Saimaa University of Applied Sciences
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Sustainable Supply Chains - How do companies integrate sustainability into their supply chains?

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Abstract

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Recent events have repeatedly raised awareness of the need of companies to take greater responsibility towards a more sustainable world. Due to the fact that companies and supply chains have a greater and further reaching impact than individuals, the aim of this study was to research how companies integrate sustainability into their supply chains.

Theoretic information was gathered mostly from academic literature but also from websites. For the qualitative empirical part Gartner's top 25 Supply Chain Businesses 2015 ranking provided the pool of researched case companies. Information was mainly collected from the case companies' websites, their sustainability reports as well as their code of conducts. Additionally, up-to-date articles and news publications were considered to achieve a more detailed picture.

The result of this thesis highlighted that the level of sustainability varies substantially between the examined case companies. Currently, already many programs and sustainability standards have been established to guarantee sustainability throughout entire supply chains. Nevertheless, the studied case companies can still show more efforts in the future to generate an even greater enhancement towards a more sustainable world.

Keywords: sustainability, sustainable supply chains, triple bottom line

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Abbreviations

CSR   Corporate Social Responsibility

GHG   Green House Gases

GRI   Global Reporting Initiative

KPIs   Key Performance Indicators

SCRM   Supply Chain Risk Management

SSC   Sustainable Supply Chains

1 Introduction

1.1 Topic background

The last World Climate Summit in Paris in last year's November showed the urgency and necessity of the world to take action in environmental issues to guarantee a safe, sustainable and worth living future for next generations. Jean-Claude Juncker, the European Union Commission president, even highlighted that this conference is the last opportunity to reach these goals (Doyle 2015). With this in mind, every individual is responsible to contribute to a more stable and sustainable planet as well as healthier societies. However, this is not only for human beings but also for governments, institutions, and enterprises. In particular, the focus not only has to be put on a single company but on entire supply chains. As sustainable supply chains (SSC) are even more and more seen as key generators of business value, organizations develop new approaches in order to integrate environmental sustainability into their supply chains (Chorn & Sisco & Pruzan-Jorgensen 2010, p. 3). Particularly, companies now have to take responsibility for the complete life cycle of a product which helps them to secure the reliability of a brand (Chorn & Sisco & Pruzan-Jorgensen 2010a, p. 7).

Moreover, companies have intensively applied low-cost country sourcing over the last years as global sourcing strategy offers cost saving opportunities. These cost saving opportunities derive from lower labor costs and cheaper raw materials in the corresponding countries. (Ruamsook & Russell & Thomchick 2009; Ochonma 2015.) Due to this strategy, doubts arise whether suppliers and supply chains are still capable to ensure social and economic sustainability in their business practices. This upcoming question gained evidence through the deadly factory collapse in Bangladesh in April 2013, whereby several production facilities of well-known textile and garment industry firms collapsed (Yardley 2013).

Due to this background, the authors expect the topic of environmental, social, and economic sustainability in supply chains to become of even more im-

portance in the future. In consequence, they see the necessity of researching in this field within the context of this bachelor thesis.

1.2 Research objectives and research questions

The aim of this thesis is to provide information about sustainability in general and sustainable supply chains. The main objective and research question of this thesis is to examine how companies implement sustainability throughout their supply chains.

Therefore, the main research question can be formulated as following:

- How do Gartner's Top 25 Supply Chain Businesses 2015 integrate sustainability into their supply chains?

Gartner is the world's leading information technology research and advisory company (Gartner 2016). Beside other rankings, it identifies and ranks once a year the top 25 enterprises plus two additional companies ranked in the master category which document their best practices in view of supply chains (Gartner 2016a). In total the ranking comprises 27 companies.

The sub research questions can be formulated as followed:

1. In which sustainability rankings are the companies listed?
2. Which of the companies use the GRI Sustainability Reporting Framework?
3. Which of the companies are ISO 14001 certified?
4. What do the case companies expect from their suppliers in view of sustainable business practices?
5. How is the customer as supply chain member integrated into the companies' sustainable business?
6. Do the case companies measure their own and/or their supply chain members' energy consumption, GHG emissions, and water consumption?
7. Which approaches do the companies in cooperation with their suppliers develop to integrate green packaging into their business?

8. Which of the companies participate in the UN Global Compact and/or use other industry related principles?

9. Which elements are included in the companies' code of conduct and do they have a supplier code of conduct?

10. Which programs are established by the companies to improve the living situation of communities worldwide?

To answer those questions, a brief definition of sustainability and its history, the development over the last decades as well as a definition of supply chains and sustainability in supply chains are going to be researched in the theoretical part of this thesis.

For the empirical part, the aim is to develop and answer the formulated sub research questions in order to compare these companies in view of similarities and differences in their sustainable supply chains.

1.3 Research methods

For the theoretical part about sustainability and (sustainable) supply chains, the qualitative approach is applied and consequently information is gathered from academic books, articles, and websites. Particularly, books regarding the topic sustainability and supply chains in general are taken into consideration. Additionally, articles from Supply Chain Management and other journals support the understanding of former and current issues regarding the thesis topic.

For the empirical part, the qualitative approach was chosen as well. The selection of the case companies is based on Gartner's Top 25 Supply Chain Businesses 2015 ranking. Thereby, the data for answering the sub research questions is gathered mostly from the individual websites of the case companies, their sustainability reports and code of conducts as well as up-to-date articles and news publications.

