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# Sustainability Trends

And their Relevance to THULE

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## ABSTRACT

The concept of sustainability has been put forward since 1987 and from that point of time research regarding it has emerged and evolved since its appearance. Definitions of sustainability vary from person to person due to the context used, and big amount of companies have started to realize its importance and begun with searching their ways till achieving a sustainable development in today's tough economic environment.

Thule AB is an international consumer product company based in Sweden, producing mainly car accessories, which operates its business primarily in Europe and the United States, recognized as the two areas with most sustainability discussions and actual actions.

This thesis studied firstly the general sustainable trends nowadays, and then further explored the institutional and business environment where Thule is in. It also derived some alternatives the company can take so as to go sustainable based on considering all these three aspects.

An intensive document study was conducted to get not only sustainability trends presented literally already, but also facts in the institutional as well as the industrial context where Thule is playing its role. When doing the research we also interviewed seven researchers from Lund University with their main study topics closely related to sustainability for the insights from an academic perspective in regard to the sustainable trends.

**Key words:** sustainability trends, Thule, sustainability policy, sustainability strategy

# Chapter 1 Introduction

## 1.1 Research background

This thesis has been written as a part of the degree project course in the Masters program “Sustainable Business Leadership” at the School of Economics and Management, Lund University.

The course was based on the methodology of action learning and self-managed learning. The students were all assigned to an in-company project, having a role as consultants. This project constituted the main part of the course. As a minor part the students were responsible for organizing several learning events addressing relevant issues related to the in-company projects. The students continuously documented their learning in learning journals and participated in tutorials on these journals.

The assessments of the students were done partly on the written thesis, partly on the consultancy process and report to the client company, partly on performance in learning events and partly on ability to document and discuss the students’ individual learning and development.

The reason we started this research is that we were asked to provide solutions to the inquiries concerning sustainability trends proposed by an international consumer product company named Thule AB.

Thule AB is a middle sized firm based in Malmo, Sweden, with approximately 3,100 employees at over 30 production and sales locations in North America, Europe and Asia. Its product categories include sports product and utility transportation. Since its establishment in 1942, Thule has grown and changed over the years, with the commitment to high quality, timeless design, continuous innovation, and respect for nature and all co-workers (THULE AB, 2010).

Thule indicated that they started to look at sustainability trends since sustainability has become one of the top issues that companies have to face to ensure their future. In more and more situations, sustainability can be a determinant factor for the success or failure of a company. Sustainable development is not only concerned about the quality of the product, but also about ensuring the adequate protection of social and environmental values. Especially, how to be sustainable and profitable at the same time becomes an essential issue.

The increasingly competitive global environment as well as the recent worldwide financial crisis is also important factors making Thule eager to understand the popular

sustainability trends and the ways to go sustainable.

## **1.2 Research purpose**

Since the concept sustainability was proposed, growing attention has been paid to it by different individuals and parties. Studying sustainability trends is one specific direction where researchers from different areas go, so as to facilitate the process of exploring opportunities nowadays to embrace the future. Sustainability trends tell how things will be in the future concerning sustainability, and presently lots of viewpoints aggregate on this topic based on varied sources of data, information and knowledge. Studies with different coverage regarding sustainability trends indicate the situations applicable for different group of stakeholders.

However, for a specific organization playing a certain role in the society, its special settings are closely related to how it should look at the presently considerable number of sustainability trends, which further decides what kind of strategies it can take to face the challenges as well as opportunities embedded in the relevant trends.

For this reason the purpose of this research is not only to show sustainability trends in general, but also to explore their relevance to a specific organization, Thule AB, by studying its special context from both the institutional and business perspective. Finally, we expect to derive possible answers toward what the organization can do correspondingly.

## **1.3 Research content**

In this research, we firstly focus on the following points, which are directly asked by the Thule AB, including showing general sustainability trends; collecting related policies in the areas they operate their business and presenting what other companies are doing, with the findings shown in chapter 3, 4 and 5, respectively.

Then we discussed the relevance of the sustainability trends we found to Thule taking into account our findings from these three aspects as well as Thule's special characteristics. Based on the information we have, we further proposed some alternatives of the strategies Thule can consider in an organized way. These contents can be found correspondingly in chapter 6.

The research content can be also shown figure 1.1. We did not provide an intensive study regarding the micro context part for a relative lack of corresponding information of Thule. Instead, we provide advice on how to fill in this blank by the company itself with its knowledge in this box, based on our research on other parts.

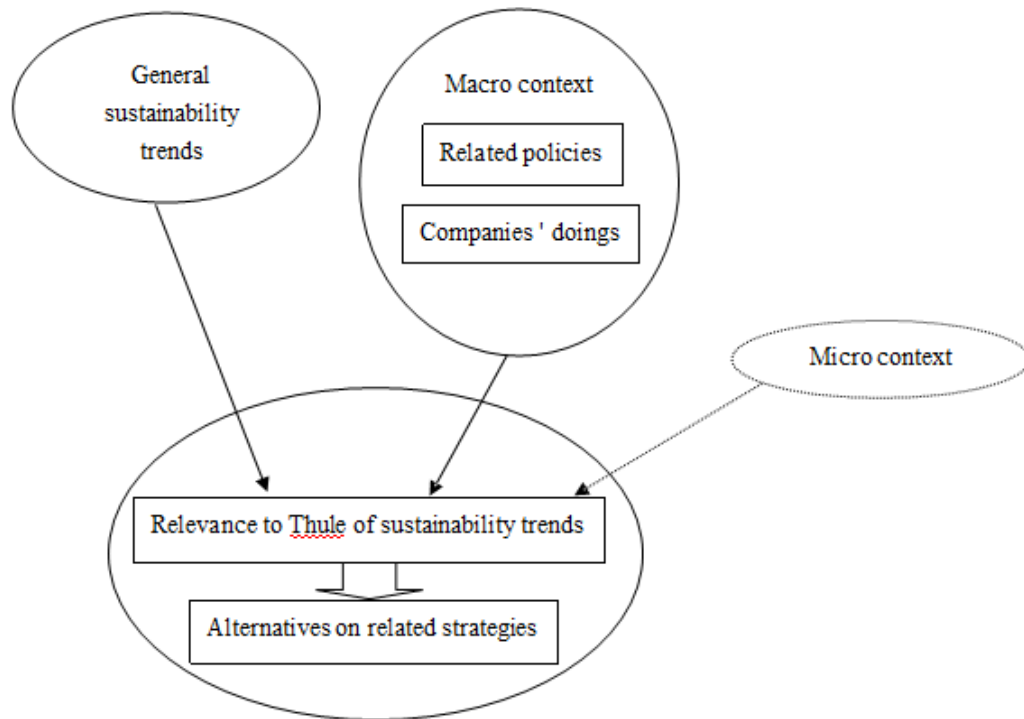


Figure 1. General scheme of the thesis

## Chapter 2 Methodology

### 2.1 Data collection

For the research of Thule's relevant sustainability trends and their political and industrial status quo, the major method of data collection was based on document study and interview. The sampling throughout the study is '*purposive*' (Patton, 1990) which means we include only samples that we consider closely according to our research purpose. For example, when we were collecting the sustainability surveys, we did not include the Jones Lang LaSalle's survey on sustainable real estate investment because we considered that this area had little relevance to Thule's operations. The reasons why we selected the method choosing and the way in which we conducted the methods for our different sup-topics will be described in the following sections.

#### 2.1.1 Document study

Since the first concept of sustainability was proposed, there has been a long period since this topic began to be considered relevant. Since then, there has been a great amount of off-the shelf materials studies and guidelines. For this specific research, we think that studying existing documents has several advantages. Specifically, compared with other methods it could: transcend the constraints of time and space, use of existing literature to study the object or content that is not closer due of time and geographical restrictions, cover a wider range of answers, in addition, it has the ability to encompass large amount of literature contents. Studying documents makes more possible to make either horizontal or vertical comparisons and it could also be used for trends study in a long term basis, which is important in this case.

Using document studies, there's no restriction in size, so we can analyze more research subjects, taking into account that the relevant literature is available. Moreover, it provides higher efficiency with a lower cost.

However, it couldn't be neglected that there are also limitations when applying document studies to this research, which are represented as: original author's subjective bias, historical limitations, a certain distance between literatures' content and the truth. No matter with intentions or not, the historical limitations, the characteristics of age and the mark of class will to some extent be reflected between



lines in the literature, lack of specificity and vividness.

For the research of political and industrial status quo, we tried to minimize negative effects by being selective on both the source of documents and what to pick up within a specific document. When selecting the documents, the most important two factors we considered including the authority of the document publisher and the relevance to our research purpose.

For the policy study, we only include official documents stating the specific set of institutions published by the corresponding issuing organizations and research papers directly referring to this kind of documents. Research was limited in only European Union and the United States according to Thule's requirement. Other areas like Asia Pacific, though holding strong potentials as its future markets, were not studied here since Thule has no incentive toward them in the near future.

For the current industrial situation study, we started by collecting survey report from 2002 up to now published by well-known organizations with different coverage of industrial world. These organizations include highly ranked management consulting firms, academic institutions and representative NGOs in this area. The content we chose from a specific survey report do not include the issuing organizations' viewpoints on concerning aspects of sustainability trends but only survey results and results summaries. In this part we also studied some successful examples of companies' strategies, regarding sustainability. The data we got based on information from example companies' web-sites, relevant employees and further relevant information in other official documents. The selection of example companies was a result of considering of both their appearing frequency on different rankings from the reports mentioned above and the extent to which their strategies might be applicable to Thule. Another factor that we considered when choosing examples is to present diversity. It's better to show strategies on different aspects from different companies than just from one company, despite some company actually does achieve remarkable results with several strategies.

However, we found it relatively much more difficult to reduce negative effects by excluding the authors' viewpoints as much as possible and considering only facts while studying documents directly pointing at sustainability concept and sustainability trends, which vary a lot according to the corresponding researchers' different ways of interpretation, categorizing and summarizing. Due to this reason, we tried to pick up the crucial elements within their statements as data to code. For example, the crucial element of regulating CO<sub>2</sub> emission is carbon footprint, and the crucial element of using more electronic than paper material is ecological footprint. This process also facilitates our work in the analysing phase.

## 2.1.2 Interview

(Bell, 1982) states that the personal in-depth interview is *“the opportunity for the researcher to probe deeply to uncover new clues, open new dimensions of a problem and to secure vivid, accurate inclusive accounts that are based on personal experience”*. Due to these characteristics of the interview, it was chosen by us as a data collection method in addition to document study. After forming some ideas from the document study phase, we did altogether 7 in-depth personal interviews. Each interview lasted from 90 min to 2 hours.

We discuss how we design the questions and select our interviewees below.

### ➤ **Questions design**

From interviews, we supposed to get practical information about what experts think about sustainability personally, not only based on their specific study field, but also sustainability trends in general. In addition, concerning on Thule’s products and main market, we also asked about their viewpoints on sustainability related to Thule’s industrial context as a customer, who is aware of sustainability.

We considered the answers regarding their research domain as experts’ perspective on sustainability. As to other answers, we use them as an additional resource, which is more practical, to complete the standpoints from literature.

### ➤ **Process of selecting interviewees**

We chose to start from those researchers whose work is most related to sustainability. The first two interviewees are researchers at Lund University Centre for Sustainability Studies, and they could provide a comprehensive overview on sustainability trends.

