

# Communication of Environmental Innovations to Consumers

## A Case of Renewable Packaging for Tetra Pak

ZEYNEP BIRSEN

**MASTER'S THESIS**

Packaging Logistics  
Lund University



# FIPDes

Food Innovation & Product Design

This Master's thesis has been done within the Erasmus Mundus Master Course FIPDes, Food Innovation and Product Design.

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Zeynep Birsen



**LUND**  
UNIVERSITY

# Communication of Environmental Innovations to Consumers

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Lund, 2013

Zeynep Birsen



## Abstract

- Title (in English):** Communication of Environmental Innovations to Consumers: A Case of Renewable Packaging for Tetra Pak
- Title (in Swedish):** Att kommunicera miljöinnovationer till konsumenter: En fallstudie av förnyelsebara förpackningar hos Tetra Pak
- Author:** Zeynep Birsen
- Supervisor:** Kajsa Modig Johansson  
Packaging Logistics, Department of Design Sciences, LTH
- Issue of study:** The interest for environmental issues is growing all around the world among consumers. Increasing awareness and change in attitudes towards environment has given rise to the sustainable development and this development has stimulated environmental innovations globally in the last years.
- Packaging has a considerable possibility to contribute to a sustainable development. In addition, consumer demands for sustainable packaging are also being felt across the supply chain. Alignment of market supply to consumer needs and preferences is critical to success in market with intense competition and demanding consumers.
- The challenge for sustainable packaging would be optimizing the packaging material. Hence, it has to be derived from sustainable source. The recent studies show that in near future there will be more packaging solutions from renewable resources. Therefore, an increasing competition is expected from bio-based materials by manufacturers of established packaging materials.
- Purpose:** The purpose of this thesis is to investigate how a brand owner using renewable packaging material can communicate this and its higher value (compared to traditional packaging) to consumers, in order to help consumers make more conscious choice when buying food products.
- Method:** To fulfill the aim of the thesis a qualitative research strategy was employed. Both primary and secondary data were collected in this study. An exploratory research was done through a qualitative approach, involving literature review and empirical research in the form of semi-structured interviews with managers and experts across the actors of packaging value chain.

**Conclusions:** Consumers are getting more aware of environmental issues and there is a growing demand for products with better environmental attributes. However, consumers are different and they value different things. In marketing research, consumers are divided into segments that have similar expectations and in this study three main segments were found in the interviews. According to the researcher, these segments could be classified as either green, yellow or red consumers, depending on their interest in environmental products.

Increased demand on environmentally friendly products might present an opportunity for companies if they have the courage to take the first step. With sustainable packaging, they would have a chance to attract the consumers who are environmentally conscious. Moreover, with reasonable prices they can have a competitive advantage and increase their market share by being socially and environmentally responsible.

Concerning the reviewed literature and the conducted interviews, it could be said that there seem to be two forms of information; information based on *facts* like knowledge and information based on emotions. These two kinds of information are the factors that affect consumers' knowledge, attitude, and behavior towards environmentally benign products. Therefore, it is essential to educate the public and make messages about environmental advantages easy to comprehend. Regarding the information based on emotions, it is meant that products or brands can create an emotional effect on consumers by advertising or marketing.

Another point that needs to be highlighted is that consumers would not buy a product just because of its environmental packaging; therefore, this feature has to be combined with high quality product content and excellent branding. Moreover, product content has to be in premium segment like organic, fair trade, or flavored products because this is what the consumer is actually buying. Packaging on its own doesn't make a huge difference in consumers purchasing decision, but combining it with other strong environmental attributes will create a holistic proposition that is very compelling.

**Key words:** Sustainable Packaging, Renewable Materials, Bio-based, Consumer Awareness, Green Products



# **Executive Summary**

## **Introduction**

The interest for environmental issues is growing all around the world among consumers. Studies show that people are concerned about the protection of environment and they are changing their behavior. Increasing awareness and change in attitudes towards environment has given rise to the sustainable development and this development has stimulated environmental innovations globally in the last years. These facts are encouraging firms to change or modify their activities, including production processes, packaging and services; and eliminate their negative effect to environment by manufacturing more eco-friendly products. The growth of green marketing is an opportunity for enterprises because green strategies offer companies and retailers a competitive advantage in product differentiation and cost savings.

Packaging has a considerable possibility to contribute to a sustainable development and consumer demands for sustainable packaging are being felt across the supply chain. The main goals in sustainable packaging are minimizing material use and waste, substituting traditional, contaminating materials with new, ecologically friendly ones that will pass through sustainable production processes, and that are possible to renew and recycle as high a percentage of packages as possible.

Trends in consumer packaging market are affected by changing consumer demographics and behavioral patterns; however, sustainability and the cost of raw materials are the drivers that concern the aim of this project most. Therefore, natural resources are becoming more valuable. Global companies like Coca-Cola and Tetra Pak and other companies launched their packaging with increased renewable content by using sugar cane derivatives instead of traditional resources. This change in packaging material helped them to reduce the greenhouse gases since it is a renewable resource.

## **Tetra Pak & Purpose of the Research**

As one of the leader companies in packaging industry Tetra Pak introduced their 2020 strategy which puts the company's environmental ambitions at the heart of its business. In the line of this strategy, the company aims to develop packaging based on 100% renewable materials. The purpose of this thesis is to investigate how a brand owner using renewable packaging material can communicate this and its higher value (compared to traditional packaging) to consumers, in order to help consumers make more conscious choice when buying food products. Furthermore, this master thesis would provide external data about renewable packaging by gathering academic and business-oriented publications related to the topic and by interviewing outside sources on the subject from business, academics and non-profit organizations.

## **Methodology**

To fulfill the aim of the thesis a qualitative research strategy was employed. Both primary and secondary data were collected in this study. An exploratory research was done through a qualitative approach, involving literature review and empirical research in the form of semi-structured interviews with managers and experts across the actors of packaging value chain. Interviews were carried out with respondents using mostly open-ended questions to collect in-depth knowledge and facts about their current projects regarding the renewable materials and consumer studies conducted by their institutions. These findings provided a holistic view about renewable packaging and an understanding of how to communicate environmental innovations to consumers. The main topics that are investigated during the study were the market for environmental packaging and consumer awareness towards these products, the understanding of environmental claims among consumers, contribution of packaging into sustainable development and more specifically higher renewable content in packaging, and finally the pricing of environmental friendly packages.

## **Results**

According to respondents, consumers are getting more aware of environmental issues and there is a growing demand for products with better environmental attributes. However, consumers are different and they value different things. Interviewees explained further that for the vast majority of consumers, including various consumer groups, their product choices are motivated by different factors. Other product attributes such as quality, price, and availability in store comes before environment for consumers. Participants mentioned that they conduct consumer researches in order to get consumer insight better and to understand what consumers think regarding packaging and what consumer expectations from packaging are. Many of the informants stated that green products are perceived by many consumers as premium and this perception causes them to think that these products are expensive. Furthermore they added that a niche segment would be willing to pay extra for a packaging with better environmental attributes; however, they added that it won't be more than 10 per cent of total product price.

Interviewees pointed that renewable materials are becoming more popular in the packaging industry. Consumer demands, environmental issues and increasing price of non-renewable resources have emerged using bio-based materials in packaging industry; and global companies are pioneers of this trend by using bio-based plastics. Participants agree that the importance of sustainability will continue to grow and the packaging industry will be influenced by this tendency and there will be more bio-based materials.

When it comes to environmental claims, the respondents affirmed that as the numbers of environmental symbols in the marketplace continue to increase,

consumers are getting more confused. Although these symbols are recognized by some consumers, the consumers do not exactly know what these logos stand for; what they understand is mostly that it is good for the environment. Instead these claims, brand owners will try to fill in their own brands with environmentally friendly, positive image according to interviewees.

Regarding the increase in awareness, participants stated that when the consumers would know and understand more about sustainability and its benefits, their awareness degree would increase and it will impact their behavior. The important issue is to educate the public, making messages about environmental advantages easy to comprehend. All the interviewees agreed that the message sent to consumers should be simple and easy to comprehend so that consumers would understand how they would benefit from that environmental innovation.

## **Discussion**

Consumers are different and they value different things; therefore in marketing research, consumers are divided into segments that have similar expectations. In this study three main segments were found in the interviews. According to the researcher, these segments could be classified as either green, yellow or red consumers, depending on their interest in environmental products. What is important to note for all these groups, however, is that none of the groups think that the environmental aspect of packaging is the most important feature of a product.

The green consumer segment does value products with environmental attributes, and this is one of the characteristics that they look for when purchasing products. This segment is willing to pay more for the sustainable aspects of a product, which may include environmentally friendly packaging according to market reports. On the other hand, the yellow consumer group, which includes larger amount of people, care about environmental issues as well; but the difference from green consumers is that they don't act upon their beliefs in their daily purchasing decisions. When it comes to paying premium for sustainable packaging, this segment might have some doubts. The last segment of consumers is the red consumer segment; those that are not concerned about environment and do not consider buying environmentally friendly products.

Regarding renewability, when the researcher asked about renewable packaging material during the interviews, the participants, after saying a few things on renewability, proceeded to mention other contributions a sustainable packaging can have like light weighing. It gives an insight that the term "renewability" is not yet a well-established concept in people's mind. This is probably valid for consumers as well; they are not yet familiar with renewability, and may not differentiate this from common environmental concerns, such as recyclability. Thus, a survey conducted by Tetra Pak shows that many consumers around the world do not understand the concept of renewability, often confusing it with recycling.

Increased demand on environmentally friendly products might present an opportunity for companies if they have the courage to take the first step. With sustainable packaging, they would have a chance to attract the consumers who are environmentally conscious. Moreover, with reasonable prices they can have a competitive advantage and increase their market share by being socially and environmentally responsible.

Concerning the reviewed literature and the conducted interviews, it could be said that there seem to be two forms of information; information based on *facts* like knowledge and information based on *emotions*. These two kinds of information are the factors that affect consumers' knowledge, attitude, and behavior towards environmentally benign products. Therefore, it is essential to educate the public and make messages about environmental advantages easy to comprehend. Regarding the information based on emotions, it is meant that products or brands can create an emotional effect on consumers by advertising or marketing.

Increasing knowledge is important, however if we think upon consumer segments, we can say that the green segment already is aware of many facts regarding environmental benefits of sustainable packaging, and they are acting accordingly. On the other hand, the yellow consumer segment is also aware of these issues, but the difference is they don't translate this belief into action. The researcher believes what is needed to stimulate this consumer group is another motive, a driver. The message that the product is giving to consumers has to address the emotional context of their needs that their product choice will make a positive impact in the environment, or making them feel good as they are doing something right for the environment through this small purchase. When it comes to the red consumer segment which has limited information about environmental issues, they are the ones who will be most influenced by information based on facts. Informing them about environmental issues could have a real effect on this consumer segment as they could gain a lot from this information and this situation might affect their attitude towards environmentally friendly products.

Regarding the information based on emotions, it is meant that products or brands can create an emotional effect on consumers by advertising or marketing, and this actually can affect all the consumer segments. For example, for the green group, they already consider environmentally friendly packaging when they are making their purchase decisions, although this is not the primary driver. These well-informed consumers can perhaps be targeted instead through their emotions to make them prioritize the environmental aspect of packaging. Likewise, using emotions through marketing and advertising could be the driver for yellow group that would make them behave according their beliefs. The yellow segment would probably be the best target for these advertisements because they are already aware of environmental issues; and this could influence them to change their purchase behavior. For the red consumer group, although they have limited information about environmental issues and don't

consider this aspect in their purchasing decisions, the emotional aspect can be targeted so that they would want to buy a product for other reasons aside from its environmental benefits.

## **Concluding Remarks**

As being environmentally friendly becoming more important in consumers' perceptions; brands would like to be associated in peoples mind as being a green company or brand. In that challenge, a brand that makes environmentally smarter choices, in its production processes, packaging material or transportation etc. and combines all these attributes in a credible way would be valued by consumers. And as this trend, being environmentally friendly, keeps growing there will be a time that it will become a "must-be" quality attribute of the product. Today, being environmentally friendly can help brands to differentiate themselves from competitors, probably making a profit out of it. They can attract consumers who value these products and who are willing to pay a premium for it.

Another point that needs to be highlighted is that consumers would not buy a product just because of its environmental packaging; therefore, this feature has to be combined with high quality product content and excellent branding. Moreover, product content has to be in premium segment like organic, fair trade, or flavored products because this is what the consumer is actually buying. Packaging on its own doesn't make a huge difference in consumers purchasing decision, but combining it with other strong environmental attributes will create a holistic proposition that is very compelling.