1.4 Delimitations

The selection of the case companies is based on Gartner's Top 25 Supply Chain Businesses 2015 ranking; however this thesis does not explain Gartner's methodology of ranking the organizations. Obviously, there are 27 companies

which have successfully implemented and documented their supply chain practices according to the ranking. The authors will only describe the sustainability aspect as one part of the supply chain practices, and will not provide an overall overview of the companies' entire supply chain. Further, the case companies will not be introduced in detail but described in a brief overview including their operating industry and headquarters. Additionally, the authors will not take all enterprises in every sub research question into account but concentrate partially on only few firms per question. Moreover, no other companies besides the companies mentioned in Gartner's research are being considered. Furthermore, all gathered information regarding the case companies is only based on the companies' websites and further public sources. In conclusion, no personal interviews with the case companies are conducted.

1.5   Limitations

Due the characteristics of Gartner's ranking this thesis shows several limitations. The first limitation is that the thesis only takes international companies into account. Consequently, national as well as small and medium-sized companies are neglected. The second limitation is that due to the ranking, primarily American enterprises are considered in this thesis. Further, only documents available for the public can be examined as the authors have no access to internal documents of the organizations. Due to the limited time frame, this paper includes only parts of all existing literature and thus cannot give a comprehensive picture of the sustainability topic.

1.6   Structure of this thesis

The general structure of the thesis is illustrated in Figure 1. After the introduction, the second chapter deals with sustainability in general and gives a brief theoretical overview, including its history and development over the last decades. In the third chapter, supply chains are introduced and described. In particular, firstly a definition of supply chains is given, secondly the degrees of supply chain coverage are discussed, and thirdly the importance of supply chains in nowadays globalized business structures is illustrated. The fourth chapter brings both former chapters together by integrating sustainability in supply

chains. Therefore, the meaning of sustainability in supply chains is highlighted, the concept of corporate social responsibility is introduced and finally the benefits of sustainable business practices are summarized. The fifth chapter includes the triple bottom lines of sustainability, namely environmental, social, and economic bottom line. The theoretical part ends with the sixth chapter which regards risk management and resilience in supply chains.

1 Introduction

2 Sustainability	3 Supply Chains

4 Sustainability in Supply Chains

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6 Risk management in Supply Chains

7 Empirical part

7.1 Methodology	7.2 Brief overview of the case companies	7.3 Sub research questions	7.4 Summary of the empirical part

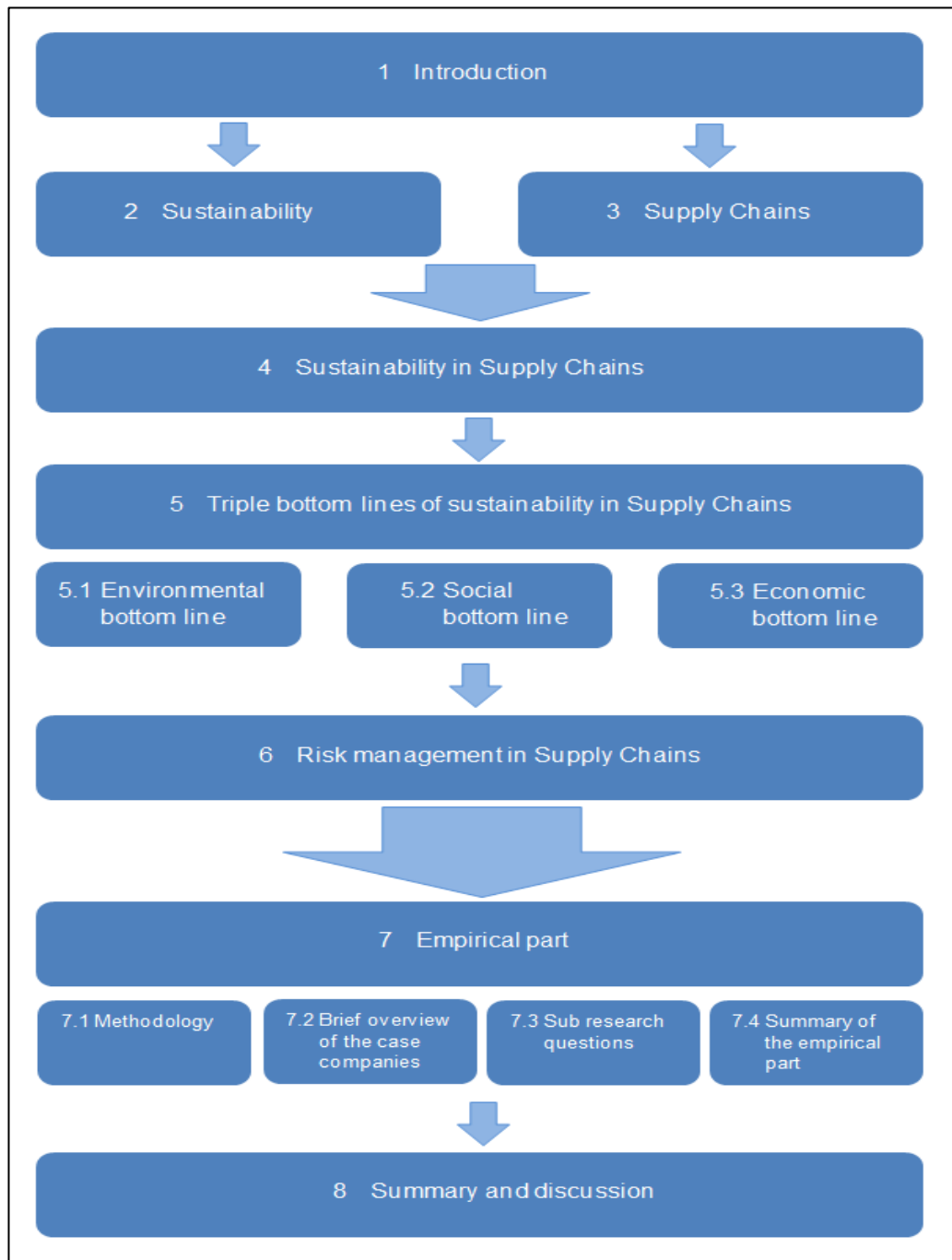| 8 Summary and discussion |
|---|

Figure 1. Structure of the thesis (Gerhartz & Ziegler 2016)