Then we dug into more pacific field of different sides on sustainability. The interviewees chosen are from Production and Material Engineering, Environmental and Energy System Studies, Materials Engineering, International Institute for Industrial Environmental Economics as well as Research Center for Innovation, Research and Competence in the Learning Economy. The purpose was to get various information from different perspectives on sustainability.

Basically, all the interviewees are from Lund University due to the limitation of the time and budget of our study. However, they are one of the most knowledgeable groups of people on sustainability. And since Thule is a Swedish company, it is relatively suitable to get information from local sources.

On the other hand, though most of them work in Lund now, the diversity is obvious if refer to their nationality and research field. Three of the seven researchers we

interviewed are from Sweden; the other four are from the US, Germany, China and India. And their study fields refer to the US, EU, Africa and Asia. Therefore, their viewpoints are professional and international rather than only local perspective.

## **Interview 1**

**Name:** Barry Ness

**Profile:** Researcher and lecturer at Lund University Centre for Sustainability Studies (LUCSUS). His research area is based on sustainable development as an overall concept, analyzing the development of sustainability science. Over the last 3-4 years he is working in the computer modeling of agricultural systems in Africa, namely sugar production systems from a life cycle perspective.

**Relevance of the interview:** At the beginning of our research process, we begin to speculate which would be the profile of the researches that we have to interview. We decided that our first interview must be Barry Ness, for two reasons: The first is because in the introduction of the program, Professor Magnus Lagnevik introduced Barry Ness as the *“person who knows more about sustainability in Lund University”*. The second reason is that he is one of the directors of the sustainable studies division in Lund University, which gives him credibility in his concepts.

At the end, he gave us important insights about the concept of sustainability and sustainability trends. His conclusion was that every sustainable practice is related with the use of land ultimately. Although at the first sight it seems not relevant to THULE’s interest, however, it is one of the considerable emerging trends in sustainability.

## **Interview 2**

**Name:** Torsten Kraus

**Profile:** PhD student at Lund University Centre for Sustainability Studies (LUCSUS). His research is specialized in the impact of economy, incentives and payments on protecting ecosystems in South America.

**Relevance of the interview:** We interviewed Torsten Kraus at the same time as Barry Ness. His opinion is relevant to this paper because he made interesting statements about water footprint as one of the sustainability trend that we identified in this paper. He was the one who gave us less relevant information.

## **Interview 3**

**Name:** Carl Dalhammar

**Profile:** Researcher at the international Institute for Industrial Environmental Economics (IIIEE) at Lund University. Focus on Environmental laws, environmental governance, consumption policies and industrial innovations. He is also a lecturer in Sustainable Business Leadership masters program.

**Relevance of the interview:** One of the topics that THULE is seeking to clarify with this project is the regulation and sustainable laws made by governments and different stakeholders nowadays. Carl Dalhammar is one of the researchers who are knowledgeable about environmental laws. With his interview, we gained a better approach towards this topic.

In addition, he also mentioned Water footprint and Carbon footprint as possible sustainability trends.

#### **Interview 4**

**Name:** Christian Stenqvist

**Profile:** Researcher and a PhD student at Lund University School of Engineering (LTH). His specific area is in Swedish energy intensive industry and the possibilities to apply energy innovation to climate policies field.

**Relevance of the interview:** As one of the researches in the Sustainable development engineering, Christian Blomqvist gave us an approach towards sustainable energy efficiency (Another sustainable trend).

#### **Interview 5**

**Name:** Srinivasan Iyengar

**Profile:** Associate professor in Materials Engineering at Lund University School of Engineering (LTH).

**Relevance of the interview:** He gave us an approach about sustainable materials which is considered as part of sustainability trends.

#### **Interview 6**

**Name:** Guoqing Gao

**Profile:** Guest researcher in Production and Material Engineering, Lund university School of Engineering (LTH). He works for a company specialized in cutting machine in China, and his research area is particularly bearing and material.

**Relevance of the interview:** With this interview, we managed to support the sustainable materials approach, and he also mentioned technological development as one of the sustainable trends.

#### **Interview 7**

**Name:** Astrid Kander

**Profile:** Researcher at Centre for Innovation, Research and Competence in the Learning Economy (CIRCLE). She is specialized in transformation society over periods of time, economic growth, technological shifts and the environmental

consequences particularly in greenhouse gases emissions.

**Relevance of the interview:** As an economics history researcher with a special focus in transformations of society over time, she gave us an interesting approach regarding the future of sustainability.

## **2.2 Data analysis**

### **2.1.1 Document study**

As to data collection and analysis, we collected, categorized, filtered and coded them iteratively.

Every time we came across new data we put them into different categories that we derived from the former data or created. New data showing totally the same thing as existing ones were filtered. Category names were revised when we found new ones which can better express the characteristics of the corresponding categories or deliver better descriptions. They were also continuously merged, split and organized to provide more sense and logic.

For example, we had the category of producing, which was lately substituted with the name manufacturing, and finally put in the category of supply chain from standing parallel with it. It is playing as a sub-category since manufacturing is actually a phase of the supply chain.

### **2.1.2 Interview Analysis**

For interview analysis, we listen to the records and read though the transcriptions reiteratively, and we followed three level of coding.

First level of coding, identifying themes, units of meanings such as words and sentences as the interviewee expressed them. We tried to be as close as possible to the text, using the words of the participants. Theoretical concepts haven't been used by this step, we tried to be empirical and facts oriented, comparing verbatim with our notes during interviews. The second level of coding was reformulating in more theoretical words. Our third level of coding was to analyze, looking for coherence and differences, from two dimensions: vertical one, that is, who cross the different interviews and horizontal one, each interview, each subject has its own coherence and structure of meanings.

After three steps of coding, we went back to the empirical data, the text, at every step, even reread and recode some parts where 3 group members can not make an agreement. During the process of interview analysis, we tried to let meaning emerge

rather than forcing into a theoretical perspective. It was a long and deconstructing process in which empirical data come first. We also paid attention to rhetorical structures which have a special meaning and connotations which give sense to the text.

## 2.2 Research Quality

We do a brief summary in table 2.1 regarding research quality for the two main research methods we used and discussed how we dealt with them in the following section.

Indicators	Research methods	
	Interview	Document study
Internal validity	Medium	Low
External validity	Medium	Medium
Researcher's control	High	Low
Intervention of measurement	Medium	Low
Difficulty of dealing of results	High	Low
Ethical problems	High	Little

Table 2.1. Research methods comparison.

## Chapter 3 Sustainability and Sustainability Trends

### 3.1 Overview

In this chapter we discuss firstly the concept of sustainability, which has been defined by different organizations. We include as many aspects of it as possible so as to provide multiple dimensions of the concept.

Based on this discussion, we present a list of sustainability trends that we found by doing an intensive document study. These sustainability trends are categorized by means of their expected effects. During the categorizing we use the concepts including carbon footprint, water footprint and ecological footprint to indicate their direct environmental effects and embedded sustainability trends beyond environmental sector to indicate social and economic impacts.

### 3.2 Definition of sustainability

The research of sustainable development is traced back to 1983, when the United Nations created the “*Brundtland Commission*”, which was intended to investigate the impact of human population growth to the environment. Sustainability has also been defined in many other ways. For example, the Environmental Protection Agency (EPA) defines sustainable development in two perspectives. The public perspective is defined as “*the satisfaction of basic economic, social, and security needs now and in the future without undermining the natural resource base and environmental quality on which life depend*”, and the business perspective is defined as “*to increase long-term shareholder and social value, while decreasing industry’s use of materials and reducing negative impacts on the environment*” (EPA, 2010). From a different perspective, World Wildlife Foundation (WWF) and International Union for Conservation of Nature (IUCN) defined sustainable development as “*Improving the quality of human life while living within the carrying capacity of the Earth’s supporting eco-systems*” (IUCN/UNEP/WWF, 1991). Nevertheless, the definition given by the “*Brundtland Commission*”, published in 1987 is the most popular. According to the document, sustainable development is defined as “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”, and it has two key concepts: *the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social*

*organization on the environment's ability to meet present and future needs* (UN,2010). Currently, organizations are beginning to develop corporate strategies with a sustainable development in a long term basis.

One of the fundamental issues regarding sustainability is classification. If organizations need to address sustainability, what are the key facts they must confront? Moreover, why they are doing this change? According to McKinsey Global Survey (2010), Companies addresses sustainability mostly to “*Maintain or improving corporate reputation*”. At a lower level, companies also develop sustainability to “*improve operational efficiency and lowering costs*” or “*meet consumers’ expectations*”, amongst several other reasons. Sustainability has a variety of dimensions, which companies can address regarding their purpose, for example, eco-friendly raw materials usage, eco-friendly transportation logistics, corporate social responsibility practices and efficient energy consumption are some of the many options that an organization can address to develop sustainability.

It has been over twenty years since the publication of the *Brundtland* report, which involves that the concept of sustainable development has been modified over time. The needs and challenges that our society is facing nowadays are not the same as in the past which leads different organizations to require different perceptions about this topic.

According to the document "*The Future of Sustainability Re-thinking Environment and Development in the Twenty-first Century*", published by (IUCN, 2006), there are four dimensions to be taken into account in the future definition of sustainable development:

*Sustainability and Resilience*: It involves all the aspects of the environment tolerance towards human activities. More than accomplish environmental friendly behavior is to develop awareness about how much we can exploit natural resources, in a way that both (society and environment) can get mutual benefits.

*Sustainability and Human wellbeing*: This dimension addresses the consequences of sustainable development in human activities. Most of the people has the perception that sustainability will lead them to lose part of the quality of life. But, what does quality of life really mean? Have clean air and clean water is also not part of quality of life?

*New Economy*: All of these changes must be made also taking into account the economy approach. What could be the best approach for an organization to become profitable and at the same time make sustainable practices?



*Presenting New Thinking:* Quite often, sustainability falls in a false concept of imagination; it means that people know what it is and the benefits to apply it, but it is more like a illusion; thus, sustainability has also to work with four elements in its definition: *imagination, vision, passion and emotion.*

### **3.3 Sustainability trends**

#### **3.3.1 Carbon-footprint**

Carbon footprint studies of all the greenhouses emissions made by human activities, and it is defined as “*the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO<sub>2</sub>)*” (EU, 2007).

Sustainability trends that we found concerning this aspect are listed below.

➤ **Carbon footprint rising to carbon emission regulation generating**

With the growing awareness of the carbon footprint concept, more than half of the global population in 2009 up from only 38% in 2007 (Environmental Leader, 2009) there is an inclination to legally regulate CO<sub>2</sub> emissions. Examples include the US EPA’s related regulations, which will be discussed in detail in chapter 4.

➤ **Carbon trading confusion to carbon market development**

This trend is showing a requirement of carbon market development due to the expansion of carbon dioxide equivalent trading. According to Point Carbon’s market outlook, the volume of global carbon offset market will grow 20% in 2010. (Carbon Market Outlook, 2010)

➤ **Only fossil fuels to increasing renewable fuels**

According to Morgan Stanley ’ s research in 2007 (Morgan Stanley, 2007) both revenue from investments in alternative energies and world-wide sales from alternative energy sources will increase considerably, with an expectation of 500 dollars in 2020 for the former and 1 trillion dollars in 2030 for the later.