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# 1. Introduction

## 1.1. Project Background

The interest for environmental issues is growing all around the world among consumers. Studies show that people are concerned about the protection of environment and they are changing their behavior (Rokka and Uusitalo, 2008). Increasing awareness and change in attitudes towards environment has given rise to the sustainable development and this development has stimulated environmental innovations globally in the last years (Boström, 2012). Sustainable development could be explained as using resources of nature's capacity within its limits and distributing them even-handed within and between generations (Lindh et al., 2012). These facts are encouraging firms to change or modify their activities, including production processes, packaging and services; and eliminate their negative effect to environment by manufacturing more eco-friendly products (Mishra & Sharma, 2012). Banyte (2010) stated that more the businesses are social and environmental responsible, they have an increased competitive advantage.

Packaging has a considerable possibility to contribute to a sustainable development. The majority of packaged consumer goods are found in the segment of food and beverage packaging; this is true for especially European households (Lindh, et al., 2012). Consumer demands for sustainable packaging are also being felt across the supply chain. The main goals in supply chain are minimizing material use and waste, substituting traditional, contaminating materials with new, ecologically friendly ones that will pass through sustainable production processes, and are possible to renew and recycle as high a percentage of packages as possible (Ford, 2012).

As the resources in nature are limited, there is a threat of scarcity and an increase of prices due to this shortage. This situation has triggered scientist and companies to look for alternative solutions. There are many innovations in the packaging industry to make it more sustainable and more environmental friendly.

The ways to succeed in this competitive market, companies have to understand the market needs and the way to understand it to map all the available information. In order to create knowledge mapping what is needed is tacit and explicit data from both internal and external resources (Moskowitz et al., 2012). As a global and well organized company, Tetra Pak already has an internal tacit data from knowledgeable people within the organization with their fact based opinions, from its suppliers and from workshops within the organization; and internal explicit data such as reports, research results, completed studies etc. from all parts of the organization. This master

thesis would try to provide external data about renewable packaging by interviewing outside sources on the subject from business, academics and other individuals and by gathering academic and business-oriented publications related to the topic. A key of success for global companies like Tetra Pak is to create knowledge by enabling the comprehension of information they have broadly. They have to make the most of this knowledge and use it to move forward. According to Moskowitz (2012), one way of creating knowledge is “mapping” and this would help companies to see the information they have and understand the complexity in the way of creating insight.

## **1.2. Tetra Pak Corporate Overview**

Tetra Pak is a international food packaging and processing company founded by Dr. Ruben Rausing in Sweden in 1951. Tetra Pak’s primary market is consumer packaging, but it also supplies processing equipment, filling machines, distribution equipment, and production services. Its headquarters is in Lausanne, Switzerland, although the roots are in Sweden-Lund where they still have a key development and production facility. In addition, Tetra Pak operates 82 sales offices, 42 production plants for packaging material and closures, 16 technical training centers, 11 R&D centers and employs over 23,400 people in more than 170 countries (Tetra Pak, 2013). The company works in collaboration with customer and suppliers to deliver safe and available food solutions by encouraging innovation and understanding of consumer needs wherever and whenever food is consumed.

Besides ensuring the safety of food, Tetra Pak also commits on sustainability by minimizing their impact on the environment and improving the health and lifestyles of people. They work to create sustainable growth and to contribute to sustainable economic, environmental and social development. In 2011, the company introduced their 2020 strategy which puts the company’s environmental ambitions at the heart of its business. Dennis Jönsson, the CEO of the company explains says “It is a strategy focused on continuity – doing what we do well and building on our achievements. But it’s also about transformation. We recognize the need to accelerate innovation, to enhance our operational performance, achieve environmental excellence, develop our people and build our reputation.”

Environment is a strategic priority for Tetra Pak and the company has established ambitious targets to drive environmental excellence, focusing on three key areas reducing environmental footprint across the value chain, developing sustainable products and to increasing recycling (Tetra Pak, 2013).

To achieve these goals Tetra Pak cooperates with civil society, industry, academia and governments and as a result of this collaboration global recycling of used Tetra Pak cartons increased by 10% in 2012 from 528 kilo tones to 581 kilo

tones, which is 22.9% of the total. In the line of this strategy, the company aims to develop packaging based on 100% renewable materials and increase the supply of Forest Stewardship Council (FSC) certified paper board available for use in Tetra Pak packages to 100%. In 2012, 26.4 billion Tetra Pak packages carried the FSC label in 39 countries around the world, a 40% increase over 2011 and Tetra Pak packages with bio-based polymer caps derived from sugar cane grew to 610 million in 2012, up from 80 million in 2011. For the reducing the environmental footprint, initial figures indicate that carbon emissions in Tetra Pak's own operations were reduced by 2 kilo tones CO<sub>2</sub> equivalents in 2012 (compared to 2010 baseline) despite a 9.5% increase in production volumes over the same period. Through 2012, Tetra Pak worked with the World Resource Institute, with WWF, and with its suppliers and customers, to establish a baseline and metrics to be able to measure the total value chain climate goal (Tetra Pak, 2013).

This master thesis is written in cooperation with Tetra Pak and it aims to increase the company's insights about the current situation of renewable packaging examples in market and the consumer perceptions on renewable packaging.

### **1.3. Objectives and Research Questions**

The purpose of this thesis is to investigate how a brand owner using renewable packaging material can communicate this and its higher value (compared to traditional packaging) to consumers, in order to help consumers make more conscious choice when buying food. It is planned to understand consumer perception of sustainable packaging, their awareness on renewability concept of environmentally friendly packaging and their willingness to pay extra for these products as new materials are often more complex and costly. In order to manage this purpose, this research asks the following questions:

- What do consumers think about renewable materials as an environmental improvement in packaging industry and are they willing to pay extra for it?
- To what extent is their understanding of environmental products and how should brands communicate these products to consumers in order to increase their awareness?

The intention at this research will be to define consumer trends in packaging industry, the understanding of environmental innovations and to make recommendations to increase consumer awareness about sustainable developments.

## 1.4. Delimitations

During the process of thesis, there were several limitations that have an effect on the outcome of the work and thus validity of the results.

The following summarizes these limitations:

- The interviews were held in English. Since many of the interviewees' and the interviewer's native language were not English, the depth of discussions were possibly limited.
- As the concept of renewability is relatively new, there were few applications in packaging industry. Examples are from different product types in consumer good packaging. The assumptions made referring these available products.
- This study is based on the interviews with influencers and the results of market researches and academic studies; no additional consumer interview was conducted. Thus, conclusions build upon these opinions.
- Some influencers in the value chain like retailers that wanted to be interviewed by investigator and have their insight about the topic were not interviewed due to unavailability in their schedule or lack of interest.
- Being unfamiliar with Swedish organizations as a foreign investigator limited the influencers that have contacted.
- Being a representative of Tetra Pak, may have caused some bias on interviewees and interviewer.

## 2. Theoretical Framework

This chapter highlights the key theoretical outlooks which shape the framework of the research. It will give insight about consumer attitudes towards environmental products and then give information about packaging, key trends in packaging industry and products with renewable material in market.

### 2.1. Consumers and Environmental Products

The food industry has recently begun to understand today's consumer in a profound way to guide product development and marketing. Consumers and customers are in the centre of product development and innovation as never before (Moskowitz, 2012). Alignment of market supply to consumer needs and preferences is critical to succeed in market with intense competition and demanding consumers (Heuvelet al, 2007). According to Kathman (2003) brands have to connect with their consumers, not only by meeting their rational needs but by addressing the emotional context of the need as well. More and more, consumers don't only want food products to be of high (sensory) quality but also to deliver specific benefits in terms of health, safety, and environmental quality (Heuvelet al, 2007). By following the consumer trends, foreseeing the emergence of a real gap, professionals will recognize the need for better consumer knowledge and have faster and meaningful results (Moskowitz, 2012).

Over the last decade, consumers became more aware of environmental problems and this resulted in an emerging marketing strategy popularly known as green marketing or sustainable marketing that includes a wide range of activities like designing, promoting, pricing and distributing products in a manner which promotes environmental protection (Cherian and Jacob, 2012; Mishra and Sharma, 2012). The growth of green marketing and green consumer, who can be identified as a person that avoids any product harming environment during process of manufacturing and consuming high amount of non renewable energy, is an opportunity for enterprise and invention the industrial world (Cherian and Jacob, 2012). Manget (2009) mentions that green strategies offer companies and retailers a competitive advantage in product differentiation and cost savings. Producers have to foresee a more subtle picture what will work and focus on products that meet the right criteria and perform as well as conventional materials (McKinsey, 2012). Many companies understand this and are starting to take action. Some players have succeeded using their greenness as differentiator and stepped forward to leaner operations, greater market share and more attractive brands (Mangetet al, 2009). The challenge for green minded companies

would be to understand which actions will be the most meaningful in their categories and for their customers.

It has established that environmentally friendly and ethical products are esteemed by consumers (Rokka and Uusitalo, 2008). According to a study conducted by the Boston Consulting Group<sup>1</sup>-BCG (2009), consumers highly value the direct benefits that green products offer. However, consumers' daily buying behavior often contradicts with this attitude; regarding this, researchers are concerned about whether the ethical and environmental consciousness among consumers is turned into a purchasing behavior and whether the companies' socially and ethically behaviors pay off (Rokka and Uusitalo, 2008). The inconsistency between attitude and behavior can be explained by complexities in consumer decision making process, because purchasing decision is always a multi-attribute choice where the consumer has to compromise between desirable but incompatible product features (Kotler and Armstrong, 2010; Rokka and Uusitalo, 2008). Therefore, even the most environmentally friendly consumers don't choose green products all the times. Another reason that hinders people buying green products is that they underrate the effect of their contribution to the problem. Moreover, there are several factors which are essential in promoting green consumers to purchase green products like drawing attention to green issues, increasing level of available information on environmental sustenance, advertisements by companies on green acts, and increasing popularity of green products by social and environmental charities can be listed as some of these factors (Banerjee, 2003).

### **2.1.1. Consumer Awareness on Green Products**

In BCG's Global Green Consumer Survey (Mangetet al, 2009), it is reported that consumers are confused when shopping for green products and uncertain about exactly what it means, what benefit it provides and how to tell a product is green. Lack of good information and lack of awareness of green product offerings are the main reasons why consumers don't purchase green products. Additionally, it is stated that consumers trust independent organizations rather than manufacturers and retailers. According to the survey results, independent consumer reports perceived as most credible followed by scientific and academic publications, family and friends, and nongovernmental organizations.

Regarding recognizing green products, consumers claimed that they rely on product advertisements or consult on product labels. However, they have also stated that they are skeptical about advertisement claims and they don't always believe

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<sup>1</sup> This survey conducted with 9000 respondents in Canada, France, Germany, Italy, Japan, Spain, UK, US and China.

labels. Some of the consumers said in the same study that they think many certification labels are misleading. In order to increase awareness on their green products and gain credentials, companies are partnering with respected NGO's or government agencies to participate solving an environmental problem. In this way, campaigns have wider impact than undertaken by companies on their own and the company also benefits from linked publicity and goodwill (Mangetet al, 2009).

According to Rokka and Uusitalo (2006), if there is no environmental information like labels on product packaging; many consumers have difficulty to understand the relationship between their buying decision and its environmental consequences. However, labels on packaging is not enough, they have to be combined with preconditions such as consumer awareness, knowledge and attitudes to make people informed choices while purchasing (Leire and Thidell, 2004).

In the Nordic countries consumers are aware of that the products are associated with environmental problems. The main reason for this awareness is that they have been exposed to eco-labels and lists of environmentally products long before sustainability emerged (Leire and Thidell, 2004). In other words, familiarizing with environmental concept by time generated higher awareness.

Consumers are getting familiar with environmental claims however when it comes to renewability, a survey conducted by Tetra Pak (2011) shows that consumers around the world found that many do not understand the concept of renewability, often confusing it with recycling.

## **2.2. Overview of Global Consumer Packaging Market**

It is estimated that the global consumer packaging market would be worth around \$395 billion and the growth in market is around 5% per year. Although it had affected by global economic downturn in 2009, market recovered in 2010 and reached back to similar levels seen in 2008. Plastic has the biggest portion with 37% in the global consumer packaging market. However, there is an increase in paper and board, up 4 percentage points to 34%, and glass up 3 percentage points to 11%. Being a lighter alternative to glass makes plastics cheaper to transport and being flexible allowing limitless design make plastics more convenient to consumers. Thus, it is expected that there will be a growth in the usage of plastic in the future (Business Insight, 2011). As Europe is the largest region for packaging sales today, market growth is driven by developing regions mainly by rising middle class in Asia Pacific and South America (Innventia, 2012). In response to this increase, most of the leading

packaging companies are investing in these areas, particularly in China and Brazil (Business Insight, 2011).

### **2.2.1. Key market drivers**

Trends in consumer packaging market are affected by changing consumer demographics and behavioral patterns. It is estimated that the global population will reach to 9.2 billion by 2050 and it will be absorbed mostly by the developing regions. In developed regions, it is expected to remain roughly same (UN, 2006). Growth in population will be followed an increase in volume demand for packaged goods, especially in developing regions such as China, India and Brazil.