The seventh chapter treats the empirical part and deals with the answering of the pre-formulated sub research questions with the help of the gathered information of the case companies' websites and further public sources. Firstly, the methodology of the empirical part is described and secondly a brief overview of the case companies is provided. Thirdly, the different sub research questions are treated. Fourthly, the findings of the complete empirical part are summarized. And finally, the eighth chapter summarizes the thesis and discusses the findings of the theoretical and empirical part.

1.7 Responsibilities during the thesis process

The authors consciously decided to research for the thesis and write the thesis completely together. The authors were not individually responsible for single thesis topics but shared the responsibility throughout the entire thesis process. In particular, the authors did not divide the thesis topics into separate parts but researched and wrote every headline together in pair work. This allows the authors to gain the same knowledge pool and insights into the different topics.

2 Sustainability

2.1 Definition

Defining the word sustainability is rather difficult as it includes several aspects depending on the point of view. However, looking at the word origin, sustainability is derived from the Latin word "sustinere" which literally means "to hold up" (Thiele 2013). When looking up in various dictionaries, sustainability has the meaning of "maintain", "support" or "endure" (Soil & More International n.d.).

The first person who established the concept of sustainability was the Saxon tax accountant and mining administrator Hans Carl von Carlowitz in 1713. The mining industry faced a severe crisis in this time due to a limited capacity of lumber which was required for smelting in the mining industry. Von Carlowitz saw the interlinkage of both industries, mining and forestry, and therefore more or less developed the sustainable forestry. In particular, he drew the conclusion that the amount of logging may not surpass the amount of new planted trees. Only when

operating in this way, the principle of sustainability can be fulfilled. (McElroy & van Engelen 2012, p. 8.) From this point on the term and idea of sustainability became popular and people became aware that raw materials are limited and therefore have to be used in an efficient way.

Nowadays understanding of the term sustainability is characterized by the Report of the World Commission on Environment and Development called "Our Common Future" or "Brundtland report" from 1987. The Brundtland report describes sustainable development as *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.* (World Commission on Environment and Development 1987, p. 41.) This report extended the original definition of sustainability in the national forestry industry, established by von Carlowitz, by the issue of global sustainable development due to the ongoing globalization.

2.2 History and development

The following Figure 2 shows the development of environmental sustainability from the scientific discovery of greenhouse gases in the 19th century until nowadays understanding of sustainable business practices.
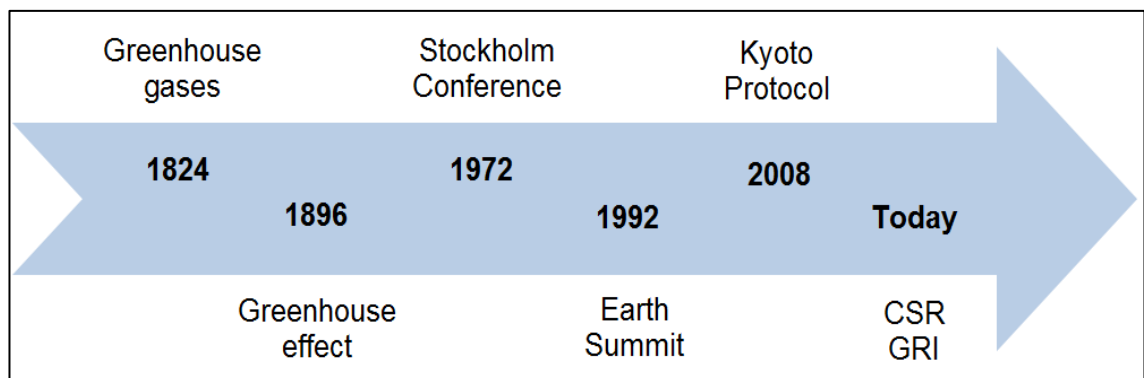
Figure 2. Development of environmental sustainability (Gerhartz & Ziegler 2016)

The first mentioning of greenhouse gases was by Jean Baptiste Joseph Fourier in 1824. However, first in 1896 the phenomenon greenhouse effect was discovered by Svante Arrhenius. Thereby, he saw the interlinkage between the level of carbon di-oxide which appears in the atmosphere and the increase of global temperatures. (Boone & Vaidyanathan & Ganeshan 2012, p. 4.)

Roughly 80 years later, in 1972, the first conference concerning the topic of environment and sustainability was held by the United Nations, namely the Stockholm Conference on the Human Environment. Besides the attendance of all 113 participating countries, agencies as well as organizations were involved and as a result the United Nations Environmental Program (UNEP) was developed. (Boone et al. 2012, p. 4.)