➤ **One renewable fuel success to another**

From 2007 to 2008, patents in wind, fuel cells and geothermal increased and patents in hydroelectric and tidal kept at all time high, while solar, hybrid or electric vehicle and biomass or bio-fuel energy patents decreased slightly. (Clean group-Heslin Rothenberg Farley & Mesiti P.C., 2010)

➤ **Cheap carbon to expensive carbon**

European Union is already taxing carbon emissions and the taxes on for the emissions for new cars are increasing, while in the United State, the state of California declares to start charging businesses of carbon emissions in the late 2010 (Kågeson, 2005). This situation can infect industries ranging from major refineries, cement factories and power plants to automobile manufacturers, restaurants and other stakeholders.

➤ **Creative carbon labeling to consistent carbon labeling**

An eco-rating system is developed currently by Wal-Mart with also academic researchers and its suppliers for the product it will sell. This system is expected to be launched in late 2010 (CNET news, 2009), and might affect the current situation that a lack of transparency in the calculations as well as international standardization remains a problem of carbon labeling and packaging.

➤ **Carbon reduction to zero-carbon**

Kohl ' s corporation has committed to achieve net-zero carbon emissions by the end of 2010 with the operation of its U.S. Offices, stores and distribution centers. (Fibre 2 Fashion, 2010) If this proves successful, a zero-carbon objective might be a new trend due to the competition reason of businesses.

### **3.3.2 Water footprint**

Water footprint purpose is to evaluate the amount of freshwater used in the manufacturing process of a certain product, taking into consideration direct and indirect use of water. Not only the traditional water disposal indicators are used, but also the “*comprehensive indicator of freshwater resources appropriation*”. (Hoekstra H, 2009) The question is not how much water is wasted; it is more regarding about how efficient we use the water.

According to the water footprint organization (2010), this concept is defined as “*the volume of freshwater used to produce the product, measured over the full supply chain.*” The volume of water consumption is measured by source and type of pollution.

Water footprint components: Whole concept of water footprint is composed by *blue water footprint*, *green water footprint* and *grey water footprint*.

*Blue water footprint*: Blue water resources are those who are provided by the surface and the ground water. Blue water footprint evaluates the use of these resources along the supply chain. This assessment is made taking into consideration the whole

resource “cradle to the grave” cycle, involving all its relevant aspects.

*Green water footprint:* refers to the evaluation of the so called *green water resources*, in which is included all the recycled water resources. For example, the water stored in the ground, or in the leaves of a tree is part of this group.

*Grey water footprint:* As opposite, grey water footprint addresses the amount of freshwater that is required to support the water pollutants.

Sustainability trends that we found concerning this aspect are listed below.

➤ **Only carbon centric to also involving water**

It has been showed that about 2.6 billion people are not accessible to clean water by 2009, which is a problem in not only the developing world (Climate Change corp, 2010). This fact has pushed up the water issue to a new focus of the environmental agenda.

➤ **Direct water usage to embedded water usage**

It has been shown by Waterwise that (Waterwise, 2007) 65% of the water consumption in the UK is embedded in food, 31% in industrial goods and only 4% accounts for drinking water and domestic purposes. This can arouse especially in the business world more and more awareness of the water problem.

### **3.3.3 Energy saving**

Energy saving has been attached great importance since people noticed the limitation of energy resources. Energy saving can be applied in many ways, for instance, simple activities like changing traditional light bulbs to energy saving ones, or complicated activities such as transformation of the whole organization’s supply chain. And nowadays, governments, NGOs and private companies are making much effort to reduce energy consumption.

Sustainability trends that we found concerning this aspect are listed below.

➤ **Energy efficiency to energy management**

According to McKinsey (McKinsey Quarterly, 2008), 170 dollars a year are expected to be invested in energy efficiency from 2010 to 2020 and this could result in halving the growth in global energy demand. Moreover, an energy management standard is planned by the International Organization of Standardization (ISO) and is expected to be launched in 2011. (Scheihing, 2009)

➤ **Energy private standard to legal standard**

European Union has published a draft of energy efficiency regulations in March, 2009 and in the United States, LEED (Leadership in Energy and Environment Design) is developing a comparative standard for calculating energy consumption and energy audit methodologies (McCaine, 2008). Concrete regulations are emerging and their realization will generate new situations for different parties.

### **3.3.4 Ecological footprint**

Ecological footprint concept appeared in the middle 1990's when Mathis Wackernagel, Swiss researcher in sustainability, defined it as "*a measure of the load imposed by a given population on nature. It represents the land area necessary to sustain current levels of resource consumption and waste discharge by that population*". In another words, ecological footprint evaluates the impact of the human activities on the earth's ecosystem. Sustainability trends that we found concerning this aspect are listed below.

#### **➤ Landfill waste to expensive space**

In the United States, landfill taxes will continuously increase throughout 2010 and in Europe, a waste target has been established that a 75% reduction in biodegradable waste from 1995 to 2010, and a 50% reduction from then on to 2013 and a further 35% to 2020 are hoped to be achieved. (Friends of Earth., 2007)

#### **➤ Printed papers to digital medias**

This trend is boosted by the development of ubiquitous computing environment, a most important part of which is to have made digital reading possible almost everywhere. Digital reading holds the advantages of being relatively cheaper and occupying less space than printed paper reading. (Since printing refers to energy and water consumption as well as carbon emission, we considered that it has an integrated impact on ecological system.) (Sharp, 1983).

### **3.3.5 Embedded sustainability**

In this section we discuss people's general attitudes toward sustainability and their related consuming and investing behaviors, that is, embedded sustainability trends beyond environmental sector, which have social and economic effects.

#### **➤ Environmental sustainability and embedded sustainability**

This trend refers to a stronger connection between sustainability and well-being. Both the United Nations development program (UNDP) (Nations, Commission on

Sustainable Development, 2010), Happy planet index (HPI) (New Economics Foundation, 2010) and Genuine progress indicator (GPI) (Lawn, 2003) all combine human well-being with environmental compact. These indices are theoretically supported by economists include Herman Daly, John B. Cobb (Daly & Cobb, 1989) and Philip Lawn, who asserted that the economic growth can have cost on the environment including pollution, resource depletion and loss of farmland and wetlands. According to the Natural Marketing Institute, the credibility of these indices will continuously increase with the expansion of Lifestyles of Health and Sustainability (LOHAS) market (New Zealand Trade, 2008).

➤ **Economic collapse to green business opportunities**

According to CONE consumer environmental survey 2009 (CONE, 2009), 34% of people are more likely to buy green products and 44% of them show little influence of the recession on their shopping habits. On another hand, Dept of Energy allocated 36.7 billion dollar in energy efficiency and energy alternative project and 4 billion dollar of investment was made in green start-ups by venture capitalists and corporate investors. This reveals more green opportunities for the near future's business behaviors. (International Energy Agency, 2009)

➤ **Fast food consuming to slow food consuming**

The Lifestyles of Health and Sustainability (LOHAS) showed that there has been a growth in organic markets in the last 5 years and people more aware of negative effects of fast food to both health and environment, as well as the importance of eating together. ( New Zealand Trade and Enterprise, 2008.)

➤ **Fast fashion consuming to slow fashion consuming**

People are more inclined to consume ethically-sources, organic and fair-trade fabric products and steering away from cheap and disposable items. Fashions are taking more consideration having environmental and social responsible elements. ( New Zealand Trade and Enterprise, 2008.)

➤ **Trash abandoning to trash re-using**

Re-using, re-selling, donating and recycling are the four aspects of this trend. EBay launched in 2009 ' green team ' and ' world of good ' web-sites with the objective to facilitate green selling and buying. (Fleischer, 2009). This might give rise to an inclination for other specifically designed platforms that change people's consuming habits.

➤ **Offline communication to on-line communication**

The development of ICT (Information and communication technologies) is resulting the expansion of digital market. Especially the growing usage of Web 2.0 technologies (eg, Blogging) social network sites (eg, Facebook, Twitter) facilitates people ' s online communication and information searching. (Sharp, 1983).This means not only it will be easier for people to know the world situation, but also it will be increasingly important for businesses to match their behaviors and their brand images.

### **3.4 Summary**

From the sustainability trends above, we found that the superstructure regarding sustainability is in the progress of development and that contributes to a changing mode of thinking and behaving from both the perspectives of individuals and organizations. In the next chapter, we take a focus on the sustainability related policies nowadays and expect to provide a general picture of its institutional context.

## **Chapter 4 Political Initiatives on Sustainability**

### **Trends**

#### **4.1 Overview**

Since the first time that the World Commission on Environment and Development in 1987 brought up “*Sustainability*”, Institutional initiatives have been progressing through a series of steps to support sustainable development. And the political impact on sustainability has become stronger during the past two decades.

Considering our research area is related to the main market of Thule’s, in this chapter, the study of sustainability trends in political domain focuses on only European Union and the USA. And both general policies related to sustainability, and specially, sustainable transportation policies have been studied.

#### **4.2 General Policies Related to Sustainability**

##### **4.2.1 EU**

The concept of sustainability was substantially elevated on the political agenda during the 1990s in Europe. Policies in national and regional level have been launched gradually. And in practice, the EU has taken the lead in the fight against climate change and the promotion of a low-carbon economy. However, unsustainable trends in relation to energy use, threats to public health, poverty and social exclusion, demographic pressure and ageing, natural resources and biodiversity loss, land use and transport still persist and new challenges are arising. (Banister, Pucher, & M, 2008)

First EU Sustainable Development Strategy (SDS) was adopted by the European Council in Gothenburg in the year 2001. According to the deeper comprehension, it promotes a dynamic economy with full employment and a high level of education, health protection, social and territorial cohesion and environmental protection in a peaceful and secure world, respecting cultural diversity. (Banister, Pucher, & M, 2008). In 2006, the European Council adopted a more ambitious renewed SDS, which builds on the Gothenburg strategy of 2001.

The latest version of SDS was provided by June 2009 in response to the request of European Council. The objective of sustainable development has been mainstreamed

into a broad range of policies, such as (Environment, 2009):

- Climate change and clean energy
- Sustainable transport
- Sustainable consumption & production
- Conservation and management of natural resources
- Public Health
- Social inclusion, demography and migration
- Global poverty and sustainable development challenges

The concepts of knowledge-based and resource-efficient economy were highlighted during recent years. For example, the EU deploys Structural Funds to support the Member States to foster a low-carbon and resource-efficient economy. Corporate social responsibility has been attached great importance, which is a measure for enterprises to combine economic, social and environmental goals. The use of shadow carbon prices to reflect the social cost of greenhouse gas emissions is becoming more and more common. External policies, for instance, through Sustainability Impact Assessments carried out in the context of the preparation of Free Trade Agreements and work on climate change (European Commission, 2009).

#### **4.2.2 US**

For the US, policies related to sustainable issues are not as integrated as they are in the EU. Nevertheless, the strategies and actions have been made by some main actors dealing with sustainability.

##### **U.S. Environmental Protection Agency**

U.S. Environmental Protection Agency (EPA), as the national wide environmental protection organization, aims to make sustainability the next level of environmental protection by drawing on advances in science and technology, applying government regulations and policies to protect public health and welfare, and promoting green business practices. (Banister, Pucher, & M, 2008) Sustainability Programs of EPA's Office include: Urban Sustainability and the Built Environment, Water and Ecosystem Services, Energy, Biofuels and Climate Change, Material Management and Human Health.