Aging population is the fastest growing segment in every region, with better healthcare people are living longer particularly in the developed regions. With the falling birth rates and increasing life expectancy, the share of elderly people is rising. Today, 11% of the global population consist of people aged 60 or over, however it is expected this share will reach to 22% by 2050. The aging population in turn is causing an increase in demand for different types of packaging such as easy-to-open closures (Innventia, 2012; Tetra Pak Dairy Index, 2010). An increase in single-person households is projected as well due to aging population, women outliving men, lone parents, and young professionals increasing. This drift will result in an increase in consumer packaging volumes especially for smaller pack sizes and also overall increase in the amount of packaging being consumed (Business Insight, 2011). Another driver in consumer packaging market is the increasing wealth of developing countries due to urbanization and the rise of global middle class. People are moving into cities and, today there are more people living in urban areas than rural. Middle class can be referred as consuming class, according to McKinsey (2012), it is expected an increase in number of middle class and emerging markets will have 1 billion new middle class consumers by 2025. Indeed, in many developing countries there has been a general upward trend in personal income, and in turn disposable income, which can be spent on more luxury products including packaged consumer goods (Business Insight, 2011).

The cost of raw materials is a financial key factor. All sectors of the packaging industry have been affected by fluctuating raw material prices during the downturn of economy in 2008. Aluminum and plastic prices are affected in the recession, due to the fluctuating price of oil; the price of plastic resin has also fluctuated. Therefore, natural resources are becoming more valuable (Business Insight, 2011; Innventia, 2012; Hughes, 2012).



Sustainability has the primary importance in the packaging industry and this trend will continue. Having sustainability strategies will be a must for consumer product companies and packaging companies. Datamonitor (2009) defines sustainable packaging as any packaging “produced in such a way that it had minimal impact on the environment”. In another word, the entire supply chain has to be considered while producing sustainable packaging. Sustainable package must complete its primary functional role, protection of the product, but it has to go beyond with additional features (Datamonitor, 2009). The challenge for sustainable packaging would be optimizing the packaging material. Hence, it has to be derived from sustainable source; in near future there will be more packaging from renewable resources. Additionally, material usage has to be optimized in order to reduce waste and decrease transportation weight (Datamonitor, 2009; SPC, 2013). Packaging material has to be recyclable, some companies are actively working into recycling processes in order to improve facilities for the collection and sorting of packaging. Moreover, the design of package must be effective and smart preventing waste, especially in food industry the food waste (Hughes, 2012, Innventia, 2012; Business Insight, 2011; PkgPackaging, 2013).

A visualization of key trends can be seen in Fig 1.



**Figure 1**Key Market Drivers

### *Sustainable materials*

For many consumers, sustainability has become an important purchasing criterion. Buyers who formerly seldom inquired about origin, type of production and packaging now put a high priority on ecologically and morally 'clean' goods (Plastech, 2009). Therefore, sustainable packaging will grow to 32% of the total global packaging market by 2014, up from just 21% in 2009, according to study from Pike Research (Environmental Leader, 2009). Plastic based packaging, which represents 35% of all materials used, will be the fastest growing sector of the sustainable packaging market by 2014.

On the one hand it has to develop new products and campaigns, incurring high costs. On the other hand, the increasing demand for sustainable products promises economic growth.

It is expected an increasing competition from bio-plastics by manufacturers of established packaging materials. The British company Innovia Films recently launched a biodegradable plastic film for food products known as Natureflex, it is 100 percent compostable. This multilayer bio-film forms an excellent barrier against moisture and gases, so that packaged products such as biscuits retain their crispness over a long time. The German bio-plastics producer FKuRKunststoff also focuses on excellent barrier properties. The company's products include multilayer bio-films that also prevent leakage from eco-nappies (Plastech, 2009).

On the other hand, it is pointed out by in Bio-based Economy Forum (2012) that there is a lack of knowledge regarding sustainable packaging, for instance, many people do not know that there are biodegradable foils (Packaktuell,2012)

### **2.2.2. Premium for Sustainable Packaging**

Many executives see spending on sustainable initiatives as an investment, not a cost (Accenture<sup>2</sup>, 2012). However, new materials are often more complex and more costly to produce for manufacturers, and this cost might be reflected to consumers. Many companies in the consumer industry believe that higher prices often keep consumers from purchasing green products. However, BCG's report (2009) shows that price is not a significant obstacle for most buyers. It is listed lower than lack of awareness of green alternatives as a barrier to green products. In the same survey consumers said that they would pay 5 to 10 percent more for green products if they were convinced that the products offered direct benefits. Another report shows that

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<sup>2</sup>This survey conducted with 250 executives in eight markets including US, Japan, Germany, France and UK.

(Accenture, 2012) that companies say they can charge an average of 19 percent premium prices for sustainable products and services.

Willingness to pay more depends on a product's category and perceived benefits. In the BCG's (2009) report, they separated products into categories and asked consumers' willingness to pay a premium. About 30% of respondents said that they are willing to pay a 10% premium or more for the food and beverage category and they perceive green products as superior than conventional alternatives.

According to a study conducted by IpsosInnoQuest<sup>3</sup>, consumers are likely to pay more for value-added features that relate to freshness and sustainability regarding food and beverage packaging. Potential packaging features which would motivate them to spend more listed as Packaging that keeps food fresh longer, Packaging that is environmentally friendly, re-usable (42 percent) and easier to use (39 percent) (Progressive Grocer, 2013).

Lauren Demar, Global CEO, IpsosInnoQuest said "Packaging plays a key role in consumer packaged goods innovation, whether marketers are introducing new products or trying to invigorate existing brands". As a key driver in the consumer's decision to buy, packaging features can often be leveraged to charge a premium. Demar added that because consumers place a higher value on packaging that preserves freshness and provides environmental benefits, marketers may have the opportunity "to win over consumers and increase revenues through innovative package designs that deliver sustainability of freshness as well as sustainability of the planet" (Progressive Grocer 2013).

Nevertheless, Hughes (2012) states that when it comes to packaging evolution, consumers will not pay more for a product just because packaging is environmentally friendly.

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<sup>3</sup>IpsosInnoQuest's study surveyed 19,883 adults from 26 countries, including Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Great Britain, Hungary, India, Indonesia, Italy, Japan, Malaysia, Mexico, Poland, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Turkey and the United States of America.

## 2.3. Packaging with Renewable Content in Market

This section would present available products with renewable packaging in market with a background of their launches, how they are introduced to consumers and how it helped to companies in reducing their environmental impact.

### 2.3.1. Coca-Cola

One of the most visible packaging launches that uses plant-based conventional plastics was that in 2009 of the bio PET plant bottle for Coca-Cola which claimed to be the first ever fully recyclable PET made partially from plants (up to 30%)(Coca-Cola Company, 2013). Though this pack is most commonly associated with the Coca-Cola brand this material is also used for many of Coca-Cola Company's bottled water brands such as in US, Canada, Brazil, Germany, Norway and Japan (Fig. 2).



**Figure 2**Coca-Cola Plantbottle

In 2010, coke delivered over 2.5 billion plant bottles reaching 10 countries and this move eliminated the need for over 60000 barrels of oil. By the end of 2012, this had grown to 10 billion bottles reaching 20 countries. This massive and rapid growth demonstrating how important this innovation is to the Coca-Cola Company's environmental positioning. By 2020, the Coca-Cola Company aims to have all virgin plastic PET used in the bottles for their brands made from responsible sourced plant based materials. One very clear benefit of the plant bottle was that it is fully recyclable in the existing PET collection recycling streams giving consumers

both sustainable plastic and the end of life solution that they understand and the most cases they already have access to (Punchard, 2012).

### 2.3.2. Heinz

Following the success of plant bottle, in February 2011 the Coca-Cola Company entered into a partnership with H. J. Heinz Company to pack Heinz smarter ketchup in the bio PET plant bottle (Heinzketchup, 2013). Realizing the fear that consumer would not fully understand environmental benefits of the new plant bottle, Heinz has made education of a platform of the advertising campaign including having labels reading “Guess what my bottle is made of?” which can be seen in Fig. 3 and using QR codes to direct consumers online where they are engaged to games and competitions. By entering sweepstakes, consumers could learn more about Heinz’s Eco actions and have the chance to win eco-friendly prizes, like a hybrid car (Punchard, 2012).



Figure 3 Heinz Plantbottle

### 2.3.3. Tetra Pak

In 2011, Tetra Pak launched their package with a polyethylene cap using a renewable source in a partnership with Nestlé Brazil and Braskem. The new cap is made out of sugar cane derivatives and this process helps to reduce the greenhouse gases since sugar cane is a renewable resource. This launch represents an important step in the use of polyethylene made out of 100% renewable raw materials in the food and beverage packaging industry and this will encourage environmental awareness by

providing consumers product that makes use of renewable sources for manufacturing its packages (Tetra Pak, 2011). Recently, Tetra Pak announced that Norwegian dairy, TINE, is the first brand in Europe launching bio-based LightCap 30™ on Tetra Brik® Aseptic Edge for range of products like vanilla sauce, iced coffee, iced tea and chocolate milk (Tetra Pak, 2013). In addition, Tetra Pak’s next step to use renewable PE for outer and laminate layer is in the pipeline.



**Figure 4**Tetra Pak Light Cap

Beside these Tetra Pak runs global marketing campaigns to make aware of people on renewable materials and the role they can play in protecting environment. “The Pack that Grows Back” campaign has a playful approach including an animation video, Facebook contest, website and on-pack advertising with customers in order to raise awareness and understanding of this issue which is often misunderstood by consumers. It explains why renewable materials are important part of the environmental agenda and offers insight to the importance of responsible resource management (Tetra Pak, 2013b).

Developing 100% renewable packaging is one of Tetra Pak’s three 2020 environmental goals, which also include capping climate impact across the value chain at 2010 levels and doubling the global recycling rate for used Tetra Pak cartons.

## 2.3.4. Danone

### 2.3.4.1. Volvic Waters

In 2010, Volvic has launched their 'greener bottle' in UK which is made partially from sugarcane waste. It contains 20% plant material, reducing the amount of non-renewable material needed to create the bottle. By combining 25% recycled plastic (r-PET) and Bio-PET, the bottle has a 38% lower packaging carbon footprint and a 16% lower total lifecycle footprint than previous bottles. The weight of bottle has also reduced with new material which halves the carbon footprint of the existing bottle (Danone, 2010; Wrap, 2012).



Figure 5 Danone-Volvic

### 2.3.4.2. Actimel – Drinking Yoghurt

In 2011, Danone launched Actimel's new bottles which are made from a minimum of 95% bio-plastic, using Brazilian sugarcane and produced by plastic manufacturers Braskem (Actimel, n.d.). The remaining 5 per cent of each bottle is made up of non-plant-based plastic from Danone's production lines and the white bottle colouring. The bottles are non-biodegradable and 100% recyclable which means they can be recycled in same way as plastic milk bottles. The company also stated that using sugarcane to make their bottles does not lead to deforestation, a wider concern related with bio-plastics (NNFCC, 2011). It is expected that this change will make a 30% reduction in carbon footprint of the product. The company affirmed that they are planning to make further changes in packaging from fossil fuels to renewable resources (Gander, 2011).



**Figure 6**Danone-Actimel

### **2.3.5. WholeFoods**

Whole Food Markets Inc is an American foods supermarket chain which emphasizes natural and organic products. It is ranked among the most socially responsible businesses and placed fourth on the U.S. Environmental Protection Agency's list of Top 25 Green Power Partners (EPA, 2013). In 2009, they launched Renew-A-Pak baking tray which is made with 100% renewable content. It enables bakery items to be baked, shipped and served in a more environmentally responsible manner with performance that matches or exceeds competitive cooking options (IOPP, 2009).



**Figure 7**Renew-A-Pak

Manufacturer, Biosphere Industries, explained further that The base material is engineered to be made primarily of starches such as tapioca, potatoes and a smaller percentage of grass fibre and other raw materials harvested yearly. Renew-a-Pak biodegradable packaging materials may also be disposed of in the normal paper recycling streams (Steeman, 2009). This product won the DuPont Awards for Packaging Innovation in 2009 due to its renewable, compostable content which



makes possible reinvention of retail bakery practices and simplification of the supply chain with considerable waste reduction (DuPont, 2009).

### 2.3.6. Pantene

In April 2011, plant based packaging was brought to personal care when Pantene announced the production of bio HDPE shampoo and condition bottles which made from 59% plant based plastics when you exclude the cap. Initially launched in the US the packaging was expanded into several European countries by the end of that year and the company is aiming to have the new packaging in all markets within 2 years (Mohan, 2011). The introduction of plant-based materials reduced the use of non-renewable resources. Plant-based plastic consumes over 70% less fossil fuels than petroleum-based plastic (P&G, 2012).