In 1992, another 20 years later, the so called "Earth Summit" took place in Rio de Janeiro and lead to the United Nations Framework Convention on Climate Change (UNFCC). This aims to stem the problem of global warming and deal with the climate change caused by humans. The focus was on both, stimulating economic growth (economic sustainability) and simultaneously operating in an environmental friendly way. The UNFCC treaty was extended in 2008 by the Kyoto Protocol which requires the 37 signing industrialized countries to adopt binding measures. (Boone et al. 2012, pp. 4 – 5; Thiele 2013.)

Now over the past 20 years the awareness regarding sustainability and environment has increased substantially. Today companies even integrate the concept of Corporate Social Responsibility (CSR) into their business operations. In addition to the main target of making profit, businesses now are required to meet all needs of their various stakeholders including sustainability aspects. In order to create transparency, many firms develop guidelines and share their CSR reports with the public. Starting from 1998, the Global Reporting Initiative (GRI) was developed and represents a framework for companies to demonstrate, compare, and measure a company's efforts in terms of sustainability. (Global reporting Initiative n.d.; Boone et al. 2012, p. 5.)

The social responsibility aspect has been treated with less intensity than environmental and economic sustainability. Nevertheless, the Stockholm Conference on the Human Environment and the Brundtland report represent, amongst others, building blocks for the establishment of a social part within the field of sustainability (Murphy 2012, p. 17).

When transferring these three aspects of sustainability to an operating business, the sustainable aspect already has to be integrated into the development

phase of a product. Therefore, companies now have to take the entire life cycle of a product into account when establishing new products. The focus is on efficient raw material use throughout entire supply chains, efficient production methods, and developing efficient products. (Boone et al. 2012, p. 7.). Moreover, companies have to take responsibility in terms of social responsibility towards all human beings who are touched by the companies' businesses.
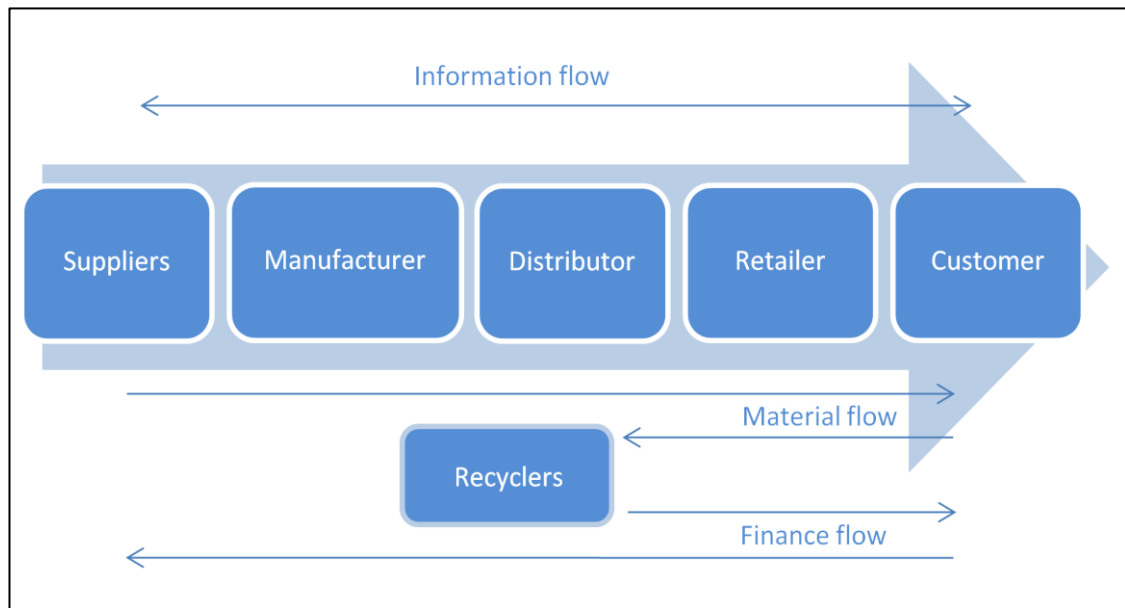
3   Supply Chains

3.1   Definition

There are different approaches in defining supply chains so consequently there is no unique definition. Some authors see supply chains as a summary of procurement, materials logistics, and distributions. Others however, categorize supply chains as a combination of various processes, namely material, information, and finance flows. (Horch 2009, p. 13.) In particular, supply chains include a minimum of three organizations which are connected either by one or more upstream or downstream flows (Trent 2008, p. 14). However, nowadays supply chains do not only consist anymore of only suppliers, manufacturers, and distributors but do also include retailers, warehouses, and transportation companies as well as the end customer himself. In general one can say that supply chains include all steps required to convert raw materials into a final product. In conclusion, the aim of a successful supply chain is to add value to the end consumer effectively and efficiently. (Shah 2009, p. 4.)

As shown in Figure 3, the material flow starts from the raw material supplier and ends at the ultimate customer. To ensure steady and stable production, a continuous flow has to be guaranteed throughout the entire supply chain. All supply chains consist of several information flows regarding demand, forecasting, and production. The information flow can be seen as a two-way direction flow, towards up- and downstream. In addition to the above mentioned flows, the money which is paid by the end consumer via different supply chain parties to the supplier represents the finance flow. (Lu 2011, pp. 10 – 11.) This until now commonly used understanding of supply chains is increasingly extended by recyclers as a further member of the supply chain. Thereby, both material flow

and finance flow go additionally in reverse directions. In particular, while the material flow goes one or more steps back in the supply chain starting from the customer, the finance flow consequently leads towards the customer (Robinson 2014). As in today's business supply chains are no longer only linear the term of a supply chain network with added reverse logistics describes the process in a more appropriate way.