##### **Department of Sustainable Development**

The Department of Sustainable Development (DSD) supports OAS member States in the design and implementation of policies, programs and projects oriented to integrate environmental priorities with poverty alleviation, and socio-economic development goals. (European Commission, 2009) DSD supports the execution of multiple-country



projects in such diverse areas as integrated, renewable energy, land-titling, natural Hazards-climate change adaptation, biological diversity and environmental law and policy. (European Commission, 2009)

### **U.S. Business Council for Sustainable Development**

Established in 2002, the US BCSD is a regional partner of the World Business Council for Sustainable Development, a global network of 200 international companies with members from 35 countries and 20 major industrial sectors. (Stead, 2008). It encourages and helps companies to gain the benefits from sustainable development that is, generating economic returns while improving the environment and society.

### **U.S. Institute on the Environment**

The mission of the Institute of the Environment is to generate knowledge and provide solutions for regional and global environmental problems, and to educate the next generation, particularly, graduate students, of professional leadership committed to the health of the planet. (National Automobile Dealers, 2010).

## **4.3 Sustainable transportation policies**

According to Thule's business field, transportation policies have the most impact on Thule. Therefore, in this paper, transportation policies are studied more in detail as a representative of emerging institutional initiatives.

Transportation consists of 20% of the total greenhouse gas emission. In recent years, EU and the US have attached greater importance on sustainability in the transport system.

### **4.3.1 EU**

Within European Union, there is a strong imperative to take action to achieve both economic and environmental goals. The 8% GHG reduction targets set by the Kyoto Protocol was launched in EU, and it has been legally binding on EU Member States since April 2004. [1] In line with the EU strategy on CO<sub>2</sub> emissions from light duty vehicles, the average new car fleet should achieve CO<sub>2</sub> emissions of 140g/km (2008/09) and 120g/km (2012) (European Commission, 2010).

A number of transport policy changes have taken place in Europe since the beginning of the 1990s. A shift away from the traditional "predict-and-provide" approach to transport and infrastructure policy and a move toward a demand-management approach (Stead, 2008). Those pull measures are generally perceived to be more

effective than push measures.

Not only standards on reducing CO<sub>2</sub> emission were set by national and regional regulations, but also EU has made great effort to modernize the EU framework for public passenger transport services to encourage better efficiency and performance. For instance, urban planning and infrastructure changes are effective measures have been taken place in many European cities, to encourage public transportation.

However, official documents set out a number measures to help to protect the environment, such as emissions standards and technology, but did not introduce any measures aimed at reducing the volume of transport (Stead, 2008).

### **4.3.2 US**

Various sustainable transport policies are more likely to be accepted in the EU, but it is certain that most of them will be less acceptable in the US. The broad aim of a sustainable transport strategy in mobility terms is to allow the output from transport to be maintained or increased, but at the same time to reduce the energy inputs, particularly in terms of the use of non-renewable resources (Banister, Pucher, & M, 2008). This would mean a reduction in emissions, including CO<sub>2</sub>, improvements in air quality, and the use of alternative fuels, to achieve both transport output and energy input to diminish over time.

#### **Pay more attention on public transport**

During the 1970's, the US governments at every level have implemented a wide range of policies to reduce the negative environmental effect of transport, mainly focusing on vehicle technology or increased funding for public transport, walking and cycling. Until now, nonetheless, no level of government in the US has tried to promote the environmental sustainability of the transport system by restricting car use or increasing its price.

Public transport was greatly reinforced by the highly innovative transport laws passed in 1991 (Intermodal Surface Transportation Efficiency Act – US Department of Transportation, 2004a) and 1998 (Transportation Equity Act for the 21st Century – US Department of Transportation, 2004b). (Banister, Pucher, & M, 2008) Similarly, federal funding for public transport rose from approximate \$3 billion in 1990 to \$8 billion in 2003. TEA21 introduced more balance in the tax treatment of free employee parking that had long encouraged car use (Banister, Pucher, & M, 2008). On the other hand, light trucks increased their share of new personal vehicles to 50.4% by the end of 2004.

#### **SmartWay program launched by U.S. Environmental Protection Agency**

U.S. Environmental Protection Agency (EPA)'s SmartWay program is to cars and trucks what Energy Star is to buildings and appliances. All vehicles manufactured from "MY2000" are listed in EPA's Green Vehicle Guide and receive two environmental performance scores: one on air pollution and the other on greenhouse gases (Stead, 2008).

To date, nine manufacturers have signed licensing agreements to use the "U.S. EPA certified SmartWay" logo to promote their certified vehicles, namely Chrysler, Ford, GM, Hyundai, Kia, Mazda, Nissan, Smart and Subaru. These dealers who sell SmartWay vehicles can get promotional materials from EPA free of charge.

Sales facts and figures could be found in appendix NADA DATA 2008, a comprehensive annual analysis compiled by NADA. There are some remarkable points in the data.

Registrations for new hybrid vehicles surged in 2007, in total 350,289 — up 38 percent from the year before. Especially, the Toyota Prius hybrid is the ninth-best-selling car in the United States. Total sales of hybrid cars fell in May 2008, with a 28 percent decline from May 2007. The reason was temporary supply constraints, says Toyota. Hybrid cars recorded a 9 percent gain for the first five months of 2009 compared with the same period of 2008. But hybrid trucks declined mostly because of supply issues and domestic models' redesign. The only imported-brand hybrid trucks, made by Toyota, were up 6 percent.

At mean time, the small car segment rose more than 11 percent. Honda Fit sales were up 64 percent; Toyota Yaris, 50 percent; and Scion Xb, 59 percent. Suzuki SX4 sales surged 144 percent. Sales of Ford Focus rose 36 percent and Chevy Cobalt, 18 percent. The midsize car segment sales remained unchanged from 2007. But domestic midsize cars — Chevy Malibu, Pontiac G6, and Saturn Aura — saw increases greater than 20 percent, compared with the same period in '07 (National Automobile Dealers, 2010)

There is a trend that people considering more to buy 'smart' vehicles according to the sales data, by referring to Green Vehicle Guide, which provides air pollution scores and greenhouse gas scores for all vehicles.

## **4.4 Summary**

Both the EU and the US highlighted using more public transportation as one of the most effective solutions to achieve sustainability in transportation. Urban planning is a more and more acceptable approach in many European cities, for the reason to fit public transportation. However, there are considerable differences between the approaches to sustainable transport adopted by the EU and the USA.

Even though the US took the initiative on air quality control in the 1960s and 1970s

with increasingly strict emissions standards for new vehicles, action has not been taken place on reducing CO<sub>2</sub>, the major contributor to greenhouse gas emissions. The EU has more strict standards on greenhouse gas emissions on national and regional level. In addition, the tendency to purchase energy efficient vehicles could be seen in both EU and the US.

General sustainable policies in EU and US cover a broad range of domains, and better accepted than any other nations and regions, which covers climate change, natural resources, renewable energy, health care, urban sustainability, material management, and green business, etc. The EU also pays attention on migration and global poverty on an international level.

On the other hand, new challenges to sustainable development are emerging, including energy security, adaptation to climate change, food security, land use, sustainability of public finances and the external dimension of sustainable development. Though considerable efforts for sustainable development have been made in major policy areas, they still need to intensify its efforts; moreover, the coordination and linkage between the strategies and their follow-up could be improved.

## **Chapter 5 Sustainability in business**

### **5.1 Overview**

In this chapter we aim to provide pictures on how sustainability is currently carried out in the business world, from both a macro perspective and a micro one.

From the macro perspective, we present firstly in general what kind of role companies are playing nowadays regarding sustainability development and secondly, what companies' attitudes are toward sustainability. From the micro perspective, we examine how a company's internal status quo decides its process of going sustainable as well as the special factors affecting a company's sustainability development including its supply chain, consumer group and employee engagement. The facts that we used are coming from collecting, selecting and analysing the survey results from existing sustainability reports on the relevant topics.

Additionally, we look at specific strategies companies take toward sustainability through concrete examples. Examples presented here are chosen based on the extent to which they are successful and applicable to Thule AB from our perception.

### **5.2 Collected survey results analysis**

So as to examine the current situation of how sustainability is handled in the business world, we collected surveys conducted by consulting firms including McKinsey & Company consulting, BCG consulting, PWC consulting from the perspective of the general attitudes toward sustainability and the corresponding reactions, and besides, how companies do regarding product life cycle and supply chain, real estate choosing and consumer communication. Survey results from PRTM, Jones Lang LaSalle and Grail contribute for these topics. Other surveys include those conducted by MIT Slone Journal, GlobalScan, Forbes and Fishman Hillard, etc. However, in the following section we just discussed a part of the results we have to deliver what we consider mostly relevant to Thule. We do not present similar informations from different sources.

Key findings which we consider mostly valuable for Thule are stated in the following section.

Firstly is the role companies nowadays is playing on the state of sustainability in

general. Findings from the inaugural annual Sustainability Survey by GlobeScan and SustainAbility (Globescan, 2009) show that many leaders all around the world think that corporate leadership on sustainability are far behind that of NGOs and social entrepreneurs. Compared to governments, they are only slightly better regarding developing sustainability agendas.

In the same report, it has also been shown that the experts recognized mostly a new generation of corporate leaders which is starting to emerge, represented by Interface, GE, Toyota, and Wal-mart.

A credible public commitment to sustainability which is grounded in the company's core values is regarded as a key factor behind the leaders' decision makings regarding sustainability. The experts also viewed a company's products, services or policies as important signs of sustainability leadership. It has been stated that a company's ability to communicate a strong commitment to sustainability is resonating the most. This is telling companies that so as to integrate sustainability as a core value, sustainable products and services should be followed through.

McKinsey global survey (McKinsey, 2010) suggested that actually most companies are not actively managing sustainability, even though executives think doing so is important to a number of corporate activities. However, those that do are reaping benefits for both themselves and society. In the survey, more than 50% of respondents considered sustainability to be "very" or "extremely" important in areas including new product developing, reputation building as well as overall corporate strategy.

PWC sustainability survey report (PriceWaterHouse Coopers, 2002) explored in depth the reason for companies to move toward sustainability and further, how they understand, identify and assess sustainability risk, implement sustainability program as well as report sustainable performance. The most noticed finding is the five sustainability stages including pre-compliance, compliance, beyond compliance, integrated strategy, purpose and passion. Specifically, each stages are characterized as below.

- *Stage 1:* The company feels no necessity beyond profits. It works on cutting corners and trying not to get caught when breaking the law or using exploitative practices that actually cheat the system. It ignores sustainability and fights against related regulations.
- *Stage 2:* The business manages its liabilities by obeying the related laws and related regulations. It responds to what it has to do legally and does it well. Sustainability activities are mostly treated as costs.

- *Stage 3:* The company is moving from defense to offense. It realizes that it can save expenses by increasing operational eco-efficiencies, cleaner processes, and better waste management. It recognizes the relationship between going sustainable and minimizing uncertainty, enhancing its reputation and maximizing shareholder value. But sustainability initiatives are just limited in some specialized departments.
- *Stage 4:* The company transforms itself to go sustainable. It brands itself in a new way which delivers its commitment to sustainability and it integrates sustainability with its key business strategies. It benefits by adding value to all stakeholders. In this stage the company produces clean products and sets up related rules.
- *Stage 5:* The company is driven by a passionate, values-based commitment to improve the wellbeing of the company, society, and the environment.