**Figure 8** Pantene Plant-Based Plastic Bottles

In order to both educate and excite consumers about the new packaging Pantene teamed up with recycle-bank in the US with a quiz and a reward, a recycle-bank points that can be redeemed for discounts. Offering this kind of engagement is important to ensure that consumers fully understand how plant based plastics differ from oil-based particularly as many consumers perceive all plastic packaging as being some way bad for the environment. P&G have stated a goal of a placing 25% of oil-based materials with sustainably sourced renewable materials by 2020. Given how important plastic packaging is within P&G's packaging portfolio it is likely the

company would expand the use of the plant based plastic into other brands if Pantene Nature Fusion launch is a success (GreenBiz, 2010; Punchard, 2012).

### 2.3.7. L'occitane en Provence

One of the latest examples of bio-based PE in beauty and care sector is L'Occitane en Provence. L'occitane is a socially responsible company, committed to reducing the impact of its actions and products on the environment (L'occitane, 2013). The Bonne Mère line of daily-use body products launched by the brand and reached stores in February with their packaging made from sugarcane ethanol, a minimum of 95% renewable material (L'occitane, 2013). The new line is being sold in France and will be exported to over 85 countries. The replacement of traditional polyethylene aims to increase the use of renewable resources by the company and reduce greenhouse gas emissions (Braskem, 2013). They actively use this information on its labelling (Packagingtoday, 2013).



Figure 9 L'occitane en Provence - Bon Mere

## **2.4. Packaging**

### **2.4.1. Packaging Functions**

The primary function of packaging is to ensure that goods are delivered to the end consumer in the best appropriate state (Lindh et al., 2012). With the application of food preservation principles, food deteriorations are prevented and longer shelf life in food quality is attained. Packaging is the last step of these principles and besides preservation of maintained food quality; it promotes the product and provides convenience to the users (Krochta, 2006).

Functions of packaging have been defined by many researchers with slight differences (Lindh, 2012; Paine and Paine, 1992) but it can be summarized as four basic functions (Krochta, 2006); containment, protection, communication and convenience. Containment refers that the content must be kept secure during the handling involved in filling, sealing, processing, transportation, marketing, and dispensing of the food. Protection involves preventing the food from biological, chemical or physical damage. A package has to communicate information about the product such as legal requirements for labeling and at the same it is an important factor in promoting and marketing the product. It has to inform the carrier, retailer and consumer on handling, storage and usage of the product. Lastly, package has to provide convenience to consumers as well, by being easy to handle, easy to open and dispense, reclosable and easy to dispose after it has been emptied (Corner and Paine, 2002; Paine and Paine, 1992; Krochta 2006).

Krochta (2006) defines three additional functions to these four basic functions; production efficiency, minimal environmental impact and package safety. Production efficiency refers to the machinability requirements that package have to perform during processes. Minimizing environmental impact of package is another function that has to be considered. Reducing the amount of packaging and the use of natural resources and recyclability are the aspects that have to be considered throughout the packaging design. Package safety requires the protection of food product from any contamination caused by the package. Therefore, food packaging material requirements are highly regulated to make sure that the package material is safe for food products and for consumers.

## 2.4.2. Carton Based Laminated Board

Packaging is no longer just a cost, it is critical to satisfy the array of consumer expectations when buying beverages (Hughes, 2012). Carton based laminated board is a form of packaging which is used to protect fresh drink and food products. It enables the distribution of food products at ambient temperatures and under refrigerated conditions. Additionally, it protects the freshness, flavours and nutritional qualities of the product during transportation and storage and it provides an optimal shelf-life. Being convenient and easy to use are the two factors that influence the consumers' choice (ACE, 2013). Examples of beverage carton can be seen in Fig. 10 in different food products such as milk, juice and broth.

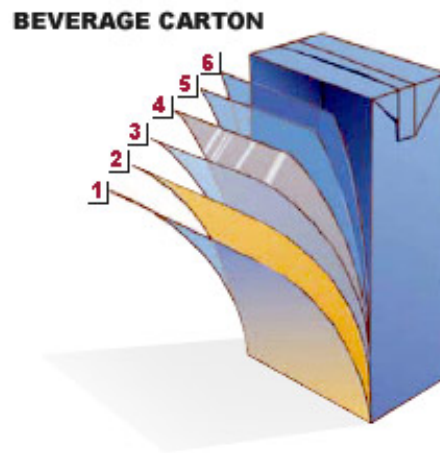


**Figure 10** Beverage cartons

Carton based laminated board has environmental advantages compared to other type of beverage packaging. Its raw material is from wood fibre which is renewable as it is sourced from forests found mainly in the Nordic countries of Sweden and Finland. It can be recycled and it is one of the packaging types that has lowest carbon footprint for milk and juice.

Carton based laminated board is made of on average, 75% paperboard which is a renewable material, 21% polymers mostly polyethylene in order to prevent leakage and 4% aluminium in order to protect the food product from light and oxygen. The packages for chilled distribution are without aluminium foil and they are generally

made up of 85% fibre and 15% polymer. These numbers are approximately calculated by weight (ACE, 2013).



**Figure 11** Beverage carton layers

Beverage carton constitutes of many layers (Fig. 11). The outer layer is polyethylene and its main function is to protect the food against moisture, besides it protects prints on the surface of package and gives a glossy look. Second layer is the paperboard, it gives stiffness and stability to the package and it is the print surface for design and images. Third layer is the polyethylene layer which is needed for lamination process, it serves as an adhesive between paperboard and aluminium foil. Forth layer, aluminium layer, provides a barrier to oxygen, flavours and light; it also contributes to the stiffness of the package. Fifth layer is the polyethylene layer which serves as an adhesive between aluminium foil and internal polyethylene layer which is the sixth layer and serves in sealing and protecting the product (Andersson, 2012; ACE, 2013). This description is valid for the packaging of food products that distributed in ambient temperatures. Chilled distribution packages don't have aluminium layer (4<sup>th</sup> layer) and polyethylene adhesive layer (3<sup>rd</sup> layer). Except the paperboard, all the other layers of package derived from traditional resources. Another component in the package is ink which is used in printing. It has a small contribution to the total weight depending on the design on package and it is derived from traditional resources as well.

All the materials used in carton based laminated board are recyclable. Coated or laminated paperboards cannot be recycled; hence the paperboard is separated from its layer during recycling process. Recycling decreases the carbon emission impact of beverage carton and allows using raw material sources in a responsible way (ACE, 2013; Krochta, 2006).

#### *2.4.2.1. Paper-based packaging material*

Paper is made from cellulose fibres of virgin wood or recycled fibres, or both and it is a raw material that is renewable, recyclable and biodegradable (Hägglind and Carlsson, 2012; Krochta, 2006). It is a versatile packaging material that is easy to form, seal and decorate; its surface can be coated to enhance the printability (Packforsk, 2001; Hägglind and Carlsson, 2012).

Wood fibre used in Europe for beverage cartons are originated from Finland or Sweden. The rest of the raw material comes from Russia, the Baltics, South America and European countries including the Norway, Germany, and in very small amounts, the UK and Denmark (ACE, 2013). Paper and pulp industry has traditionally been a great importance to Nordic countries (Soldberg, 2013). For example 70% of land area in Sweden is covered with forest (FSC, 2013). Increased awareness about nature among Nordic consumers has also affected sustainable management of forests. Forests are mostly managed with responsible management practices which mean that harvested trees are replaced entirely by planting of young saplings and through natural regeneration (ACE, 2013).

Beside laws enforced by countries controlling forest management, there are certification programs that aim to promote sustainable forest management like Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC). FSC states their mission as “FSC shall promote environmentally appropriate, socially beneficial, and economically viable management of the world's forests” and by accomplishing this aim they want to meet the social, ecological and economic rights and needs of present generation without compromising those of future generations (FSC, 2013). Likewise, PEFC commits on conserving forests and their biodiversity, and communities that make a living from them; they also assure the society to manage forests sustainably (PEFC, 2013).

#### *2.4.2.2. Polyethylene*

Plastics are high molecular weight polymers that can be moulded into desired shapes (Krochta, 2006). Polyethylene is the type of plastic that is mostly used in carton based laminated board. It serves as a liquid barrier, protects the food product inside and the package outside; and it provides a smooth surface for printing (ACE, 2013).

Although plastics are used widely and it seems harmless, manufacturing plastic materials can have negative impact to the environment. The main reason for that is

plastics are made mostly from oil and natural gas which are non-renewable resources (Greeningforward, 2013).

Many chemical companies launched bio-based polymers that made from agricultural resources in recent years and this new material has been started to used by many companies in their packaging's an alternative to petroleum-based thermoplastics. This new polymers enables to reduce the environmental impact of packaging and the dependence on non-renewable resources (Fowler et al, 2007).

#### *2.4.2.3. Aluminum foil*

A thin aluminium foil layer is used in beverage carton regarding its barrier properties. With absolute resistance to moisture, air and light, aluminum foil serves as a light and oxygen barrier and it enables food products last longer on shelves without preservatives or refrigeration (Packforsk, 2001; ACE, 2013).

Aluminium foil is a material that is recyclable as well. After the re-pulping process (separation of layers), paper mills collect aluminium powder or polyethylene-aluminium fraction recycled as composite material. Recycling aluminium reduces the need for raw materials and reduces the use of valuable energy resources. For every tonne of aluminium recycled, five tonnes of bauxite which is the form of aluminium found in nature are conserved (ACE, 2013; PlanetArk, 2012).





# 3. Methodology

This section represents the way of approaching the research aim and the method chosen to achieve the goal. The data collection techniques are explained the way they have been designed and carried out.

## 3.1. The Research Process

The steps of the research plan can be seen in Fig. 12: Research Process. First, the study object was identified as renewable materials in packaging. Based on the project purpose, qualitative research methodology was selected. Secondary data and primary data were collected. Primary data consists of semi-structured interviews with managers and experts in the research area. After deciding the interviewees and agreeing on having a meeting, interview content was planned and executed. Gathered data was analyzed and conclusions were presented.

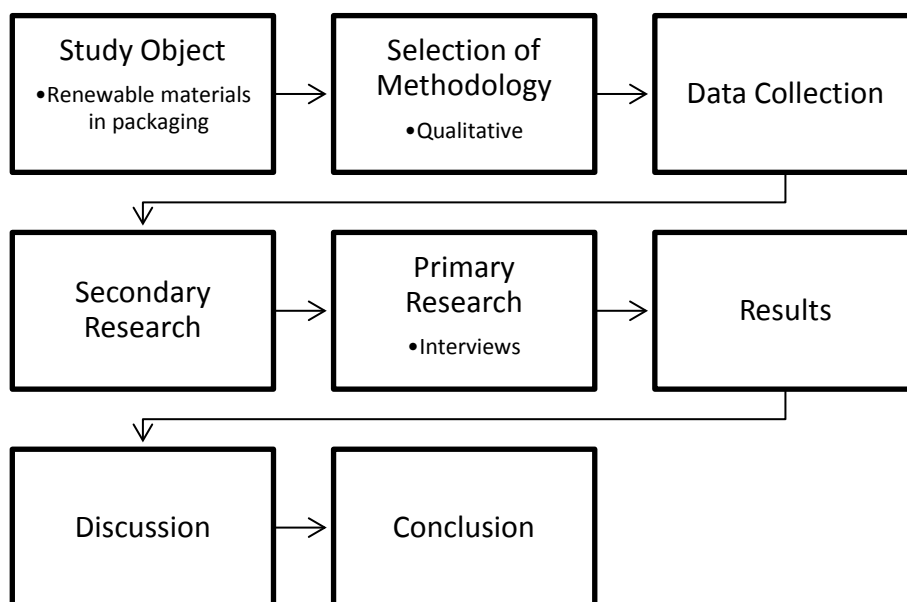


Figure 12 Research Process

## **3.2. Qualitative Research**

Qualitative research is a research strategy that highlights the words rather than quantification in the collection and analysis of data (Bryman and Bell, 2007). An interview is the most commonly used method in gathering qualitative information. This thesis uses a qualitative methodology in order to understand consumers' perception of renewable material content in packaging through interviews with managers in different companies and experts in different organizations. After consulting Tetra Pak, it was decided to interview managers and experts rather than consumers. As using renewable materials in packaging is a recent trend in the market; consumers have limited information about it. Tetra Pak suggested that we could get a holistic view about renewable packaging by interviewing managers and experts in the packaging industry instead of consumers, and these findings could provide an understanding of how to communicate environmental innovations to consumers.

Semi-structured interviews were carried out with participants using mostly open-ended questions to collect in-depth knowledge and facts about their current projects regarding the renewable materials and consumer studies conducted by their institutions.