Figure 3. Simplified supply chain structure and included flows (Gerhartz & Ziegler 2016, based on Shah 2009, p. 5)

Therefore, due to the increasing complexity of involved parties, the management of supply chains becomes of substantial importance. In particular, supply chain management is responsible for planning, coordinating, and controlling the three different flows starting from the raw material provider and ending at the final customers (Trent 2008, p. 15; Shah 2009, p. 4).

3.2 Degrees of Supply Chain coverage

As described in the former sub-chapter, the number as well as the parties themselves integrated in a supply chain can vary depending on several factors, for example on the business industry and a company's individual business practices. Therefore, three different degrees of supply chain coverage can be distinguished (Horch 2009, p. 14).

- **Direct supply chain:** In this level, there are only three parties involved in the supply chain, namely a supplier, a manufacturer, and an end consumer.
- **Extended supply chain**: In the extended degree, the supply chain covers only suppliers of the intermediate supplier and customers of the intermediate customer's customers.
- **Ultimate supply chain:** In comparison to the former described coverage degrees, the ultimate supply chain includes all involved parties in the upstream and downstream flows from the primary supplier to the final consumer. (Skjøtt-Larsen & Schary & Mikkola 2007, p. 20; Horch 2009, p. 14.)

3.3   Importance of Supply Chains

Regarding the degree of supply chain coverage, ultimate supply chains are becoming more common due to the ongoing globalization. Therefore, companies compete globally against each other and source as well as attract customers worldwide. These opportunities arise thanks to the economic growth in developing countries (Crandall & Crandall & Chen 2014, p. 16). As these economies experience high economic growth rates, companies in those countries as well as foreign countries' enterprises cooperating with local firms can benefit by extending their supply chains.

In addition to the above mentioned phenomena, several further trends have contributed to the increasing importance of supply chains. Following four major trends are identified by the authors.

Shorter product life cycles: Due to decreased product life cycles in all industries (Shah 2009, p. 11; Crandall et al. 2014, p. 15), an efficient integration of all involved parties in the supply chain has to be ensured in order to react successfully on the increased pace of changing customer needs.

Higher level of outsourcing: In order to generate the highest possible added value for the customer, the value chain of a company has to be optimized by outsourcing   non-core   activities   and   focusing   on   core   activities

(Shah 2009, p. 11). This approach is applied by many companies in order to exploit their potential of maximum customer value.

Change in customer demands and proliferation in product lines: Due to the high competition on the markets, customers are in a superior position. Thus, they request a rising variety of products and features (Shah 2009, p. 11; Crandall et al. 2014, p. 18). This mostly forces companies to design and manufacture their products according to customer needs. Hence, the necessities of a broader range of product lines emerge which can only be provided by entire supply chains and not by single manufacturers.

Need for quality improvement: Besides low-cost production, quality is seen as a main driver for customer satisfaction. Therefore, a steady quality improvement is expected by customers. A high level of quality has to be guaranteed throughout the entire supply chain (Crandall et al. 2014, p. 17). With regard to increasing product lines, quality improvements can only be ensured by supply chains and cannot be achieved by single manufacturers.

The company's success of coping with previous described trends, its differentiation potential as well as its competitive advantage is now dependent on the strength of the entire supply chain. As a result, individual firms no longer vie against each other but entire supply chains compete on the market (Shah 2009, p. 4) which highlights the importance of supply chains.

4 Sustainability in Supply Chains

4.1 Meaning of sustainability in Supply Chains

A sustainable supply chain, also known as green supply chain, describes the integration of environmental, social, and financial business practices into the entire supply chain life cycle. Thereby, the supply chain life cycle includes the product design and development phase, selection of materials, production, packaging, transportation, warehousing, distribution, consumption, return, and disposal. (Sustainable Supply Chain Foundation n.d..) The main goal of implementing sustainability into a company's supply chain is to develop and ensure

long lasting environmental, social, and economic value for all involved parties (Chorn et al. 2010a, p. 7). Regarding a traditional supply chain, there is a limited data exchange about the degree of commitment to sustainable business practices between every involved party. This leads to a high level of non-transparency as every supply chain party focuses on its own activities. Contrary, in green supply chains information regarding sustainability is shared and a mutual target is followed. Thus, all parties support, motivate, and guide each other in developing new sustainable approaches. (Emmett & Sood 2010, p. 9.)

4.2 Corporate Social Responsibility

The terms sustainability and Corporate Social Responsibility are controversially discussed in literature. While some authors use both terms as near synonyms, others understand them as completely different concepts (Strand & Freeman & Hockerts 2015). Nevertheless, in order to create a comprehensive understanding for this paper, the authors base their statements on the view that CSR rather focuses on the social aspect and aims to balance current interests of stakeholders. Sustainability however refers to the idea of balancing supply and demand of resources to secure intergenerational equity in terms of environmental, social, and economic aspects. (Bansal & DesJardine 2014.)

The variety and difficulties of finding a suitable and unique definition for CSR arise also from its complicated nature as the social aspect has to be embodied into a company's business. This is due to the fact that these two aspects initially follow controversial objectives. In particular, the entire company's decision-making process is led by the principles of contributing in a positive way to the society by protecting human rights, fulfilling labor, and environmental standards as well as meeting legal requirements (Emmett & Sood 2010, p. 11). CSR's intention is to enhance the well-being of the society by using resources in a responsible way. Moreover, CSR comprises the ongoing engagement of enterprises to act in an ethical way and participating in improving the economic status while simultaneously increasing the life quality of employees, their social surrounding, and the society as a whole. (Löber 2012, pp. 5 – 6.)