PRTM's *Global Supply Chain Trends 2008–2010* survey (PRTM, 2010) has found that most firms agree with the need of taking a greener approach. Many organizations said that "environmental sustainability is a factor in their globalization strategies and a lot of respondents said that they were going green to fulfill customer requirements or increase customer confidence".

Grail's "The Green Revolution" report (GRAIL Research, 2009) provides unique insights to help companies improve their Communication strategy and effectively influence the shopping behavior of green consumers with the following key findings. Firstly, green is here to stay according to the fact that green products are in general welcomed by consumers despite their relatively high price. Secondly, green consumers are more diverse than many companies believe. More findings are about purchase drivers, companies' green initiatives and if they've been effectively communicated as well as the impact on green of recession.

BrighterPlanet (Brighter Planet, 2010) study the companies's sustainable strategies from the perspective of employee engagement. The report 's findings suggested that though many office are actively promoting recycling and they encourage energy efficiency, few considered the sustainability initiatives internally started by the management effective. It also has found that a system for employees to share ideas and best practices helps the initiative to succeed but a specially set sustainability figurehead leading the initiative has surprisingly functioned worse than management or the board. Moreover, smaller companies' employees show higher impression on their sustainability initiative success.

## 5.3 Examples on business sustainability strategies

So as to show what specific strategies companies can follow so as to be sustainable, we present the following example company strategies regarding sustainability. The strategies are mostly focusing on how companies are dealing with product life cycle, greening supply chain and going green distance for the reason that Thule is a consumer product manufacturer, for which these stages are important points where operations can be undertaken for the sustainability objectives.

As well these areas are where the company successful sustainable practices that we found are existing. Choices of examples presented here are made according to the frequency of their appearance on some sustainable rankings and studies. It does not mean that options can only be chosen from the following boxes.

### 5.3.1 Product life cycle

- HP designed a printer which is made of 83% recycled plastics and packaged in 100% recyclable materials. The printer also incorporates HP technology that allows the user to combine portions of different web pages all on one page to conserve paper when printing from the Internet. (PRTM, 2010)
- Nokia is focusing on developing energy efficiency to their customers, by producing chargers and alarm settings which lead the consumers to lower the energy consumption. (NOKIA Corp., 2007)
- Cadbury introduced Easter “eco-eggs”. It was a part of a program with the aim to cut the company’s carbon emissions 50% by 2020. These sweets are far greener than traditional Cadbury eggs in the sense that they are individually wrapped in foil. Cadbury expects this innovation to reduce its use of plastic by more than 75% and cardboard by 65%. (PRTM, 2010)
- IKEA has the conception of designing furniture that is compact, modular, and lightweight, which is an approach to greatly reduce fuel requirements. (PRTM, 2010)
- Swedish industrial manufacturer *Alfa-Laval* has accomplished to have a market position, by selling environmental products that have strong energy saving features. Between its portfolios, there is a large selection of energy saving products, like *cooling systems for supermarkets refrigeration*. (Alfa-Laval, 2009)
- *Toyota* has also identified ways to reduce their economic impact by applying energy efficiency in their products. The classic example is the popular automobile



Toyota Prius, which has the Hybrid system that reduces CO<sub>2</sub> emissions by combining power sources including “*gasoline engines, diesel engines and fuel cells*” (Toyota, 2009). This is considered a energy reduction as well, because it aims to reduce fossil energy, which can also be considered as a carbon footprint reduction.

### 5.3.2 Supply chain

- Coca Cola has developed an water efficiency strategy based on three steps: “*reduce water use ratio (efficiency) while growing the unit case volume; recycle the water used in operations (wastewater treatment); and replenish the water used through community water access and watershed restoration and protection*” (Coca Cola, 2009)
- Pepsico ' s Gatorade production and bottling facilities were in the past geographically separated. This required additional transport time, fuel usage, and management attention. However, the division has significantly cut costs, improved efficiencies, and reduced its negative environmental impact after putting the two operations in adjacent facilities. (PRTM, 2010)

### 5.3.3 Going green distance

- Coca-cola take into consideration its current global environmental impacts in the areas including production, bottling, distribution, and consumption. Besides identifying the usual suspects like the water needed for the bottling process and the fuel needed to transport the bottled drinks, it also noticed that energy demands of the millions of vending machines around the world and the leaks of refrigerant from those machines accounts for the the biggest source of environmental damage. Coke is now working on improving the efficiency of their refrigeration and reducing damaging refrigerants to significantly reduce both carbon emissions and energy costs. (PRTM, 2010)

## 5.4 Summary

From the study above, we found that though sustainability is not actively carried out in a general sense in the business world, some leading companies play active roles through different strategies corresponding to their respective characteristics. The process of going sustainable is not only affected by a specific business ' s external environment, but also its internal situation which decides how motivated it is toward sustainability and in what way it is motivated.

## Chapter 6 Sustainability strategies

### 6.1 Overview

From our findings we categorize the objectives of sustainability trends as carbon footprint reducing, water footprint reducing, ecological footprint reducing and embedded sustainability. So as to achieve these objectives we put the relevant strategies we find Thule can consider into the two boxes called hardware control and software control.

When discussing the possible effects of these strategies to Thule, we use the triple bottom line abbreviated as TBL, known as “people, planet, profit” or the “three pillars”. (Geothe-institut, 2008). This concept measures an organization’s success from all the three perspective of economic, ecological and social. These three pillars account for the different dimensions of the goal of sustainability. They are described briefly bellow.

- **"People** (human capital) pertains to fair and beneficial business practices toward labour and the community and region in which a corporation conducts its business. A TBL company conceives a reciprocal social structure in which the well-being of corporate, labour and other stakeholder interests are interdependent."(Geothe-institut, 2008)
- **"Planet"** (natural capital) refers to sustainable environmental practices. A TBL company endeavors to benefit the natural order as much as possible or at the least do no harm and curtail environmental impact."(Geothe-institut, 2008)
- **"Profit"** is the economic value created by the organization after deducting the cost of all inputs, including the cost of the capital tied up. It therefore differs from traditional accounting definitions of profit."(Geothe-institut, 2008)

The interactions of these three aspects are illustrated in figure 6.1.

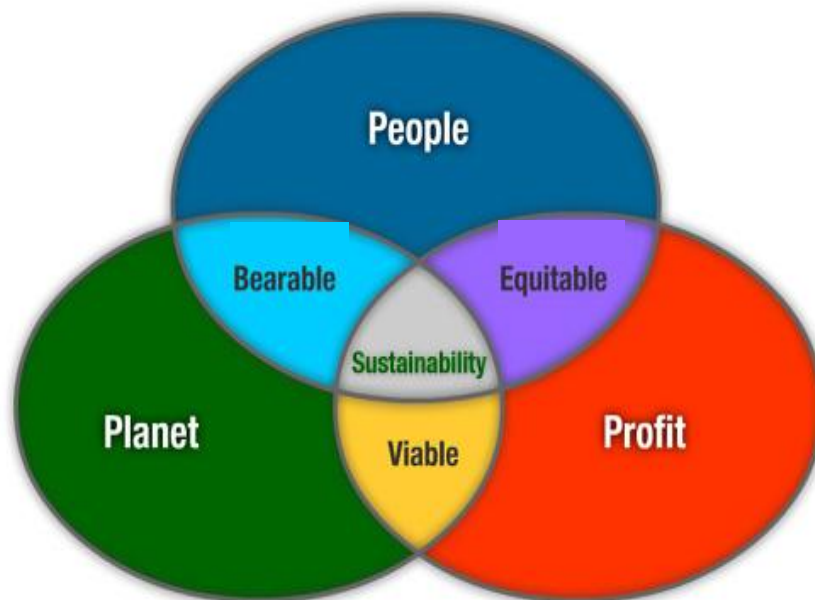


Figure 6.1 Tripple Bottom Line Scheme

Regarding the micro context of Thule, we firstly suggest a continuous observation both externally and internally regarding sustainability. Since for a specific organization it is worthy to understand where it's placing itself both vertically and horizontally. More specifically, what are the limitations as well as special opportunities derived from its field (the industry for the case of Thule) or related field and in which stage of going sustainable it is come as the first two questions to answer when the organization is trying to take actions regarding sustainability. This can decide the range and priorities of its chosen strategies and change over time. All of these make it in-proper to make decisions just according to one snapshot, which is however, what we have done.

The strategies we present here are partially based on what we get from the interviews.

## 6.2 Hardware control

In this box we refer to strategies and decisions the company can made regarding its product life cycle, supply chain and space planning. We provide some suggestions under each title below.

### 6.2.1 Product life cycle

Product life cycle here involves all the production chain process. We identify what practices can be include towards a sustainable development listed by specific product

life cycle phases.

➤ Product concept

An innovative and successful product concept can place the company's position in the sustainability stage and guide the product design.

➤ Product design

During the product design phase, specific decisions including material choosing and cost setting can take sustainable considerations. For example, one focus can be put on involving as much green material and lowering the cost concurrently. On another hand, to use less harmful material can be also a point to work on. Designing packages can also be an aspect to work on. Both using green material and simplifying packages may be solutions.

➤ Recycling

Recycled material can be also taken into consideration when designing products and packages. Sold products can be recycled if they can be used for further production.

How they are interacting with the triple bottom line is illustrated in table 6.1.

	Planet	Profit	People
Product conception	X	X	
Product design	X	X	
Recycling	X	X	X

Table 6.1 Life Cycle phases and Triple bottom Line

## 6.2.2 Supply chain

The supply chain is a complex, dynamic network that includes suppliers, manufactures, warehouses, retailers, and customers. It is a structural mode of function net that encircles a core enterprise, through the control of information flows, material flows and cash flows, begins with purchases of raw materials, makes semi-products and finished products, sends the products to consumers through the sale network finally, and integrates the suppliers, manufacturers, retail dealers and retailers until the final users together. In this section we include the practices on a supply chain that we think can contribute to sustainability. We however, discuss the marketing part later in the software control section.

➤ Sourcing.

A set of rules can be established to assess suppliers regarding sustainability. For instance, in what sense and to what extent a specific supplier has a green mindset.

➤ Manufacturing.

The manufacturing process involves both energy and water consumption. Efforts can be put on strategically recycling water and saving energy by developing related technologies.

➤ Logistics.

Since transportation is accounting for a large part of carbon emissions, strategies regarding carbon footprint can be considered in this specific stage. For instance, locations of factories can set close to raw material suppliers and warehouses. Moreover, cheap and clean transportation tools, like light trucks with bio-fuel engines, can be chosen.

How they are interacting with the triple bottom line is illustrated in table 6.2.

	Planet	Profit	People
Sourcing	X		
Manufacturing	X	X	
Logistics	X	X	

Table 6.2 Supply Chain practices and Triple bottom Line

### 6.2.3 Space planning

From our study above, we perceive that due to the growing scarcity of land space, it is more costly to use it. We discuss alternative strategies related to this aspect below.

➤ Location choosing

So as to efficiently use space, strategies can be taken regarding place choosing of offices, stores, factories and warehouses. One of the aspects can be making as much as possible shared resource. For example, building one warehouse that can be shared by an amount of stores instead of building several for them.

➤ Interior design

Interior design can be another aspect to take into account. In a specific office, space usage can be different depending on different focuses with the interior design.

How they are interacting with the triple bottom line is illustrated in table 6.3.