### **3.2.1. Limitations of Qualitative Research**

Validity and reliability are two principles that are traditionally used to evaluate the quality of a research (Bryman and Bell, 2007; Golafshani, 2003). Reliability deals with the ability whether the research results are repeatable for a following study; and validity refers to the integrity of research outcomes (Bryman and Bell, 2007). The objective of a study has to achieve high reliability and high validity degree.

Triangulation is one of the techniques that are suggested to be used by Bryman and Bell (2007) in order to increase the reliability of a study. Triangulation involves the use of multiple sources of data and different perspectives (Rönholm, 2006). In order to increase the reliability in this study, information from company reports, articles, market research reports, consumer surveys, and personal interviews has been combined. However, this study has some reliability issues regarding delimitations mentioned in previous chapter. Some players in the value chain such as retailers could not be interviewed due to time constraints. Results of the research depend on researcher's interpretation skills, hence the analysis of results may slightly differ from another research team that have more experience in evaluating cross between qualitative interviews. Also, because the scope of this research is that all the

interviewees selected are from Sweden, the results may vary if the study was to be done in different locations.

Validity is divided into two aspects, *internal validity* which refers to a good match between researchers' findings and theoretical ideas they develop; and *external validity* concerning to what level conclusions of the research can be generalized across social settings (Bryman and Bell, 2007). Validity of the research can be increased by formulating clear, impartial questions for interviews, also using triangulation method adds to validity (Rönholm, 2006). In order to get a higher degree of validity, questions prepared as understandable and non-biased; and the questions were reviewed by supervisor and reformulated according to their comments.

### **3.3. Data Collection**

Both primary and secondary data has been collected in this study. After gathering secondary data from the literature and reports done by other researches and companies, selection of interviewees has started. The primary research stage included interviews with managers and experts across the actors of packaging value chain. Participants who agreed to take a part in this study are from the Swedish market.

#### **3.3.1. Interviewees**

In the beginning of selecting interviewees, the ambition was to cover important actors in the supply chain and they were divided into three categories: non-profit organizations, businesses, and academia; it can be seen as a chart in Table 1.

Eco-Label is a non-profit state-owned company and it is a part of the Nordic Ecolabel. The Nordic-Ecolabel is a tool to help consumers choose environmentally-sound products. The purpose of the company is to give consumers clear and concise environmental product information, also to promote the development of products that are environmentally friendly. This way, they want to contribute to sustainable consumerism (Eco-Label, 2013). The company is also very well known and trusted by Swedish consumers. Marketing and Communication Head of the company was selected as an interviewee as the company mission complies with this project in a holistic view; in addition, they have a strong relationship with consumers.

**Table 1** Interviewees

	<b>Name</b>	<b>Position</b>
<b>Non-profit</b>	Eco-Label (Svanen)	Marketing and Communication Head
	Innventia	Market and Consumer Insight Senior Manager in Packaging Solutions Business Area
<b>Business</b>	BillerudKorsnäs	Market Strategy and Business Intelligence Manager for Liquid Paperboard Packaging & ACE Board Member
	Company A	Development Engineer from Innovation Department
	Company B*	Managers in Tetra Pak -Environment Director Market Area Nordics -Manager Marketing & Product Management
<b>Academia</b>	AkeThidell – Lund University	Assistant professor in International Institute for Industrial Environmental Economics

\*Product Managers in Tetra Pak, responsible for Company B have been interviewed.

Innventia is a research institute located in Stockholm working with innovations based on forest raw materials. The company is partly founded by government and they have owners from major players in pulp and paper industry. Their main research areas are material processes of paper and pulp, bio-refining and packaging solutions (Innventia, 2013). Market and Consumer Insight Senior Manager in Packaging Solutions Business Area has been interviewed. They have recently conducted a consumer research on packaging trends. The results of this study is highly interesting and related with the content of this thesis, thus their contribution was valuable.

BillerudKorsnäs is one of the biggest manufacturers of fibre-based packaging material in Sweden. Business strategy of the company focuses on customer benefit, innovation and sustainability. They develop renewable materials and packaging solutions which promote sustainable development. In order to meet customer demands, they conduct research about end user needs and smart packaging (BillerudKorsnäs, 2012). Market Strategy and Business Intelligence Manager for Liquid Paperboard Packaging has been selected as an interviewee; he is a board member of ACE-Alliance for Beverage Cartons and the Environment as well. It was important to get their insight and experience on renewable materials and consumer demands towards sustainable packaging.

Company A is a food company developing and producing liquid cereal products. The consumer segment of Company A is mostly people who are very concerned and aware of health and environmental issues. Due to consumer demands they are trying to reduce their environmental impact; therefore, they want to use more sustainable packaging. Development Engineer from Innovation Department has been interviewed in order to get better insight of this very niche consumer segment and their demands for sustainable packaging.

Company B, a global dairy firm, defines their company as environmentally responsible and commits to reduce their environmental impact due to packaging. After discussing with supervisors and product managers in Tetra Pak, it is decided to interview the Product Manager as well as the Environmental Director, both within Tetra Pak, who were responsible for this brand. As they are running ongoing projects with Company B regarding the new packaging demands, they have provided information and insights of this brand. In this paper, responses of these two managers will be mentioned as “Company B”. Since Company B has a wider consumer range compared to Company A, it was important to see the needs of a broader consumer segment.

Åke Thidell, assistant professor in International Institute for Industrial Environmental Economics at Lund University was selected as an interviewee. He has done studies on guiding consumers with environmental information about products and on Ecolabeling, perception, understanding and use of this information among Nordic consumers.

The selected interviewees are contacted with an informative email about the thesis topic and a request for a personal interviewing. Interviews were conducted during April and May in 2013.

### **3.3.2. Conducting Interviews**

Semi-structured interviewing is a qualitative research technique that enables to explore respondents' perspectives on a particular idea and elicit depth of information (Boyce and Neale, 2006). If a researcher wants to have detailed information about a person's thoughts and to learn more about specific issues, interviewing is a very useful tool.

The main characteristics of semi-structured interviews are listed below:

- *Open-ended questions:* Questions formulated so that the respondents can give an explanation on the topic. Many of the questions start with “why” or “how” in order to let respondents to use their own words.
- *Semi-structured format:* A list of questions has to be prepared before the interview. Questions don’t necessarily have to follow same order during the interview, the order might change or additional questions might be asked as conversation flows. But the questions should be asked with a similar wording.
- *Seek understanding and interpretation:* Interviewer should be attentive to what is being said and should seek clarity and understanding during the interview.
- *Recording responses:* Interview is audio-recorded and supported with written notes by interviewer (Guion and et al., 2012).

Semi-structured interviews allows the investigator to have well-structured and well-organized conversations with respondents and ensure to gather valuable data for his/her work. The interview questions are listed and categorized in Table 2.

**Table 2** Interview Questions

Topic	Main Questions
<b>Market &amp; Consumers</b>	<p><b>Company/Organization</b></p> <ul style="list-style-type: none"> <li>▪ How would you describe your organization?</li> <li>▪ Could you describe the market for your organization?</li> </ul> <p><b>Consumers</b></p> <ul style="list-style-type: none"> <li>▪ Who are the main consumers? (Age, gender, income, lifestyle)</li> <li>▪ Which segment of the consumers is aware of environmental innovations in packaging industry?</li> <li>▪ How do you think consumers value environmental developments?</li> </ul> <p><b>Understanding Consumers</b></p> <ul style="list-style-type: none"> <li>▪ How do you get information about consumer needs and requirements?</li> <li>▪ How do consumers react to environmental claims on packaging?</li> <li>▪ Do you think that environmental friendly products are considered premium?</li> </ul>
<b>Packaging</b>	<ul style="list-style-type: none"> <li>▪ In what ways could packages act value-adding, in your opinion?</li> <li>▪ What do you think about contribution of packaging into sustainable development?</li> <li>▪ Do you think this added feature (sustainable packaging) will influence them at the point of purchase?</li> </ul> <p><b>Renewable Packaging</b></p> <ul style="list-style-type: none"> <li>▪ In the market there are products with renewable packaging like Coca-cola plant bottle or Tetra Pak. Can you tell me more about renewable materials?</li> <li>▪ How consumer prices will be affected by environmental improvements? Who is going to pay for it consumers, companies? Are consumers willing to pay premium for it?</li> </ul>
<b>Trends in Packaging</b>	<ul style="list-style-type: none"> <li>▪ Thinking further about packaging and the environment, which factors are important in shaping or driving the future use of packaging; recycling, carbon footprint, renewability, package weight, water footprint?</li> </ul>

	<ul style="list-style-type: none"> <li>▪ How important are environmental improvements in packaging industry? How do you believe it affects your organization and why? Which improvements are the most important and why?</li> </ul>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>▪ Do you think that consumers are not currently demanding sustainable products as much as you expect in the future?</li> <li>▪ In what kind of improvement and development possibilities do you see in the packaging towards more sustainable packaging?</li> <li>▪ What are the barriers for companies to do environmental innovations or improvements?</li> <li>▪ What are the barriers for consumers to buy environmentally benign products?</li> </ul>
<b>Environmental Claims</b>	<ul style="list-style-type: none"> <li>▪ What do you think about environmental claims on the market?</li> <li>▪ What do you think about the consumer's logo recognition and understanding (logo's such as Svanen, FCS, Krav or Recycling)? Have you conducted any tests of how consumers experience the claims?</li> <li>▪ How familiar are the consumers with claims such as recyclable, biodegradable, renewable, carbon footprint, water footprint?</li> <li>▪ Do you think consumers trust environmental claims?</li> <li>▪ What kind of activities do you do in order to increase the awareness about environmental claims? Do these claims really affect the consumer decisions?</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>▪ What type of information do you think is important for the package to communicate?</li> <li>▪ Do you think there is a risk for "information overload"?</li> <li>▪ What other types of information do you consider important for the environmental package to communicate?</li> <li>▪ Much of the information is communicated by symbols. Are those symbols standardized in the business?</li> <li>▪ How should companies communicate their environmental actions to their consumers? To increase awareness?</li> </ul>
<b>Remarks</b>	<ul style="list-style-type: none"> <li>▪ Is there anything that you consider important in the area environmental packaging that we have not yet covered and that you would like to discuss?</li> <li>▪ Do you have any questions regarding this interview or my study?</li> </ul>

### 3.3.3. Execution of Interviews

In the beginning of the interviews, the purpose of the project was explained and issues regarding confidentiality and recording were asked. After that, interviewees were asked to present themselves, their position in the company or organization and their responsibilities within company. Interview questions have been formulated before the interviews; however, depending on the participants' background, questions differed from each other. For example, Ecolabel and ÅkeThidell, associate professor from Lund University were asked more about environmental claims while Innventia were asked about their researches on renewable materials. With the flow of discussions, order of the questions and time spent on each question showed differences. At the end of interviews, respondents were asked to provide any further

information they wanted to add. Interviews usually lasted one hour. All the interviews were face-to-face interviews except EcoLabel due to time constraints; they chose to answer questions via email. Face-to-face interviews were preferred because of the ability of active questioning. After completing interviews, they were transcribed from recordings, and the transcripts were analyzed.

The transcripts were reviewed for components and data fragments that seemed to be of potential significance. In order to analyze the respondents' answers, a matrix was created. First, categories were formed according to the topics and then each respondent's answer was written in the cell related with the category. This matrix gave an overview about the answers of interviewees and it enabled the researcher to see clearly what each respondent said about a specific topic, and what the similarities and differences between the interviewees are. This file can be seen in Appendix-A.



## 4. Results

This chapter will present findings from interviews about environmental developments in the packaging industry and their comments on consumer awareness on the subject. It is observed that there were similarities as well as some discrepancies in the interviewees' comments; these findings will be outlined.

### 4.1. Consumer Attitude

#### Consumer segments

In the beginning of interviews, the same question was asked to every participant:

*“Please describe the market. Do you think that consumers care about environmental developments in products?”*

The intention was to understand different consumer segments and to get familiar with their attitudes. Regarding this, consumers are divided into segments by respondents. According to consumer research conducted by Company B in Sweden, 50% of consumers are interested in environmental attributes differentiating in intensity; Company B further divided these consumers into three categories, one of which was the category of green consumers that constitutes 5 to 15% of the population that are also ready to pay more if the environmental attribute of the products would be increased. He described green consumers as most the interested ones in environmental attributes compared to the other two groups. They are highly aware of issues related to environment, and buying ecologically is their typical purchasing behavior. Moreover, making sustainable choices is a part of their lifestyle and they know how to act to have less impact on environment. For example, they value information on origin of product or they favor locally-produced products with lower carbon emission levels due to shorter distances; they support environmentally and socially responsible production in every part of the supply chain; however, the researcher noted that the specific topic of renewability was not mentioned by the interviewee as a preference of this consumer segment. The second group is described by the same interviewee as being more flexible with their green choices. They are conscious of environmental problems and are familiar with these as well; however, they don't apply this attitude to every decision they make. The last group refers to people who are concerned about these issues but

they don't exactly know what to do. They have a positive standpoint however they are not well informed on how to act, and they need help to improve their action.