Nowadays, companies are even seen as a kind of "person" which is participating in the society as "citizen" and not more as a set of actions of individuals. Therefore, CSR has become a term to put firms and organizations under pressure regarding social concerns and thus take corresponding actions. (Paetzold 2010, pp. 3 – 4.)

4.3 Benefits of sustainable business practices

Besides contributing to an improvement of the societies' overall living standard, companies experience various benefits when implementing sustainability in their supply chains.

Innovation: Due to the increasing public presence of sustainability, it offers companies the possibility to create innovative products, services, and solutions which combine the idea of meeting the customer's needs and simultaneously concentrating on sustainability (Epstein-Reeves 2012). In particular, it allows companies to drive innovation by integrating sustainability in their product development, design, and manufacturing.

Lowered costs and increased efficiency: The efficient usage of resources allows companies to reduce waste and energy consumption. Consequently, production costs and overall costs can be decreased. (Emmett & Sood 2010, p. 7; Epstein-Reeves 2012.) As costs represent a diminishing factor to the overall profit, the reduction of costs and the increase of efficiency are seen as important drivers for sustainable business practices.

Differentiation and Competitive Advantage: A company can distinguish itself as well as its products from its competitors by applying the CSR approach. In addition to attracting new potential customers, CSR helps companies to gain competitive advantage and strengthen their position in the market (Emmett & Sood 2010, p. 7). Nevertheless, as a growing number of companies operate in an environmental, social, and economic friendly way companies struggle in differentiating themselves solely by applying this approach (Epstein-Reeves 2012). However, sustainable business practices still contribute positively to a company's brand image and reputation (Emmett & Sood 2010, p. 7).

Serve modified needs of customers: Customers nowadays have modified needs regarding the integration of sustainability in both the product itself and its sourcing and manufacturing process. These customers can be served by implementing CSR into the entire supply chain. Furthermore, CSR can be seen as a new communication tool for promoting the commitment towards sustainability (Epstein-Reeves 2012). This is both for business-to-consumer and business-to-business markets.

Improved risk management and resilience: As discussed in chapter six sustainable business practices allow companies to reduce their risks and simultaneously increase the companies' resilience to cope with unforeseen events.

In order to exploit all possible benefits, CSR and sustainability approaches have to be implemented not only in a single business but throughout the entire supply chain. Only a complete integration allows companies to take full advantage.

5 Triple bottom lines of sustainability in Supply Chains

The concept of modern sustainability is based on the Brundtland report from 1987 and compromises the three pillars of sustainability, namely environmental, social, and economic (Kuhlman & Farrington 2010, p. 3436). These three pillars are also known as the three "Ps" (Planet, People, and Profit) or as the three "Es" (Environment, Economy, and Equity) (Boström 2012, p. 3). Furthermore, John Elkington developed the term "triple bottom line" in 1994 which refers to the three aspects (The Economist 2009). Elkington saw the importance of extending the traditional success measurement, namely economic key figures, by environmental and social measurements (Savitz 2013, p. 5). All above mentioned phrases are used equally and refer to the same idea of sustainability and simultaneously the concept of CSR.

Figure 4 illustrates different ways of modelling the three dimensions of sustainability.
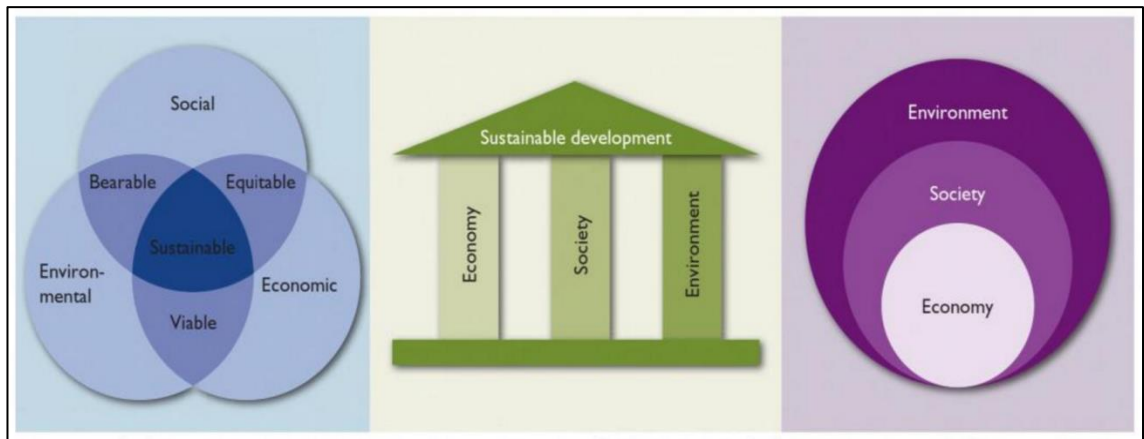
Figure 4. Model of the Three Dimensions of Sustainability (Laasch & Conaway 2014, p. 62)

As shown in the first illustration of Figure 4, combining social and economic business practices leads to an equitable company. However, it neglects being bearable and viable. This practice has been applied by Chinese companies as they have completely left out the environmental aspect. Consequently, the Chinese population faces a high level of pollution in big cities. If companies operate in an economic and environmental friendly way, they are viable, whereas concentrating on the environment and society leads to a bearable business. Only when combining all three dimensions companies can be seen as sustainable. (Laasch & Conaway 2014, p. 62.)