	Planet	Profit	People
Location choosing	X	X	
Interior design	X	X	

Table 6.3 Space planning and Triple bottom Line

## 6.3 Software control

In this box we refer to strategies and decisions the company can made regarding its management control, green product marketing and sales and long term strategy. We provide some suggestions under each title below.

### 6.3.1 Management control

In this section we discuss how company can facilitate employee engagement regarding sustainability development.

➤ Matrix.

Related matrix can be made to assess the energy saving and water saving. This can be applied to factories as well as operating offices, with the coverage from the manufacturing process to employees' daily work. Other things like paper usage and disposable tableware usage can also be included.

➤ Internal communication

So as to get employees involved to a higher extent, efforts can be made to facilitate communication between them. This can be specifically realized by improving the knowledge management system in the company and making use of social net work sites like Facebook and Twitter.

➤ Information spreading

Information spreading is another aspect that can promote employees' engagement. This is more referring to delivering sustainability related knowledge to employees systematically, which can be realized by, for example, newsletters and organized seminars.

How they are interacting with the triple bottom line is illustrated in table 6.4.

	Planet	Profit	People
Matrix	X		X
Internal communication	X		X
Information spreading	X		X

Table 6.4 Management control and Triple bottom Line

### 6.3.2 Green product marketing and sales

In this section, we discuss three company actions that affect consumer behaviors toward green product purchase.

➤ Pricing

Since price is a critical factor deciding consumers' shopping behaviors regarding green products, delivering as much value as possible to them when holding a competitive price level at the same time is important. Efforts can be made on transferring as little as possible cost to consumers.

➤ Consumer group identification

Since more people are realizing the importance of going sustainability, during the marketing process of a specific green product, attention can also be paid to exploring new group of consumers than those derived from common sense, while at the same time the company keeps the consumer group that they already have.

➤ External communication

If consumers will purchase a specific green product is also relating to the extent to which they understand the point of the product regarding sustainability. In this sense, efforts can be made on delivering how the product is benefiting the environment, society as well as the consumers themselves. For instance, how much energy is saved through using a product. Especially in many cases, saved energy also means saved money.

How they are interacting with the triple bottom line is illustrated in table 6.5.

	Planet	Profit	People
Pricing		X	X
Consumer group identification		X	X
External communication		X	X

Table 6.5 Green product marketing and Triple bottom Line

### 6.3.3 Long term strategy and corporate social responsibility

Long term strategies are applicable during later stages of sustainability development, which are discussed in chapter 5, which means integrating going sustainable with lasting and growing the company's operation profits. When developing long term sustainability strategies, the company can focus more on long term profits.

➤ Corporate social responsibility

Realizing corporate social responsibility can be a part of the company's marketing and brand building. For instance, the company can build cooperating relationships with communities that already hold a reputation regarding sustainability. Examples include Fair trade and Greenpeace. Building such a relationship for a specific product might also give rise to a chain effects on the company's other products.

How they are interacting with the triple bottom line is illustrated in table 6.6.

	Planet	Profit	People
Corporate social responsibility	X	X	X

Table 6.6 CSR and Triple bottom Line

## 6.4 Summary

In this chapter we discussed from what perspectives a company like Thule can practice toward sustainability. For each aspect we provide example strategies that Thule can take into consideration. Further, we illustrate which dimensions of the triple bottom line of sustainability they are directly interacting with in tables from our perceptions. However, each of these aspects can be directly or indirectly relating to environmental, economical and social dimensions of an organization's achieving sustainability.



## **Chapter 7 Conclusion and prospects**

In this paper we aim at providing how an international consumer product company like Thule can take actions according to the sustainable trends nowadays. We integrated the research methods of both literature review and 7 semi-structured interviews to collect data for this research. After getting five categories of sustainable trends regarding carbon footprint, water footprint, energy saving, ecological footprint and embedded sustainability, we studied how sustainability is carried out in policies and businesses in general. Based on these results we derived sustainability strategies that Thule can consider when going sustainable, and discussed whether or not these different aspects of strategies can affect the three pillars of planet, profit and planet, which have been used to assess an organization's success regarding sustainability by the triple bottom line theory.

Throughout the research we found that the increasingly mature institutional context is giving rise to a lot of sustainability trends, and the construction of this context is prospered by not only the growing public awareness of the fact that both natural resource and energy are getting scarce, but also resulted more new business areas and activities calling for corresponding rules and standards to regulate the market. For a company there can be space for sustainability development with its different operation phases ranging from product manufacturing to employee communication management.

However, we did not discuss in which stage Thule is regarding sustainability development due to a lack of related information. According to our research, different focus should be put depending on this and further research can be done in this direction so as to provide more specific and oriented strategies for Thule. Another limitation of our research is that when identifying the sustainability trends, we made forecasts to a large extent based on the related regulations that are still under construction. Changes may happen and that makes it necessary for those who consider our results pay attention to them in both the near and far future.

## References

1. Geothe-institut. (2008, 03). *Sustainability-From principle to practice*,. Retrieved 05 19, 2010, from <http://www.goethe.de/ges/umw/dos/nac/den/en3106180.htm>
2. New Zealand Trade and Enterprise. (2008.). *Global health of life and sustainability*. New Zealand : New Zealand Trade and Enterprise.
3. Alfa-Laval. (2009). *Sustainability Report 2009*. Lund, Sweden: Alfa-Laval.
4. Banister, D., Pucher, J., & M, L.-G. (2008). Making sustainable transport politically and publicly acceptable: lessons from the EU, USA and Canada. *Institutions and Sustainable Transport: Regulatory Reform in Advanced Economies* , 17-50.
5. Bell, E. &-.7. (1982). *Field Research: A Source Book and Filed Manual*. London: Allen and Unwin.
6. Brighter Planet. (2010, 02). *EMPLOYEE ENGAGEMENT SURVEY. An Analysis of the Extent and Nature of Employee Sustainability Programs*. Retrieved 05 20, 2010, from [http://attachments.brighterplanet.com/press\\_items/local\\_copies/55/original/employee\\_engagement\\_2009.pdf?1265816076](http://attachments.brighterplanet.com/press_items/local_copies/55/original/employee_engagement_2009.pdf?1265816076)
7. Carbon Market Outlook. (2010). Landfill Methane Outreach Program Annual Conference. . *Carbon Market Outlook* .
8. Clean group-Heslin Rothenberg Farley & Mesiti P.C. (2010). *Clean energy patent growth index*. Clean group-Heslin Rothenberg Farley & Mesiti P.C.
9. Climate Change, c. (2010). *Strategy "Water footprint" enters corporate vocabulary*. Retrieved 05 20, 2010, from <http://www.climatechange.org/content.asp?ContentID=5957>
10. CNET news. (2009, 07 16). *Wal-Mart to label products with eco ratings*. Retrieved 05 20, 2010, from CNET news: [http://news.cnet.com/8301-11128\\_3-10288186-54.html](http://news.cnet.com/8301-11128_3-10288186-54.html)
11. Cola, C. (2009). *Coca Cola Sustainability Report*. Atlanta, Georgia: Coca Cola.
12. CONE. (2009). *Consumer environmental survey 2009*. Boston: CONE.
13. Daly, H., & Cobb, J. (1989). *or the common good redirecting the economy toward community, the environment, and a sustainable future*. Boston: Beacon Press.
14. Earth., F. o. (2007). *Landfill allowance trading scheme*. London: Friends of Earth.
15. Environmental Leader. (2009, 03 03). Retrieved 05 20, 2010, from <http://www.environmentalleader.com/2009/03/03/carbon-footprint-awareness-growing-slowly/>
16. EPA. (2010, 04 09). *EPA (Environmental Protection Agency)*. Retrieved 05 05, 2010, from

- <http://www.epa.gov/Sustainability/basicinfo.htm#sustainability>
17. EU, E. P. (2007). *CARBON FOOTPRINT - what it is and how to measure it*. Ispra, Italy: European Union.
  18. Fibre 2 Fashion. (2010). *Fibre 2 Fashion*. Retrieved 05 14, 2010, from Fibre 2 Fashion: [http://www.fibre2fashion.com/news/textiles-environmental-policy-news/newsdetails.aspx?news\\_id=855](http://www.fibre2fashion.com/news/textiles-environmental-policy-news/newsdetails.aspx?news_id=855)
  19. Fleischer, D. (2009). *Green teams: Engaging Employees in Sustainability*. Green impact.
  20. Foundation, N. E. (2010). *Happy Planet Index*. London: New Economic Foundation.
  21. Globescan. (2009, 07). *Companies and Governments Lag NGOs in Driving Sustainability but New Corporate Leaders Emerging, According to Experts*. Retrieved 05 19, 2010, from [http://www.globescan.com/news\\_archives/tss\\_release01/](http://www.globescan.com/news_archives/tss_release01/)
  22. GRAIL Research. (2009). *The Green Revolution*. Retrieved 05 19, 2010, from The Green Revolution: [http://www.grailresearch.com/pdf/ContentPodsPdf/The\\_Green\\_Revolution.pdf](http://www.grailresearch.com/pdf/ContentPodsPdf/The_Green_Revolution.pdf)
  23. Guba, E. G. & Lincoln, Y.S. (1994). Competing Paradigms in Qualitative Research. In E. G. Guba, *Handbook of Qualitative Research*. London: Sage.
  24. Hoekstra H, A. (2009). *Water Footprint Manual*. Enschede: Water Footprint Network.
  25. IKEA . (2009). Retrieved 05 26, 2010, from IKEA: [http://www.ikea.com/ms/en\\_GB/about\\_ikea/our\\_responsibility/index.html](http://www.ikea.com/ms/en_GB/about_ikea/our_responsibility/index.html)
  26. International Energy Agency. ( 2009). *The impact of the financial and economic crisis on global energy investment*. International Energy Agency.
  27. IUCN/UNEP/WWF. (1991). *Caring for the earth: a strategy for sustainable living*. London: Earthscan Publications.
  28. Kågeson, P. (2005). Reducing CO2 Emissions from New Cars.
  29. Kirk, J. &. (1986). *Reliability and Validity in Qualitative Research*. Newbury Park: Sage.
  30. Lawn, P. A. (2003). *A theoretical foundation to support the Index of Sustainable Economic Welfare (ISEW), Genuine Progress Indicator (GPI), and other related indexes*. Adelaide: School of Economics, Flinders University of South Australia.
  31. McCaine, A. (2008). *Industrial Energy Efficiency As Standard Practice*. Berkeley.
  32. McKinsey. (2010). *How companies manage sustainability*. Boston: McKinsey Global Survey.
  33. McKinsey Quarterly. (2008). *How the world should invest in energy efficiency*. Boston: McKinsey Quarterly.
  34. Morgan Stanley. (2007). *Green Market Penetration forecast 2007*. Morgan Stanley.
  35. National Automobile Dealers, A. (2010, 05 01). *NADA.org*. Retrieved 05 01, 2010, from NADA.org: <http://www.nada.org/Publications/NADADATA/2008/>
  36. Nations, U. (2010, 05 03). *Commission on Sustainable Development*. Retrieved 09 11, 2010, from Commission on Sustainable Development: [http://www.un.org/esa/dsd/resources/res\\_pdfs/csd-18/csd18\\_2010\\_bp4.pdf](http://www.un.org/esa/dsd/resources/res_pdfs/csd-18/csd18_2010_bp4.pdf)
  37. Nations, U. (2010, 05 03). *UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS*. Retrieved 05 05, 2010, from

