in the past. This final section also asks if further action needs to be taken and if so what.

Figure 4.3 Database

General Information

Practitioner

Product Name   Scroll down menu

Mill   Scroll down menu

Requester

Name
Title
Organisation
Address
Country
Telephone #

Question

Category   Scroll down menu

Question

Question Owner

Response

Date response sent
Information/Publications Sent   Scroll down menu

Specific Response

Data Sources used

Response verified by:

Further action needed   Scroll down menu
If yes, what?
Owner

4.4.2 Success of Database Management System

For this database to be successful it is necessary to define responsibilities and to ensure that everyone in the mills and sales offices are made aware of the new system. To begin with one person should be made responsible for creating and entering information into the database on a company wide basis. This person would need to collect questions from the various production units and sales offices and enter this information into the database. As this is done the responses should be checked to ensure that the right answers have been sent out. By doing this the database will be seen as a tool and it may be more likely that people will be more open to entering information into it in the future.

Questions coming into the corporate level should also be stored here since information on the company's position on different issues is likely to be useful for the people in the sales offices and mills as well. One individual at each site should be designated responsible for the upkeep of the database. The database should however, be accessible to all but there should be one person who is responsible for ensuring that data is entered properly and on a timely basis. It is thought that this database could be stored on the company's Intranet site. This would make it easy for everyone to access and search. It is the hope that this database will help to avoid problems that have been experienced in the past. One practical example is a recent question which came into Stora Enso Fors Mill. A large British customer asked a question about the percentage of Forest Stewardship Council (FSC) pulp several products were made of. This customer had asked the same question in early 1999 and had received a response from the mill. In 1999 the customer was told that the percentage was around 29-37% where as in late 2000 he was told that it was only around 12-25%. The customer still had a copy of the fax he was sent in 1999 with the first figure which he forwarded to the mill. There were several problems with the response which was sent to the customer. The first problem was that it was not clear who responded to his question. The second problem was that there was no indication of how this number was calculated, i.e. what data was used, how the calculation was done and there was no record of the question being answered or received at the mill. It is hoped that the use of the database will help to improve or prevent such problems in the future.

4.5 Data Quality

This brings us to another critical issue, namely that of data quality. It will be important to ensure that the data used to answer customer's questions meets certain requirements. It is the goal of Stora Enso to ensure that data will be transparent, reproducible and relevant. The Center for Environmental Assessment of Product and Material Systems (CPM) has defined data quality as data which is reliable, accessible and relevant. They go further and define each of these aspects. Reliable data is defined as data which is precise by this they mean data which has a low error margin. In addition to this it should be believable. To ensure that the data is believable it should be traceable and competent data. The next requirement is that the data is accessible. This is defined by the communication of this data, the openness of the data after the data is compiled. The data should be traceable. Finally the language used should be appropriate. Meaning that an international company may want to ensure that the data is available in English so that it will be of use to everyone within the company. The final aspect, which determines data quality, is the relevancy of the data. This includes using the right data form. One should be sure that the data used is adapted for its intended purpose. The data should also be relevant for the type of study being done. (Pålsson 2000)

It is very important to not only document the questions being received but to also ensure that data is made available for everyone to use which meets certain standards. The environmental communications department in currently working on making information available on the Intranet site on different issues such as forestry, labelling, etc. It is the author's belief that this information will mainly be made up of policies and Stora Enso's position on different issues. It does however, become clear as shown in the example of failed communication that Stora Enso will also need to work on the quality of their data in the future.

Chapter 5
Conclusion and Further Research

5.1 Conclusion

At the beginning of this research it was thought that there was no structure for the communication of environmental information within Stora Enso. However, over time it became very clear that there is a structure though it may not be very well defined or clear. Although, there is a structure the system only works well if the actors know whom they should contact and who is responsible for what. It became clear that past working relationships were sometimes more important than current duties. Unfortunately, also the corporate office often isn't contacted for assistance until there is an acute need for assistance or when the questions are in regards to the entire company and not just an individual production unit. It is hoped that the internal re-organization of Stora Enso will help alleviate some of the past problems. This will remain to be seen.

It also became very clear that Stora Enso needs to develop a database of environmental information as the one suggested in Annica Taprantzi's thesis. The one suggested in this thesis is a short-term solution whereas the verifiable database should be the long-term goal. A database with technical information on products and emissions for the various production units is likely to be needed in the future.

Another conclusion which can be drawn is that there is a need for Stora Enso as a corporation to define their positions on a variety of issues. This needs to be done rather quickly and this information needs to be made accessible to everyone within the company. Stora Enso as a corporation must decide what type of environmental profile they want to have. It is important that they either focus on promoting Stora Enso as a corporation or Stora Enso's products. It also needs to be decided how proactive Stora Enso's environmental product information shall be in the future. These types of decisions need to be taken on the corporate level and the commitment to improve the environmental communication of the corporation as a whole needs to be communicated well internally. Clear internal and external communication strategies need to be developed and communicated to all necessary persons within the corporation.

Stora Enso is doing a lot to ensure that they protect the environment as much as possible, however, this information is often not being communicated to customers. It will be important in the future to ensure that the sales staff is well trained in environmental issues and that they discuss these issues with their customers even if they do not ask for this information.

5.2 Recommendations

One issue that is in need of further research is the use of Environmental Product Declarations (EPD). There are a variety of definitions on what an environmental product declaration is. The Swedish EPA has said:

> An environmental product declaration provides environmental information focused on a product or a service based on a life-cycle perspective. The general idea is that an environmental product declaration will provide the purchaser and user of a product with the possibility to take environmental aspects into consideration. The producer of the good is given market inputs that will provide an incentive to design products in an environmentally preferable way. Further the process of developing an environmental product declaration is expected to raise the producer's awareness of the environmental aspects of the product.

Stora Enso along with other paper and pulp companies in Scandinavia has decided that they will no longer participate in the Nordic Swan labelling scheme. This is in large part due to the new requirements that have been set which make it impossible for any of the Swedish mills to meet the requirements on wood procurement. The forestry industry has instead decided to create their own label which will be more like an EPD. The thought is that customer's are increasingly demanding what the Swedish Environmental Management Council call "quantified and verified information about the environmental performance of products and services." This EPD will not be certified by a third party and will work as a sort of scorecard of environmental data for the product. Stora Enso would like to use this format in the short-term but the long-term goal is to start using certified EPD's. There are advantages to using EPD's rather than the Nordic Swan Label. The fact that detailed data on the emissions and impacts of the product on the environment are accounted for is positive. There is one fundamental problem with the EPD system however. It is very difficult to communicate the information. It is likely that the customers will not be able to understand the information.

There is no benchmarking which makes it difficult to see if one product has less of an impact on the environment than another. For this system to be effective research into how this information can be communicated and understood easily by the various stakeholders will need to be carried out.

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