The above mentioned model has been transformed into a less complex model by illustrating the three spheres as pillars (see second illustration in Figure 4). All three dimensions are interlinked and stand and fall with each other. Thereby, all three aspects are mutually supportive. This fact is due to the world's high level of interdependence. Concentrating on one dimension does not compensate a weak focus on another pillar. Therefore, all pillars have to be focused on. (Boström 2012, p. 3; Thiele 2013.)

The last illustration in Figure 4 points out the limitation and dependence of an economy by its society. In particular, the level of economic growth is defined by a society's capacity of consumption. Moreover, the society in turn is dependent on the environment as the planet's natural resources limit the society's ability to grow. (Laasch & Conaway 2014, p. 62.)

In the following all three pillars or so called bottom lines are presented and described. Of course, these have to be integrated not only into a single company but in its entire supply chain to guarantee sustainable business operations and supply chains.

5.1 Environmental bottom line

The environmental bottom line emphases the planet. The environmental aspect of sustainability arises from the idea that natural resources are limited and only a responsible and efficient usage of resources guarantees businesses to operate in the future. Our today's business has a remarkable impact on the living standard of today's and future generations. (Business Ethics n.d..) The world population already now has to protect the environment to allow next generations to benefit from the planet's resources like former generations did. This not only has to be followed by every individual but also by organizations, institutions, and companies by integrating sustainability in their business models.

In order to quantify a product's, a project's, or a company's impact on the environment, several measures can be applied. Possible environmental measurements are:

- Carbon footprint (see 5.1.2)
- Energy use
- Water consumption
- Fossil fuel consumption
- Recycling and reuse
- Pollutants emitted. (Slaper & Hall 2011, p. 5; Savitz 2013, p. 6.)

Following this approach and measuring its success allows companies not only to operate in an environmental friendly way but simultaneously save costs as resources are used in a more efficient way. This coherence underlines the strong dependence between the different pillars.

5.1.1 Cradle to Grave & Cradle to Cradle Model

Due to the increasing popularity of sustainability and consumers sensitivity for green products, a fully integrated approach has to be developed which shows all steps occurring during a product's or service's entire life cycle. Earlier, the sustainability approach included only direct effects of the manufacturing process within one company which were tried to be minimized. All indirect environmental effects which a company produced during manufacturing were not covered. Nowadays, this view has been extended by integrating also all indirect effects. In particular, sustainable business practices now not only have to be applied by one business but by the whole supply chain to guarantee a long-term sustainable development. A product is only recognized as sustainable by the society when its entire life cycle follows the principles of sustainable business practices. In order to transform this idea into a framework, the cradle models were developed. (Kohler & König & Kreissig 2010, p. 38.)

Literally the term "cradle" defines an infant's first bed. When using this term in the consensus product life cycle idea it underlines the beginning of every product's or service's life.

Cradle to Grave

According to ISO14040 'Environmental Management – Life Cycle Assessment', the term Life Cycle Assessment (LCA) or Life Cycle Analysis (LCA) is defined as "cradle-to-grave" approach which compiles and evaluates all inputs, outputs, and possible environmental influences of a product or service throughout its life cycle (Kohler et al. 2010, p. 38).
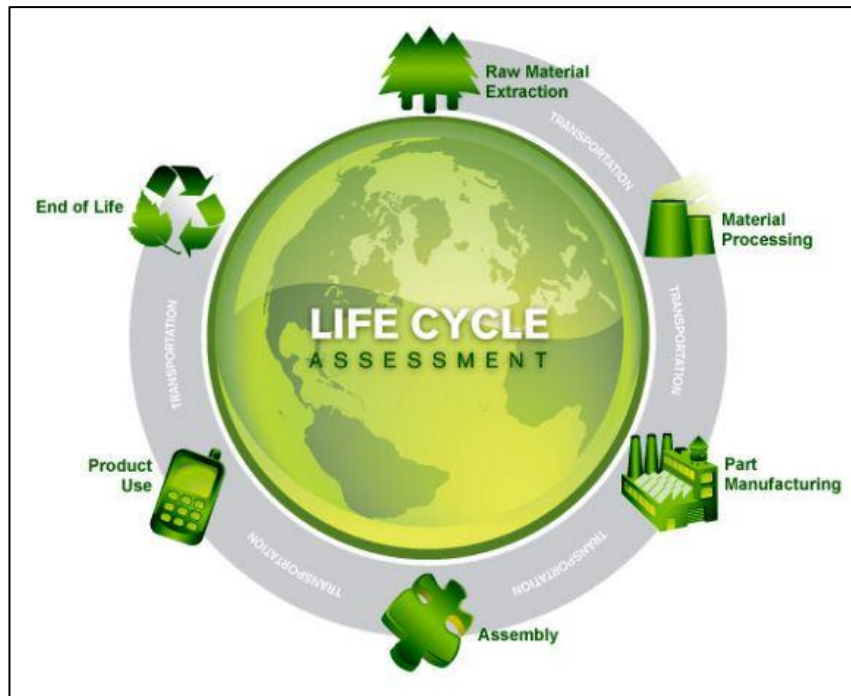
**Figure 5. Life Cycle Assessment (Solidworks 2009)**

In particular, it begins with the gathering of raw materials which are needed for the final product and ends as soon as the materials are returned to nature (Kohler et al. 2010, p. 38). Whereby the sourcing of raw materials holds the idea of the product's or service's "cradle", the return of materials holds the idea of its "grave" (Figure 5).