- [http://www.un.org/esa/dsd/resources/res\\_pdfs/csd-18/csd18\\_2010\\_bp4.pdf](http://www.un.org/esa/dsd/resources/res_pdfs/csd-18/csd18_2010_bp4.pdf)
38. Nature, I. U. (2006). *The Future of Sustainability. Re-thinking Environment and Development in the Twenty-first Century*. Gland: IUCN.
  39. New Zealand, T. a. (2008). *Global health of life and sustainability*. New Zealand,: New Zealand, Trade and Enterprise.
  40. NOKIA Corp. (2007). Nokia CR Report 2007. Retrieved 05 28, 2010, from <http://www.nokia.com/corporate-responsibility/cr-report-2007/performance>
  41. Norris, N. (1997). Error, bias and validity in qualitative research, Educational Action Research,. In N. Norris, *Error, bias and validity in qualitative research, Educational Action Research*, (pp. 172-176). Norwich: University of East Anglia.
  42. Patton, M. Q. (1990). *Qualitative evaluation and research methods*. London: Sage.
  43. PriceWaterHouse Coopers. (2002). *13th Annual Global CEO Survey*. PWC.
  44. PRTM. (2010). *Global Supply Chain Trends 2008 - 2010. Driving Global Supply Chain Flexibility through Innovation*. PRTM.
  45. Scheihing, P. (2009, 01). *Energy management standards (EnMS)*. Retrieved 05 20, 2010, from [http://www1.eere.energy.gov/industry/pdfs/webcast\\_2009-0122\\_energy\\_mngmnt\\_stnds.pdf](http://www1.eere.energy.gov/industry/pdfs/webcast_2009-0122_energy_mngmnt_stnds.pdf)
  46. Sharp, H. (1983). *Interaction design: beyond human-computer interaction. 2nd edition*. Lawrence Erlbaum.
  47. Smith, M., Thorpe, R., & P, J. (2008). *Management Research*. London: Sage Publications Ltd.
  48. Stead, D. (2008). Effectiveness and Acceptability of Urban Transport Policies in Europe. *International Journal of Sustainable Transportation* .
  49. THULE AB. (2010). *THULE*. Retrieved 05 15, 2010, from THULE: <http://www.thule.com/en-GB/SE/>
  50. Toyota. (2009). *TMC Sustainability Report*. Tokio, Japan: Toyota.
  51. UN. (n.d.). *UN Documents*. Retrieved 05 06, 2010, from UN Documents: <http://www.un-documents.net/ocf-02.htm>
  52. Wackernagel, M. (1996). *Our Ecological Footprint: reducing human impact on the earth*. Gabriola Island: New Society Publishers.
  53. Waterwise. (2007, 02). *Hidden Waters*. Retrieved 05 20, 2010, from <http://www.waterwise.org.uk/images/site/EmbeddedWater/hidden%20waters,%20waterwise,%20february%202007.pdf>

## Appendix

### Interview 1

**Name: Barry Ness**

**Profile:** Researcher and lecturer at Lund University Centre for Sustainability Studies (LUCSUS). His research area is based in sustainable development as an overall concept, analyzing the development of sustainability science. Over the last 3-4 years he is working in the computer modeling of agricultural systems here in Africa – namely sugar production systems from a life cycle perspective.

**Relevance of the interview:** At the beginning of our research process, we begin to speculate which would be the profile of the researches that we have to interview. We decided that our first interview must be Barry Ness, for two reasons: The first is because in the introduction of the program, Professor Magnus Lagnevik introduced Barry Ness as the *“person who knows more about sustainability in Lund University”*. Thus, in this point of time it was relevant to have this meeting. The second is because he is one of the directors of the sustainable studies division in the university, which give him credibility in his concepts.

At the end, he gave us important insights about sustainability and its trends. His conclusion was that every sustainable practice is related at the end with the use of land. Although at first sight it seems that is not relevant to THULE’s interest, for us is a topic that we did not consider at the beginning, therefore is must be considered in this paper.

**Abstract of the interview:**

-Team: What do you feel about sustainability in general? That’s the main question, what do you think of sustainability nowadays, and the future of sustainability?

-Barry: This will obviously become a topic – area that will become more and more important as we start seeing more continued population growth, more and more of the negative effects not only from carbon releases but also bio-diversity laws, getting to what I have been doing with land use change issues and that kind of thing. So, this will only be something that becomes higher and higher on the radar screen I think – unfortunately.

-Team: What do you think of sustainable materials? Do you see sustainable materials coming into a more prominent role?

-Barry: Yes, but I see a potential conflict as well because my area of research focuses on you could say trade-offs with different production systems or just different systems

in general. So you could be developing more sustainable materials on something that's more bio-based, so you could have a bio-based plastic for example in your boxes. But then you need to look at the potential feedbacks in creating the bio-based products. In this case it might be involve land use that would create the plastic product, the base material for the product itself. Where does that come from?

-Team: What sort of trends do you see on the rise in sustainability?

-Barry: I see we have lots of pressures on land. We see that happening now, lots of pressures on land. And then when you start looking at clearing land area that hasn't been used in the past used for agriculture – intense agriculture production, you're releasing soil carbon, you're releasing different things out of the soil, all that carbon that has been sequestered there over the last thousands of years, hundreds of years, that gets released into the atmosphere, therefore it's exacerbating the climate change, not leading to any kind of improvement.

-Team: Do you think that the companies are aware about the issues?

-Barry: Some of them. Most of them, you could say Swedish companies are particularly good. Some of them don't want to be aware of these kinds of things or just think that the market might solve this or whatever. A whole range or a whole continuum of companies that either bury their heads in the sand and say this isn't important to us all the way to 'yes! We understand the inter-linkages'.

-Team: Do you think the companies are trying to develop sustainable energy developments? Would you say that they are doing related to supply chains? What are some of the things they are doing to improve sustainability in companies?

-Barry: it's a whole range of things that have been happening. There are companies which are quite aware of their production chain and actually aware of where things come from, for example IKEA. These are some kinds of impacts, the sub-suppliers or different suppliers; do we know where they are getting their materials from? Do we know how this kind of stuff is produced, etc.

-Team: Trying to do a full life cycle analysis as a growing trend but not really been embraced yet?

-Barry: it isn't so much as in LCA, it's more of a life cycle sustainability assessment. Its not only life cycle assessment because lifecycle assessment only talks about environmental impacts, so looking at cradle-to-gate perspective, then you're saying OK! how far back to the cradle do we actually go? What social aspects? I mean sustainability doesn't only involve environmental impacts, its got social impacts too. What are the conditions on the ground for these people that are producing the stuff.

-Team: how do you think policies are affecting sustainability practices in a company, especially in the European Union and the United States?

-Barry: it depends on what indicators you are talking about. My expertise is

agricultural policy, and we all know about the common agricultural policy of the EU which you could say when it comes to development outside the EU is something that hinders some kind of sustainable development. I mean these policies have been changing over the last decade and now they have decided to make it more market oriented and that kind of thing but the debate between the WTO and free-trade within the world trade organization versus you could say agricultural policies in both United States and European Union is quite different to what's actually happening. Protectionist policies versus more free trade. So Things are changing slowly but probably not fast enough. If you are looking from a global perspective, things are definitely not changing fast enough.

-Team: what about carbon neutrality? What is your position on that?

-Barry: Once again its something that could be sought after but then first we need to step back and say, are a lot of these products that are trying to be carbon neutral or whatever, do we need the product in the first place?

-Team: Do you see policies supporting this?

-Barry: generally, different policies and that kind of thing slowly starting to support this. ....looking at different types of CSR, corporate social responsibility and those kind of programs and theres a whole range of them as a business.

-Team: another thing we wanted to hit on is embedded water use. Do you see it as a trend that's on the rise?

-Barry: In-fact these other large systems that these things become more and more important as resources decrease.

-Team: So far we have identified 3 or 4 trends, carbon footprints the most obvious one, when they relate sustainability they say we have to correlate to use of cars and emissions and stuff like that, theres water footprint, use of land, do you have any other?

-Barry: I don't know if this will sit with each other but you could do some kind of conceptualizations. I mean bio-diversity laws could be an impact of land use, it could be an impact of climate change, so all these things are connected, these systems or sub-systems, they all interconnect with each other. You cant change one without impacting the other. So are we talking about drivers or state conditions or are we talking about actual impacts.

-Team: we're talking about the actions more. What sort of things are we doing about sustainability or what sort of trends?

-Barry: So the responses? (yeah) so that comes back then to what can we do about it now? Where do you address the problem? you address climate change and that then has some kind of feed over effect to bio-diversity laws, could have a feed over effect to land use. So a lot of these come back to basic drivers of population, human population, there's just too many of us to start with. The second is consumption levels,

we consume too much and its taking the resources. Its forcing us to change land use patterns, create production chains which use fossil fuels which emit carbon. Getting back to basic drivers, where does consumption come from? From our head, our needs to reproduce need to seek happiness. We need that car, that roof rack. It all comes back to how we're wired in our heads to seek happiness.

## **Interview 2**

**Name: Torsten Kraus**

**Profile: PhD student at Lund University Centre for Sustainability Studies (LUCSUS).** He is specialized research area in economics and incentives or payments to protect ecosystems in South America.

**Relevance of the interview:** We interviewed Torsten Kraus at the same time as Barry Ness. His opinion is relevant to this paper because he made interesting statements about water footprint as one of the sustainability trend that we identified in this paper. He was the one who gave us less relevant information.

**Abstract of the interview:**

-Team: what do you feel about sustainability in general? For example some say global warming is a myth.

-Torsten: From a business perspective, I think sustainability has been kidnapped many times as something you have to say and use in order to get new markets, keep customers or just be with the mainstream. There are different dimensions of sustainability. When it comes to sustainability science, you try to look at a certain topic holistically, with open eyes, look at different drivers and outcomes of the problems, where they derive from and how to influence to minimise the negative outcomes.

-Team: how do you think companies are embracing sustainability? What actions are they undertaking in sustainability behaviour?

-Torsten: The ultimate aim of a company is to make a profit, and the company has to sell a product to make a profit – which is not a bad thing, but now companies recognise the fact they should do their production in a certain way to minimise environmental impacts.

-Team: what sort of sustainability trends do you see on the rise?

-Torsten: I think concepts such as water footprint is important in getting people to realise the amount of water in things they consume everyday. They don't see the amount of water associated with a banana or a cup of coffee. CO2 is a very tricky thing, I think the whole concept of CO2 neutrality is totally flawed, there is no such thing as CO2 neutrality. If a company sells some products thats CO2 neutral thats a lie. You can compensate for co2 emissions by planting trees to reducing emissions somewhere else because you invest in a renewable energy project in a place where



there won't be money otherwise.

-Team: taking the policies part, what do you think about the EU and USA's policies about sustainability and what do you think they have to improve?

-Torsten: I don't know what the EPA is doing, and I don't know what the EU is doing very much as well. What I know is that these government organisations are influenced by lobbyist groups a lot as well. They are powerful players, but they alone would not bring out the changes required in time –i mean we all saw what happened in Copenhagen. .

-Team: so companies trying to be carbon neutrality would not be a solution.

-Torsten: not a solution, but a way forward since they are addressing the problem. You can see increasingly that companies are compensating their emissions or label the CO2 footprint.

### **Interview 3**

**Name: Carl Dalhammar**

**Profile: Researcher at the international Institute for Industrial Environmental Economics (IIIEE) at Lund University.** Focus on Environmental laws, environmental government, consumption policies and industrial innovations. He is also lecturer in Sustainable Business Leadership masters program.