Ecolabel and associate professor from Lund University describe the typical profile of green segment as middle aged women with above average income; they reflect this lifestyle in making environmental choices.

Company A defined their consumers as green consumers, and she added that they are very concerned about environmental issues. In addition, she said that their consumers are mostly vegetarians, vegans or people who have food allergies. Innventia replied to this question that there is a very small niche that actually acts upon their environmental beliefs; however, there is a growing trend towards sustainability reflecting on broader public. Similarly, the interviewee from BillerudKorsnäs added that a small segment of the population actually buys environmentally benign products. Besides, there is another segment that buys if the price is right, and one more segment that does not consider environmental attributes while shopping. Moreover, he added that that young people growing up are much more environmentally friendly than the preceding generation. This fact gives a clue that the new generation will demand more sustainable products in the future.

### Product Attributes

This was not a question but many of the interviewees mentioned product attributes. They explained further that for the vast majority of consumers, including various consumer groups, their product choices are motivated by different factors. Regarding this, the researcher asked how environmental attributes affect consumers' buying decisions. Company B listed these factors as price, quality of product and environment, while BillerudKorsnäs added to these factors availability of the product in the store where the consumer shops. Environmental considerations listed after these key indicators.

BillerudKorsnäs explained that although there are different reasons for consumers to buy green products, their main motive is to feel good about themselves. Buying green makes them feel better because "they think that they are doing something right". He added that people think that if it is environmentally friendly or organic, it is natural, and they relate this with health, thus they feel healthier as well. As a result, buying green products combines two important aspects-- health and environment, and this action corresponds to the motto "good for me, good for planet".

### Understanding Consumers

The researcher asked how companies get information about consumer needs and requirements, as understanding consumers is essential for companies. Innventia, BillerudKorsnäs and Company B mentioned that they conduct consumer researches in order to get consumer insight better. Ecolabel mentioned that they have direct contact with consumers via social media tools like Facebook, Twitter, LinkedIn and they receive emails from consumers. Aside from this, Ecolabel also arranges public events several times each year to have a closer relationship with consumers. 1400 companies in Sweden carry Ecolabel logo on a range of products and services and they have direct continuous contact with these companies to discuss how to strengthen the market for their Eco-labeled products and services. Moreover, Ecolabel and Company A stated that the green consumer segment as referred to before also gets in touch with them to ask specific questions regarding their actions and the environmental impact of their products.

### Packaging and Consumers

We discussed with interviewees what consumers think regarding packaging and what consumer expectations from packaging are. Company A stated that packaging is very important for consumers especially when it comes to food products. One reason for that is that packaging is in contact with their foodstuff and this relates with food safety and health. Another reason is that packaging is what is left after eating or drinking the product. After they use the product, consumers see packaging as a waste, thus the material that they are holding in their hand matters because they don't want it to be harmful to the environment. This is the moment that they think about its impact on nature and how to dispose packaging.

Innventia pointed out that according to a research they conducted recently, paper board is the most environmentally friendly packaging for Swedish consumers because it is natural and renewable (Innventia, 2012). In the same research from Innventia, 20% of Swedes stated that they refrain from buying some products because of their packaging, which is perceived to be bad. Plastic is the least environmentally friendly for Swedes according to the same study. Company A added that they receive questions regarding their plastic bottled products. Their consumers ask why they have plastic bottles instead of cardboard packaging as it is not friendly to environment.

Another question regarding packaging was what consumers know about renewable packaging. BillerudKorsnäs and Company B mentioned that most consumers don't know about renewability and its relation to sustainability. BillerudKorsnäs said that researches implicate that most people understand few basic notions when it comes to environment. According to Company B and BillerudKorsnäs,

what consumers understand best is recycling and returnable packaging because it is physical; consumers are involved in it physically. Therefore, for consumers, it is both important and easy to understand.

### Pricing

Another question that was asked to all participants was about pricing. The question was:

*“Do you think that consumers will be willing to pay premium for sustainable packaging with higher renewable content?”*

Company A said that they don't think such an improvement in packaging would affect consumer prices. However, if it affects the price, green consumers who are aware of environmental issues and demands better environmental attributes would pay a premium for it. Correspondingly, Innventia mentioned that a niche segment would be willing to pay extra for a packaging with better environmental attributes; however, they added that it won't be more than 10 per cent. In addition, participants from Company A, Company B, BillerudKorsnäs, Innventia and Ecolabel agreed that consumers won't buy a product just because it has an environmental packaging, nor would they pay premium for it; the packaging has to be combined with content and brand in a premium segment.

## **4.2. Sustainable Packaging**

In order to get insight of interviewees about sustainable packaging, the researcher asked if they think sustainable packaging would add value to products. According to Ecolabel, contribution of packaging into sustainable development is a viable issue and it has a growing importance. Company A stated that packaging has quite an impact in life cycle analysis of products. Therefore environmental impact of processes will matter for companies depending on which type of packaging they are using in the future. Ecolabel added that the type of material they are using in their packaging will be much more important for companies in the future.

Company A and B declared that they would like to have increased renewable share in their packaging, and implement bio-based packaging into their products. However, as they are not the producers of packaging, they want the manufacturers to offer them these products. Therefore, manufacturers and research and development institutions like Innventia are doing studies to develop new sustainable packaging

materials; for example, they are working on barriers from renewable resources to eliminate aluminum. Innventia stated that using renewable materials in packaging is one of the popular topics in the food industry; especially in the liquid packaging board sector, removing aluminum and using renewable barriers instead, is in vogue. Innventia is working on deriving barriers from cellulose. Although this sustainable barrier has good oxygen barrier properties, it is not a good moisture barrier; however, research is currently being conducted to overcome this hurdle. In addition, he mentioned that if they could manage to develop 100 per cent cellulose based material, recycling of this type of packaging would be much more efficient.

According to Ecolabel and Innventia, the main trends in sustainable packaging are listed as light weighting, reducing amount of material, renewability and reusability. These two respondents gave these answers regarding all kind of packaging types, not just about food packaging. For instance, consumers responded very positively to a change in washing detergents packaging which reduced packaging weight. Ecolabel and Company B pointed out that especially in Sweden, consumers are becoming more aware of the relation between packaging and transportation, and packaging that weighs less and drives down environmental impact of transportation is more likely to drive consumers' willingness to buy these types of products. Moreover, light weighting is the environmental friendly way of doing it even if you have unsustainable material, as stated by Innventia.

### Renewable materials

Renewable materials are materials that can replenish with the passage of time, either through biological reproduction or other naturally recurring processes. The researcher asked the participants what they think about increased renewable materials in packaging. BillerudKorsnäs mentioned that liquid paperboard packaging business has an advantage compared to other type of packaging. Its main raw material, wood fibre, is renewable, as it is sourced from responsibly managed forests, found mainly in the Nordic countries of Sweden and Finland.

As stated by Innventia, renewable materials are becoming more popular in the packaging industry. Companies A and B pointed that consumer demands, environmental issues and increasing price of non-renewable resources have emerged using bio-based materials in packaging industry; and global companies are pioneers of this trend by using bio-based plastics. It is mentioned by BillerudKorsnäs that within 10 years there will be more bio-packaging than today, and that it is probably going to be a hygiene factor. He also mentioned that it is expected that bio-fuel will be cheaper than oil within few years and environmental solutions will be more profitable. BillerudKorsnäs stated that nowadays, renewable plastics are produced from sugar cane but there are studies being done to derive it from cellulose which will be cheaper

than obtaining it from sugar cane. Actually this is another moot point according to him; if it becomes possible to produce plastics from cellulose, this would mean that manufacturers would be able to produce plastics from trees, forests. He discussed that this might lead to the possibility of plastic companies starting to buy forests, thus competing with the paperboard industry.

Company B, BillerudKorsnäs and Innventia agree that the importance of sustainability will continue to grow and the packaging industry will be influenced by this tendency and there will be more bio-plastics. Company B and BillerudKorsnäs agreed that if a brand has bio-based material in its package which is completely green and renewable, it will be positive for that company from the consumer's point of view. Ecolabel stated that this characteristic could be an advantage and may affect consumers' buying decision if the information about packaging is simple and understandable.

### **4.3. Environmental Claims**

When the topic of consumers' understanding of environmentally products was being discussed in the interview, the researcher asked about how the environmental claims affect consumers' knowledge and awareness on environmental issues and whether people trust these claims.

Ecolabel and Innventia pointed out that as the numbers of green claims in the marketplace continue to increase, consumers are getting more confused. Åke Thidell, associate professor from Lund University, stated that third party assessments, standards and certifications would be beneficial to all stakeholders to help ending consumer confusion.

There are efforts to standardize the environmental symbols in the business; Krav, FSC and Ecolabel have a strong place in the market and they are highly trusted according to Company A, Company B and Ecolabel. However, BillerudKorsnäs pointed out that although these symbols are recognized by consumers, the consumers do not exactly know what these logos stand for; what they understand is mostly that it is good for the environment.

Furthermore, Ecolabel claimed that their company has a high credibility from consumers. As it is a non-profit organization, Ecolabel can push the market to adapt their products to fulfill their criteria without risking that people would think they are green washing just to make a profit. Hence, 86% of Swedish consumers find Ecolabel trustworthy, according to a research carried by YouGov (2011) in Sweden. In Nordic market research report done for Nordic Ecolabel in 2012 and 2013, 77% answer that

they consider products that carry the Nordic Ecolabel are a good environmental choice, and only 39% trust companies claims that they offer good environmental products. Regarding environmental impact of packaging, Ecolabel stated that they haven't labeled any product due to its higher degree of renewable material in packaging because they haven't received any application for this yet, probably because this is still an ongoing challenge for both the product and packaging companies.

However, it is assumed by Innventia that there will be less labeling in the future because too much labeling tends to be confusing. Instead, brand owners will try to fill in their own brands with environmentally friendly, positive image according to Innventia, BillerudKorsnäs and Company B. Company A and B affirmed that their brands have a high trust from their consumers about what they claim on quality, health or environment and it is important for them to keep this credence in that way.

## **4.4. Environmental Innovations**

### **4.4.1. Increasing Awareness**

Concerning the consumer awareness, the question below was asked to all the participants:

*“What kind of activities are you doing to increase the consumer awareness on environmental issues? How should companies communicate their environmental actions to their consumers?”*

As stated by Ecolabel, awareness refers to the knowledge of consumers about products or services. In essence, when the consumers would know and understand more about sustainability and its benefits, their awareness degree would increase and it will impact their behavior. The important issue is to educate the public, making messages about environmental advantages easy to comprehend, according to Ecolabel and BillerudKorsnäs.

Ecolabel and Company A stated that their companies are trying to find more attractive ways of informing and educating consumers about their environmental innovations and modifications in their processes, such as by organizing online games or other interactive tools. A lot of work has been done with this purpose but according to Innventia there is still a long way to go.

Mostly, this awareness comes through the media organs including newspaper, radio, television, and of course internet media according to Ecolabel. Advertising exists

on nearly all media platforms, whether print, television or internet. Company A, Company B, Innventia, Ecolabel and BillerudKorsnäs are actively using social media and their webpage to be engaged with consumers and they also use these tools to inform them about their products, projects, new launches and activities. Ecolabel mentioned that they coordinate joint events with their customers, companies that receive Ecolabel license; to keep up with them and educate them as they think that many companies need help and advice to have more efficient processes. According to Ecolabel, consumers are not the only ones who need to learn more about sustainability; companies also need more education on how to be more sustainable.

According to the interviewee from Innventia, regulations will also help companies to operate more environmentally friendly because although everybody wants to be environmentally conscious, not all companies really act upon their beliefs. A suggestion made was to put taxes on using unsustainable materials such as packaging with aluminum foil or plastics. Making existing alternatives more expensive or reducing the cost of new sustainable material will encourage producers to use materials from renewable resources and this might actually help affect consumer behavior in switching to more sustainable packages.

All the interviewees agreed that the message sent to consumers should be simple and easy to comprehend so that consumers would understand how they would benefit from that environmental innovation. Interviewee from Innventia added that after giving the correct message comprehensively people will start acting upon that knowledge and they will change their behavior.

#### **4.4.2. Barriers to Environmental Innovations**

The researcher asked all interviewees to define barriers both for consumers and companies on environmental innovations. The intention was to identify the obstacles and find a solution that helps overcome the issue.