**Relevance of the interview:** One of the topics that THULE is seeking to clarify with this project is the regulation and sustainable laws made by governments and different stakeholders nowadays. Carl Dalhammar is one of the researchers who knows best about environmental laws. With his interview, we gained a better approach towards this topic.

In addition, he also mentioned Water footprint and Carbon footprint as possible sustainability trends, which helped us to identify the final proposition.

**Abstract of the interview:**

- Team: do you feel governments are taking the right measures towards a better understanding of sustainability, taking into account your expertise in environmental regulation?

-Carl: First of all, big challenges in sustainability nowadays are consumption and population growth. It is getting more and more difficult to solve problems with only given solutions and by technological innovations, because populations especially in poor countries and willingness to consume outgrows. The improvement that you make and it's very hard to couple resources from growth. How do we tackle these issues? How do we tackle growth? How do we solve those potential ecological problems whether is climate change or destruction eco systems, without having to resort totalitarian approaches like

Chinese policies.

-Team: What would you think it would be the most effective way to achieve sustainability?

-Carl: Awareness is not the best way. Initiate effective policies and better economical instruments will bring technological innovations and will be directed with consumption.

-Team: What are the trends in legal policies?

-Carl: In Europe, the link between growth and development are not very clear. In developing world, economic growth equals economic development. Big race will be in carbon emissions and exports. There are different priorities in each country. In Europe is going to focus less on growth, Climate Water issue is going to be much important come in a few years. Water technology is going to be a determinant factor.

-Team: How do you think the use of embedded water a hit wonder in coming years?

-Carl: Yes, it's going to be a huge issue, most towards Scarcity and providing solutions. Also, that you want to export to developing countries. What are the requirements to do that?

-Team: What can you say about carbon neutrality? Do you see any country achieving carbon neutrality in the next 10-15 years?

-Carl: Why not? You will probably see a country carbon neutral. It makes sense more towards carbon trading than developing environmental infrastructure. So definitely, it can be possible, but more as business rather than being 100% carbon neutral.

-Team: In the same way, have you seen companies trying to be carbon neutral as well?

-Carl: Yes. I saw couple of them. I think in all kind of sectors are seeking to become carbon neutral in any way. Actually, you can see a trend in this topic. Companies with a huge amount of emissions are seeking to achieve this subject.

-Team: So far, you talked about EU regulation, and how different countries in Europe are approach environmental laws. What do you think about US? Do you think EPA is making the proper decisions?

-Carl: no they aren't. US are in big mess now, because they cannot do so much big problems in senate. They can loose market share if they don't keep going. US still have a priviledge position in technological innovation. You can see a lot of US technological companies with the major number of clients outside America. They have a lot of issues, take car of like health care, taxes, immigrations.

-Team: Can you identify trends that are coming in the future about environmental policies?

-Carl: Its going to be interesting with growth and equalities in general. Water is going to become a big issue, because every economic boom involves resource scarcity.

## Interview 4

**Name: Christian Blomqvist**

**Profile: researcher and a PhD student at Lund University School of Engineering (LTH).** His specific area is Swedish energy intensive industry and the possibilities to energy and climate policies, so if they are threatened by energy prices that has gone up by EU ETS, carbon trading, pulp wood, cost increases. Energy efficiency

**Relevance of the interview:** As one of the researches in the Sustainable development engineering, Christian Blomqvist gave us an approach towards sustainable materials and energy efficiency (Another sustainable trend).

-Team: what do you see the trends in upcoming policies? Do you see the policies the policies getting harsher and more difficult to implement (in EU)?

-Christian: EU is dictating a lot of rules for member states to adhere. Policy often comes from EU level down, that's a trend. It influences policy-making in that we have to always implement policies in the name of EU goals – like common market, and not to destroy competition and so on.

-Team: Is EU more relaxed in the environmental policies compared to Sweden?

-Christian: no, I don't think so. I think when it comes to energy efficiency, EU is important for Swedish policymaking and it pushes Sweden forward.

-Team: so basically collaboration is better than enforcement?

-Christian: I think so, yeas. Collaboration between EU, Sweden and industries is important.

-Team: do you see the manufacturing industries moving more towards energy efficiency or are they going for new green materials?

-Christian: I think the companies are trying to improve what they already do. The other option would be more science or research focused and there are probably many research programs trying to improve processes from the beginning. Companies fund these research but in practice in their everyday operations they improve their efficiency.

-Team: What would you say is driving this?

-Christian: Probably cost cutting?

-Team: What do you feel about sustainability – the term?

-Christian: It is a good term, I like it, but it is used by different actors differently so it's hard to really understand. I accept when people say something is sustainable – I nod my head and I think I know what they mean.

-Team: what about carbon neutrality? Maldives wants to be carbon neutral by 2020, Copenhagen by 2025, do you think this would be something that catches on or do you think this would be possible? We did get a view that being carbon neutral is an impossible thing.

-Christian: I think Malmo has a target to be carbon neutral by 2030, I think its good. I know they have this target in energy and environmental strategy, but i don't think that people there really know what it is. For me they can say it, but I don't think it can be done in such a short time without buying CO2 credits or put money into CDM credits. However, you cannot use community tax for projects in other countries so there are obstacles. Carbon neutrality is an ambitious target and I think they have to be careful in defining and explaining what they mean. I think it's inspiring.

-Team: along with energy efficiency we see embedded water use. Do you see this concept cropping up?

-Christian: in Sweden, there is a pretty low interest for water efficiency. Some people might want to be environmentally cautious because of what they learn in school, but I learned in university that water in this country is not an issue. Of course if water is heated, then its energy efficiency and that is important. When you buy a t-shirt, I hear that it takes 20000 litres of water to make a t-shirt, and i think this is important for the companies like H&M to be aware of these things.

## **Interview 5**

**Name: Srinivasan Iyengar**

**Profile:** Associate professor in Materials Engineering of Lund University School of Engineering (LTH).

**Relevance of the interview:** His interview is relevant because he gave us an approach about sustainable materials wich is considered as part of a Sustainability trend

**Abstract of the interview**

-Team: How do you define environmental friendly material?

-Srinivasan: We have to think about eco-friendly material in a macroscopic perspective. The whole life circle of production should be counted. Resources of the material, energy and land use in producing process, transportation, waste treatment as well as reuse and recycling. Step back, to get a whole view of the life circle. Taking producing aluminum for example, producing aluminum from raw aluminum costs 3.5 times more energy than producing it from recycled materials.

-Team: Is bio-base material a good replacement of the raw materials we are using today?

-Srinivasan: Yes, it is more than eco-friendly. By using bio-base material such as plant oil instead of fossil oil, it is greatly improved the situation that we drill a hole for fossil oil to produce plastics, exhausting non-renewable resources. It is renewable and also possible to use the plants as fertilizer or stock for biogas. But the important thing is to retain balance. For example, Sweden is famous for paper production. They have rational land use system. When certain areas of forest are used, there are always more

trees being seeded somewhere else to keep balance.

## **Interview 6**

**Name:** Guoqing Gao

**Profile:** Guest researcher in Production&Material engineering, Lund university School of Engineering (LTH). He works for a company specialized in cutting machine, and my research area is particularly bearing and material.

**Relevance of the interview:** With his interview we manage to support the sustainable materials approach, and he also mentioned the technological development as one of the sustainable trends.

**Abstract of the interview:**

-Team: What do you think about green material regarding to sustainability?

-Guoqing: For machinery, we are trying to use material has less negative environmental impact, but most commonly used material is steel. It is hard to say, how to use advanced technology to make the least waste is very important. To make the least waste in complicated process is more important in production, as well as decrease noisy and other pollution.

-Team: What is obstacle for industry to use green material? How are they becoming more involved in environmental issues?

-Guoqing: Companies pay more attention to customer demands, quality control rather than raw material. As companies, maybe first they will consider cost. They are responsible for their employees, and response to related policies is obligation, too. But still, the responsibility is always been considered first.

## **Interview 7**

### **Interview 7**

**Name:** Astrid Kander

**Profile:** Researcher Centre for Innovation, Research and Competence in the Learning Economy (CIRCLE). She is specialized in transformation society over periods of time, economic growth, technological shifts and the environmental consequences particularly in greenhouse gases emissions.

**Relevance of the interview:** As an economics history researcher with a special focus in transformations of society over time, she gave us an interesting approach regarding the future of sustainability. Defining trends also involves forecasting what are going to be the possible tendencies of sustainability in the future.

**Abstract of the interview:**

Team: What do you feel about sustainability?.

Astrid: Well politically I think it's a very powerful concept after the Brundtland

Commission and it has been extremely successful about its diffusion, but it is still a very vague concept. As a society we haven't been able to define properly sustainability, but I think in terms of certain areas, some researchers talk about the sustainable gap, that emanates from the predefined level of emissions, that environment can absorb with no critical consequences, and if the emissions are above this gap, you can evaluate if the gap is widening or closing. You need to have one criterion to evaluate sustainability. Sustainability in a way is a concept where you get together economic, social and environmental aspects, and the interesting thing is to see if there is a tradeoff between these three aspects, or if there is a win-win situation.

Team: What sort of trend do you see in the sustainability field, because you have been studying the history of this term?

Astrid: One interesting thing is after this financial big crisis, what will come after that is a merger between development blocks of the second industrial revolution which were built by electricity, and one with the internal combustion development, and it has started the microelectronics revolution, which can lead to create more environmental products, like for example, electronic cars that can be plugged during the night and that will be less wasteful, and creating consumer behavior that not only acts as producers, but also as part of the system.

Team: What about embedded water?

Astrid: It is also true in the energy and energy intensity area. The energy decrease by intensity in the developed world driven by us importing energy in commodities that we get from emergent economies, so maybe it's not systemic change, maybe it's a division of labor, globally.

Team: What do you think about policies that they are made nowadays?

Astrid: They are quite weak. Copenhagen was a big disappointment for the energy sector, who was seeking for reduction policies. I think that has clearly shown that for example stock market shares of clean energy companies decrease after the COP failure. The whole thing has to do with some politicians that think that the transitions to renewable energies are going to be expensive.

Team: What about carbon neutrality, some companies are trying to achieve carbon neutrality from 10 to 15 years.

Astrid: I think it's a really good ambition. For some countries will be very difficult to achieve that, it requires a lot of high technology and energy efficiency improvements for example smart buildings that use solar panels and other kind of devices that provides alternative sources of energy.

Team: What about sustainable materials? Do you see real sustainable materials?

Astrid: Good question. From my perspective material is never a problem, energy is the limiting problem. Material can be used and destroyed, but you can always put material again if you have enough energy. But I think the best way to have sustainable

materials is to have an increase throughput in the economy of more biofuels, because it will represent a free source of energy, that doesn't have to create net greenhouse emissions to the atmosphere. We need to improve the photosynthesis speed. But it is also have to be taken into account the use of land area. This lead to create a social problem because some of the crops used to feed people can be used to do biofuels.

Team: As you said, this leads to a social issue, but there are also environmental consequences as well, for example deforestation?

Astrid: Yeah, that happens a lot, even in Europe we had forest hundred years ago, the problem is not to cut the forest, and the problem is how to maintain a sustainable growth of deforestation. Now there is a trend of a sustainable way to cut the trees to preserve the eco-system.