*“What are the barriers for companies to do environmental innovations?”*

According to Ecolabel, Company A and Innventia, the main barrier for companies is the economic aspect of innovations because these companies think that environmental innovations will come with a cost and customers are not going to pay for this extra charge. Company A mentioned that this mindset of the investment will cost too much, hinder companies doing changes in their practices. However, she further said that companies have to foresee that there will be a payoff time and that they can actually earn money by being environmentally friendly because



improved consumer perception will ultimately result in higher sales. The reason of this barrier is again the lack of awareness and knowledge about sustainable practices according to her and this could be overcome by education and increasing knowledge of their employees about importance of environmental innovations.

Another concern that companies have pointed out by Innventia is whether this new renewable packaging material will fit to their machineries. He added that new material should work with their existing machineries; if they would need to change their equipment, it would be too expensive for them.

On the other hand, BillerudKorsnäs, Company A and company B mentioned that they don't think environmentally smarter products will cost extra to them in the longer term regarding the foreseen price increase in non-renewable resources.

*“What are the barriers for consumers to do environmental innovations?”*

According to Ecolabel, first barrier for consumers is lack of knowledge of the importance of sustainable consumption and the ignorance towards environmental activities.

Another barrier that was mentioned by BillerudKorsnäs and Ecolabel is that green products are perceived by many consumers as premium and this perception causes them to think that these products are expensive. However, the interviewee from Company A stated that the consumer segment that prefers buying green products or that actually acts according to their environmental beliefs will be willing to pay a premium for a product with better environmental attribute. Moreover, participant from Innventia doesn't think that consumers will pay high premium, not more than 10 per cent of the total price. Another concern that was pointed out by all interviewees is that consumers see the product and its packaging as a whole; if they have to pay extra for renewable packaging, both the content and packaging have to be environmentally friendly.



## 5. Discussion & Conclusion

This chapter will discuss the findings in theoretical chapter and results from interviews conducted with influencers in the industry on the basis of the research questions asked in the beginning of the thesis.

### 5.1. Research Question #1

*What do consumers think about renewable materials as an environmental improvement in packaging industry and are they willing to pay extra for it?*

Consumers are getting more aware of environmental issues and there is a growing demand for products with better environmental attributes (Rokka and Uusitalo, 2008). However, consumers are different and not all the consumers demand the same things. In order to answer this question, we have to understand what different consumer segments want and what their needs are. In marketing research, consumers are divided into segments that have similar expectations (Kotler and Armstrong, 2010). There are three main segments found in the interviews, and according to the researcher, these segments could be classified as either green, yellow or red consumers, depending on their interest in environmental products. What is important to note for all these groups, however, is that none of the groups think that the environmental aspect of packaging is the most important feature of a product. Other product attributes such as quality, price, and availability in store comes before environment (Rokka and Uusitalo, 2008). If the product doesn't have a good quality or the price is not reasonable, having an attractive packaging or being environmentally friendly will not attract people to buy that product, and most probably they will not be willing to pay a premium for it.

The green consumer segment does value products with environmental attributes, and this is one of the characteristics that they look for when purchasing products (Manget, 2009). Nevertheless, as mentioned by interviewees it doesn't have the first priority. However, as existing literature from Manget (2009), Accenture (2012) and McKinsey (2012) confirms, as long as the other product attributes meet with their demands, this segment is willing to pay more for the sustainable aspects of a product, which may include environmentally friendly packaging, according to market reports.

On the other hand, the yellow consumer group, which includes larger amount of people, care about environmental issues as well; but the difference from green consumers is that they don't act upon their beliefs. They have an intention to be more environmentally friendly but they don't put it into practice in their daily purchasing

decisions. Indeed, Leire and Thidell (2004) reports that there is a discrepancy between consumers' intentions and their behavior. When it comes to paying premium for sustainable packaging, this segment might have some doubts. In fact, some of the interviewees stated that sustainable packaging doesn't have to be necessarily more expensive; why should the consumer pay extra for it? According to Manget's study (2009) green products do not need to cost more; many companies could lower the price of green products by decreasing their own cost. Moreover, being environmentally friendly is becoming a hygiene factor, something that brands must have. Therefore, this situation might be an opportunity for brands if they have the courage to take the first step. If they keep the same price but with sustainable packaging, they would have a chance to attract the larger consumer segment of people who are environmentally conscious, but do not necessarily behave accordingly, probably due to price concerns. In this way, they can have a competitive advantage and increase their market share as discussed by Banyte (2010) by being socially and environmentally responsible.

The last segment of consumers is the red consumer segment; those that are not concerned about environment and do not consider buying environmentally friendly products. According to Manget (2009), these consumers possibly will not be willing to pay a premium for environmentally benign packaging.

During the interviews when the researcher asked about renewable packaging material, the participants, after saying a few things on renewability, proceeded to mention other contributions a sustainable packaging can have like light weighing. It gives an insight that the term "renewability" is not yet a well-established concept in people's mind. This is probably valid for consumers as well; they are not yet familiar with renewability, and may not differentiate this from common environmental concerns, such as recyclability. Although consumer studies in literature (Accenture, 2012; Manget, 2009; McKinsey, 2012) show that people perceive paper and paperboard packaging as most environmentally friendly material, they don't associate it with renewability. Yes, they say it is natural, and know that it comes from forests, but they don't link it with renewability. There is a knowledge gap because they don't know the relationship between materials and their resources.

## 5.2. Research Question #2

*To what extent do the consumers have an understanding of environmental products and how should companies communicate these products to consumers in order to increase their awareness?*

Concerning the reviewed literature and the conducted interviews, it could be said that there seem to be two forms of information; information based on *facts* like knowledge (Leire and Thidell, 2004) and information based on *emotions* (Kathman, 2003; Heuvel et al, 2007). These two kinds of information are the factors that affect consumers' knowledge, attitude, and behavior towards environmentally benign products. However, facts and emotions have different effects on different consumer segments.

Although there is an increasing tendency in environmental awareness; many people understand few basic notions when it comes to sustainability or renewability (Soldberg, 2013). During the interviews, it is mentioned by all the participants that the main reason why people do not buy environmentally friendly products is because of a lack of knowledge about the issue. If people don't know, they don't understand the importance of environmental choices. Hence, it is essential to educate the public and make messages about environmental advantages that are easy to comprehend (Leire and Thidell, 2004). According to the same study, the message has to be simple and easy to understand. Further, it has to explain how people can benefit from that environmental attribute. When people start understanding, they would value environmental attributes and this awareness might reflect on their behavior (Asher, 2012).

Interviewees gave examples on what they do to generate awareness about their environmental practices and improvements they are doing in their processes. Generally, companies and organizations are working as partners in awareness campaigns, or they support each other. For instance, members of ACE- Alliance for Beverage Cartons and the Environment which includes manufacturers and suppliers, work together to demonstrate that beverage carton packaging will be a smart green choice today and also in the future. Organizing events and seminars is another way of interacting with consumers. In addition, companies are running awareness campaigns to increase knowledge of people. Media organs have traditionally been used by companies or organizations to let people know about their actions; also, internet media is often used in recent years, as social networks have enormous user bases and users have high engagement to social media. Social media is being used for awareness campaigns more frequently.

Increasing knowledge is important as mentioned in literature, however if we think upon consumer segments, we can say that the green segment already is aware of many facts regarding environmental benefits of sustainable packaging, and they are acting accordingly (Leire and Thidell, 2004). On the other hand, the yellow consumer segment is also aware of these issues, but the difference is they don't translate this belief into action. Do they really need more information to change their behaviour? The researcher believes that the answer is no, but what is needed to stimulate this consumer group is another motive, a driver. The message that the product is giving to consumers has to address the emotional context of their needs (Kathman, 2003), somehow showing them that their product choice will make a positive impact in the environment, or making them feel good as they are doing something right for the environment through this small purchase.

When it comes to the red consumer segment which has limited information about environmental issues, they are the ones who will be most influenced by information based on facts. Informing them about environmental issues could have a real effect on this consumer segment as they could gain a lot from this information and this situation might affect their attitude towards environmentally friendly products.

Regarding the information based on emotions, it is meant that products or brands can create an emotional effect on consumers by advertising or marketing, and this actually can affect all the consumer segments (Kotler and Armstrong, 2010). For example, for the green group, they already consider environmentally friendly packaging when they are making their purchase decisions, although this is not the primary driver. These well-informed consumers can perhaps be targeted instead through their emotions to make them prioritize the environmental aspect of packaging.

Likewise, the yellow group is also aware of environmental issues, or at least they state that they do; however, they don't translate this knowledge into actions at all times. Possibly, using emotions through marketing and advertising could be the driver that would make them behave accordingly. The yellow segment would probably be the best target for these advertisements because they are already aware of environmental issues; this could influence them to change their purchase behaviour.

For the red consumer group, although they have limited information about environmental issues and don't consider this aspect in their purchasing decisions, the emotional aspect can be targeted so that they would want to buy a product for other reasons aside from its environmental benefits. One way of approaching this is through effective branding.

Building in brand image is important today's competitive atmosphere (Manget, 2009). Brands should stand for something and it should associate in consumers' mind with specific perceptions and beliefs. As being environmentally friendly becoming more important in consumers' perceptions; brands would like to be associated in

people's mind as being a green company or brand because the other way around is very risky; to be looked upon as being not environmentally friendly (Soldberg, 2013). Therefore, brand owners want their brands to speak for themselves as being green (Leire and Thidell, 2004); so that consumers would know that if they choose that "green" brand or company they are doing something good rather than buying other brands. This choice would make people feel good about their decision and about themselves. When brands succeed in generating similar feelings in consumers' mind then consumers will continue to buy their products. In that challenge, a brand that makes environmentally smarter choices, in its production processes, packaging material or transportation etc. and combines all these attributes in a credible way would be valued by consumers (Mishra & Sharma, 2012).

And as this trend, being environmentally friendly, keeps growing there will be a time that it will become similar to a hygiene or a food safety factor, which is to say that it would be a "must-be" quality attribute of the product. Must-be quality attributes of a product are taken for granted when fulfilled, but result in dissatisfaction when not fulfilled (Löfgren and Witell, 2005). When this point comes, being environmentally friendly will not make a difference, which is why Tetra Pak is doing environmental innovations on bio-based materials now, while it is still possible to use it as a competitive advantage. Today, being environmentally friendly can help brands to differentiate themselves from competitors, probably making a profit out of it. They can attract consumers who value these products and who are willing to pay a premium for it. When it becomes a hygiene factor later on, possibly nobody would be willing to pay extra for it.

Another point that needs to be highlighted is that products with environmental attribute are mostly seen as premium products by consumers (Leire and Thidell, 2004) and if your product is in the premium segment, packaging is a part of the product (Kotler and Armstrong, 2010). During interviews, it was discussed with participants about the purchasing behavior of consumers regarding the sustainable packaging. All participants agreed that consumers would not buy a product just because of its environmental packaging; therefore, this feature has to be combined with high quality product content and excellent branding. Moreover, product content has to be in premium segment like organic, fair trade, or flavored products because this is what the consumer is actually buying. Packaging on its own doesn't make a huge difference in consumers purchasing decision, but combining it with other strong environmental attributes will create a holistic proposition that is very compelling.





## 6. Proposals for future research

In order to understand the market for packaging with higher renewable material, further investigation needs to be done including both qualitative and quantitative data. Some conclusions were drawn but this study was mainly an exploratory study. Companies, experts and influencers were interviewed from Sweden who are the important players in packaging industry. Following suggestions could bring better understanding of the market and potential business opportunities for renewable packaging:

- In this study, we collected information from influencers, experts and companies. The next step could be getting insights of consumers by conducting a survey or having focus group interviews with consumers. It will be important to get their thoughts at first-hand.
- Another suggestion is including more actors from the supply chain. As it is mentioned before, retailers were not interviewed in this study. They are one of the important players in the value chain and their contribution would be valuable.
- The other global companies in FMCG sector are also launching packaging with increased renewable material and they are marketing this new feature in their packaging to consumers. This means that there is going to be an increase in the awareness among consumers regarding renewable materials and its environmental impact. It would be a good idea to keep an eye on the market and re-evaluate the consumer's perception regarding new launches.
- Tetra Pak has launched its packaging with bio-based caps in Brazil and Peru earlier. It would be a good idea to study how the implementation of bio-based caps worked in those markets, what the communication strategy was and what the market response was. This information could be translated into a specific market, preferably Sweden or other Nordic countries.



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# 8. Appendixes

## APPENDIX A – INTERVIEW RESULTS

Categories	Eco-Label	Company A	Company B	Inventia	BillerudKorsnäs	Axe Thiel
<b>Describe the market</b>	<ul style="list-style-type: none"> <li>*Women in age group 40-44</li> <li>*Above average income and lifestyle that reflects many "green" environmental choices</li> </ul>	<ul style="list-style-type: none"> <li>*Consumers are very concerned about everything, health, environment</li> <li>*They are aware of everything</li> <li>*Mostly vegans and vegetarians or allergic people</li> <li>*Women between 30-45 who has a family</li> </ul>	<ul style="list-style-type: none"> <li>*Between 5 or 8 up to 15 maybe 20% people are committed (it depends to position). Prepared to pay little more - 5 to 15 dark green</li> <li>*6 segments</li> <li>*50% of the consumers are interested in environmental attributes (hard core- flexible-concerned they need help with a simple solution, to handle that concern)</li> </ul>	<ul style="list-style-type: none"> <li>*Very small niche that actually act on their environmental beliefs but there's a growing trend towards reflecting on broader public</li> <li>*20% Swedes said they refrain from buying products because the packaging is perceived to be bad for the environment.</li> </ul>	<ul style="list-style-type: none"> <li>*Most consumers don't know about sustainability and renewability, they understand few basic notions when it comes environment. They understand recycling because it is physical and easy to understand</li> <li>*Different reason to buy ecologically generally feel good reason</li> </ul>	<ul style="list-style-type: none"> <li>*Segmentation: basic browns, beginners, green consumer, dark green</li> <li>*Women, high educated, high income</li> </ul>
<b>How do you get information about consumer needs and requirements</b>	<ul style="list-style-type: none"> <li>*Social media (Twitter, Facebook LinkedIn)</li> <li>*Direct emails to company to ask specific questions</li> <li>*Public events</li> <li>*Discussion with companies, how to strengthen market for Eco-labelled products and services</li> </ul>	<ul style="list-style-type: none"> <li>*Consumer ask about plastic bottles and about the Tetra Rex for its headspace which 5% less environment impact</li> <li>*If you see whole lifecycle package is one thing but as the consumers hold in their hands and after usage they see packaging as waste and plastic is main issue.</li> <li>*Packaging is very important consumers</li> </ul>	<ul style="list-style-type: none"> <li>*Environmental research</li> </ul>	<ul style="list-style-type: none"> <li>*Consumer research has done about packaging perceptions</li> </ul>	<ul style="list-style-type: none"> <li>Consumer research</li> </ul>	<ul style="list-style-type: none"> <li>Consumer research, surveys</li> </ul>

Categories	Eco-Label	Company A	Company B	Inventia	BillerudKorsnäs	Ake Thidell
<b>In what ways packaging could act value adding</b>	<ul style="list-style-type: none"> <li>*Consumers becoming more aware of transportation and packaging issues</li> <li>*Smarter packaging and environmentally packaging would be value added to many products</li> </ul>	<ul style="list-style-type: none"> <li>*Package has to be environmentally friendly</li> <li>*If TP can offer package with better environmental approach which doesn't cost much is important.</li> </ul>			<ul style="list-style-type: none"> <li>*If you are in the premium segment packaging is a part of the product</li> </ul>	
<b>Claims &amp; Environmental claims</b>	<ul style="list-style-type: none"> <li>*96% recognize EcoLabel</li> <li>*86% trustworthy</li> <li>*49% sweds look for EcoLabel (often, now or then)</li> <li>*71% positive image for the company if they have EcoLabel</li> <li>*77% EcoLabel good environmental choice</li> <li>*39% trust company claims</li> <li>*Growing tendency to use symbols that few people understand</li> <li>*See EcoLabelled products as premium</li> </ul>	<ul style="list-style-type: none"> <li>*Claims about health and content, about quality</li> <li>*Consumers trust claims like Krav or EU flower</li> <li>*They have a high trust about what they claim (health and carbon footprint).</li> <li>*Main focus to have trust</li> <li>*Swedish consumers prefer compostable</li> </ul>	<ul style="list-style-type: none"> <li>*Brand-Trust: continue to buy building a brand on environment care..</li> <li>*Brand value</li> </ul>	<ul style="list-style-type: none"> <li>*Less labelling in the future because it tends to be confusing</li> <li>*Brand owners want more the package itself the company profile has an image of being environmentally friendly</li> <li>*Building a brand itself is sth important right now</li> </ul>	<ul style="list-style-type: none"> <li>*People understand FSC is good, maybe 20% knows what it stands for but they recognize logo and think it is positive.</li> <li>*Carbon footprints becoming necessary</li> <li>*Tetra Pak filled their brand with environmentally friendly, positive, protects whats good to make it solid and stronger</li> <li>*Self declared claims, people will trust given time. Good will sth you have to build up for many years</li> </ul>	<ul style="list-style-type: none"> <li>*Svaren, Krav well known labels</li> <li>*Self declared claims: Not anymore, attached to brand name</li> </ul>
<b>What kind of activities to increase the awareness</b>	<ul style="list-style-type: none"> <li>*Social media, events, seminars, advertising, homepage</li> <li>*Joint events with customers</li> <li>*Need more awareness campaigns towards consumers</li> </ul>	<ul style="list-style-type: none"> <li>*We are working on it developing.</li> <li>*Corporation with farmers and organizations</li> </ul>		<ul style="list-style-type: none"> <li>*Needs more regulation that will help more sustainable alternatives, promoting sustainable packaging like taxes especially aluminium, carbon, materials increase</li> <li>*A regulation to make existing alternative more expensive</li> <li>*Sustainability will be key agenda for government try to stimulate</li> </ul>	<ul style="list-style-type: none"> <li>ACE</li> </ul>	
<b>Information on packaging</b>	<ul style="list-style-type: none"> <li>*Information on recycling is important</li> <li>*what kind of materials are used in packaging because they send a direct message to consumer</li> </ul>					<ul style="list-style-type: none"> <li>*Message should be easy</li> </ul>
<b>Sustainable packaging</b>	<ul style="list-style-type: none"> <li>*Growing importance</li> <li>*Could be an advantage is the information about packaging if simple to understand</li> </ul>			<ul style="list-style-type: none"> <li>*We are absolutely going that direction but it is a slow trend</li> </ul>	<ul style="list-style-type: none"> <li>*Sustainability is going to continue</li> <li>*In 10 years time we are going to use more bio plastics</li> </ul>	

Categories	Eco-Label	Company A	Company B	Inventia	BilleudKorsnäs	Ake Thidell
<b>Consumers</b>	<ul style="list-style-type: none"> <li>*Becoming more aware of environmental issues such as production methods and transportation issues</li> </ul>	<ul style="list-style-type: none"> <li>*Swedish consumers drink a lot of milk. It is a huge step to change it from milk to cereal based drink for environment</li> </ul>	<ul style="list-style-type: none"> <li>*Consumers never ever just buy a environmental package is always has to be combined with content and brand.</li> <li>*Price aspect-Quality-Environment</li> <li>*Paper-nature-renewable</li> <li>*Not familiar with renewability, yes recycling is important</li> <li>*Good for me good for the planet (health and environment)</li> </ul>	<ul style="list-style-type: none"> <li>*Pessimistic: consumers not acting environmentally friendly right now that will take some time but we are absolutely going that direction but it is a slow trend</li> </ul>	<ul style="list-style-type: none"> <li>*It has to make consumer feel better you know you are doing sth good; environmentally friendly or organic means without artificials, natural so you feel healthier</li> <li>*Cartonboard is most environmental friendly according to their research than glass.</li> <li>*Small segment of population actually buy environmentally products and there is this segment buys iff the price is right and the rest dont care</li> <li>*In the mix of choice Product-Price-Availability and then Packaging</li> </ul>	<ul style="list-style-type: none"> <li>*20-40% consumers occasionally make decisions on environment</li> </ul>
<b>Awareness of consumers</b>	<ul style="list-style-type: none"> <li>*Consumers are more aware of environmental issues today than 10 years ago</li> <li>*Important issue is to educate the public, make messages about environmental advantages easy to comprehend</li> <li>*reduce number of symbols</li> </ul>	<ul style="list-style-type: none"> <li>*Both our consumers and other consumer segments know that we are environmentally friendly compared to milk.</li> <li>*Our consumers are really aware and demanding</li> </ul>			<ul style="list-style-type: none"> <li>*Young people growing up are more environmentally friendly than the one generation before. It is going in the right direction.</li> </ul>	<ul style="list-style-type: none"> <li>*Experiment: Organic and conventional milk with same price – Less than 3% of consumers chose organic</li> <li>*Schools, kindergarten, discussing in media, explaining why it is important</li> </ul>
<b>Barriers for consumers</b>	<ul style="list-style-type: none"> <li>*It can be a price issue but more an issue of not understanding the importance of buying Ecolabelled products for a sustainable consumption</li> </ul>			<ul style="list-style-type: none"> <li>*Unwillingness to pay huge premium, changing habit would also take time</li> </ul>		
<b>Barriers for companies</b>	<ul style="list-style-type: none"> <li>*Too few employees understanding sustainable issues and how to practice</li> <li>*Need more education on how companies can be more sustainable</li> <li>*More research to help companies change their packaging</li> </ul>	<ul style="list-style-type: none"> <li>*Mindset of cost too much, but there will be a pay off time.</li> <li>*Consumers perception creates higher selling</li> <li>*Owners and top of the company should want it and knowledge that you can actually earn money by being environmentally friendly</li> </ul>		<ul style="list-style-type: none"> <li>*Customers are not willing to pay for a premium</li> <li>*Environmentally friendly material should work with existing machinery</li> </ul>		

Categories	Eco-Label	Company A	Company B	Imvventia	BillerudKorsnäs	Ake Thidell
Contribution of packaging to sustainable development	*Viable issue and worth looking at	*Implementing the biobased packages (she is not responsible of it)	*Increased renewable share	Driving forces: Renewable resource, compostable-reuse	*We are very sustainable *Package should make you pick one of them. *If you have bioplastics in your package which is completely green and renewable, of course it is positive cant be negative.	*Resource efficiency, weight less, less material as possible, transport efficient, easy to recycle to separate
Sustainable development & improvements & possibilities	*Increasing demand for sustainable products and services	*Environmental impact of companies will matter in the future depending on which type of packaging used. *Important for them the environmental impact of packaging	*Reduce the waste, reduced or transport, smarter raw materials; smart for longer term	*Removing aluminum and using renewable barriers, having sustainable barrier, although it is a good oxygen barrier properties not a good moisture barrier, they do double coating, small plastic film and nano-cellulose. HOT TOPIC *If we could grow material 100% cellulose based recycling would be more efficient	*You find environmental solutions which are actually cheaper *Within 10 years biofuel will be cheaper than oil, since biomaterials is going to be more available for food biopackaging *In 10 years we will have more bio packaging than today but it is going to be a hygiene factor sth you have to have.	
Paying premium for sustainable packaging	*Doubtful just for packaging *Both packaging and the contents	*Don't think extra cost will effect consumer because of renewable packaging *But if there would be cost, if you make choice as consumer, if they value it they can pay more.	*Do we have to charge some more environmentally smart products? Or the other way around?	*Dont think consumer will pay high premium, maybe a small percentage but not more than 10%. If you put more than that you would attract very small niche. *Cost* a way of branding of being environmental friendly and this comes with a cost and cant charge customer the full incres in price *Small niche market they are willing to pay premium		

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<b>Trends in packaging</b>	<ul style="list-style-type: none"> <li>*Weight less</li> <li>*Less transportation cost</li> <li>*Efficient production processes</li> <li>*Choice of packaging material</li> </ul>	<ul style="list-style-type: none"> <li>*Compostable</li> <li>*Recycling and reuse</li> </ul>		<ul style="list-style-type: none"> <li>*largest trend: light weighting, environmental friendly way of doing it even if you have unsustainable material</li> <li>*reducing material</li> <li>*paper based packaging</li> <li>*Renewability-compostable-reuse</li> <li>*Promoting sustainable material has to continue no matter what media says</li> <li>*Companies have to decide what environmentally friendly for them and have to go with it no matter what media says</li> </ul>	<ul style="list-style-type: none"> <li>*Sustainability</li> <li>*Renewable plastics from cellulose x2 as cheap as they are doing it from sugar cane</li> </ul>	
<b>Media Attention</b>		<ul style="list-style-type: none"> <li>*Consumer power is strong if you dont do what you are claiming then you would have big problems</li> </ul>			<ul style="list-style-type: none"> <li>You can't be environmentally unfriendly, people would stop buying - hygiene factor</li> </ul>	
<b>Business</b>			<ul style="list-style-type: none"> <li>*When it comes to environmental attribute of packaging, on its own it doesnt make huge difference but combining with other strong environmental attributes it will create proposition that is very compelling if you have that kind of packaging with labels and if you fill it with organic or locally produced and if you put a brand convey and communicate that speaks to you as environmentally interested person, then you can have sht very competitive even you can charge some more</li> <li>*What brand syands for</li> <li>*Increasing environmental competitiveness would be great for the brand</li> </ul>		<ul style="list-style-type: none"> <li>*When you change your package somebody is always going to be unhappy, if you are changing you have to offer a bonus.</li> <li>*If you can't give the consumers the idea is better and that's what we use with sustainability</li> </ul>	