The main goal of applying a LCA is to decrease a product's negative environmental impact by simultaneously raising its value. LCA is the basis for identifying potentials for reducing resources. This can be reached by reducing material and energy consumption, increasing recyclability and use of renewables as well as extending product durability. The cradle to grave model is the most commonly used methodology to measure the causes of and reasons for environmental impacts. (Holland & Lam 2014, p. 245.)

Cradle to Cradle

Contrary to the former described cradle to grave approach, the cradle to cradle framework integrates sustainability already into the design phase of a new product. The aim of the cradle to cradle model is to design a product which can either be returned to nature (Biological Cycle) or integrated into the design

phase of a new product (Technical Cycle) in the end of its life cycle, as shown in Figure 6 (Aharonovitch 2008).
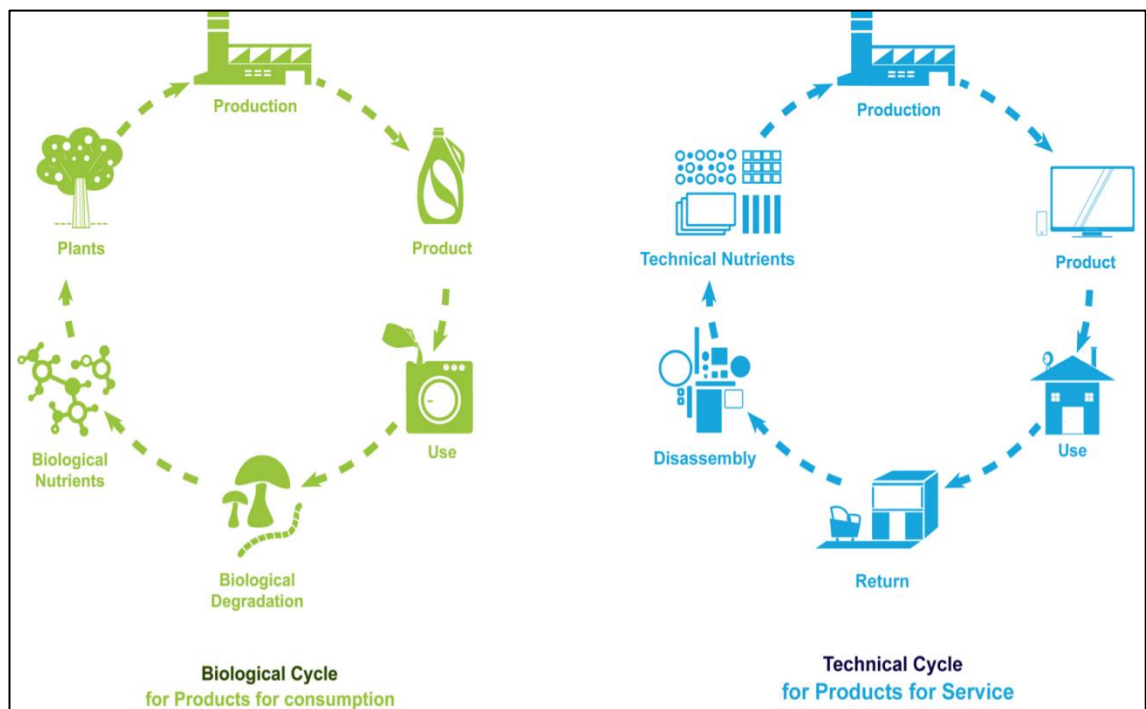
Figure 6. Cradle to Cradle Model (C2C Platform n.d.)

The cradle to cradle philosophy was developed by William McDonough and Dr. Michael Braungart who saw the necessity of designing products in a different way. Contrary to the cradle to grave model which only concentrates on being "less bad" and eco-efficient, the cradle to cradle approach focuses on becoming "more good" and being additionally eco-effective. In consequence, a company is able to even generate a positive footprint instead of leaving a negative footprint (see 5.1.2). (MBDC n.d..)

5.1.2 Footprint indicators

Every human action leads to resource consumption and the production of waste. Due to the constantly increasing world population and consequently increasing consumption it is necessary to find appropriate measurements which give indication of the earth's capability of satisfying the societies' resource demand. For this reason, different footprint indicators have been developed to calculate the supply of and demand on natural resources. (Global Footprint Network 2015.)

In the following the three different footprints are presented and further ex-
plained.

Ecological footprint

The ecological footprint was developed by Mathis Wackernagel and William
Rees in 1990. It measures how fast the world population consumes resources
and generates waste in comparison to how fast nature can absorb the produced
waste and generate new resources. Currently, the ecological footprint is one
year and six months. This means that the earth needs one year and six months
to regenerate the world population's consumption of one year. (Global Footprint
Network 2015.)

In comparison to the following discussed footprints, carbon and water, the eco-
logical footprint is not measured in terms of quantitative metrics but in terms of
global hectares (Franchetti & Apul 2012, pp. 14 – 15).

The ecological footprint includes the supply of nature as well as the demand on
nature. The supply side is represented by the biocapacity which describes the
earth's biologically productive land areas. Whereas, the demand side is de-
scribed by the ecological footprint and refers to the productive area which is
needed to meet human needs (see Figure 7). This footprint is measured by the
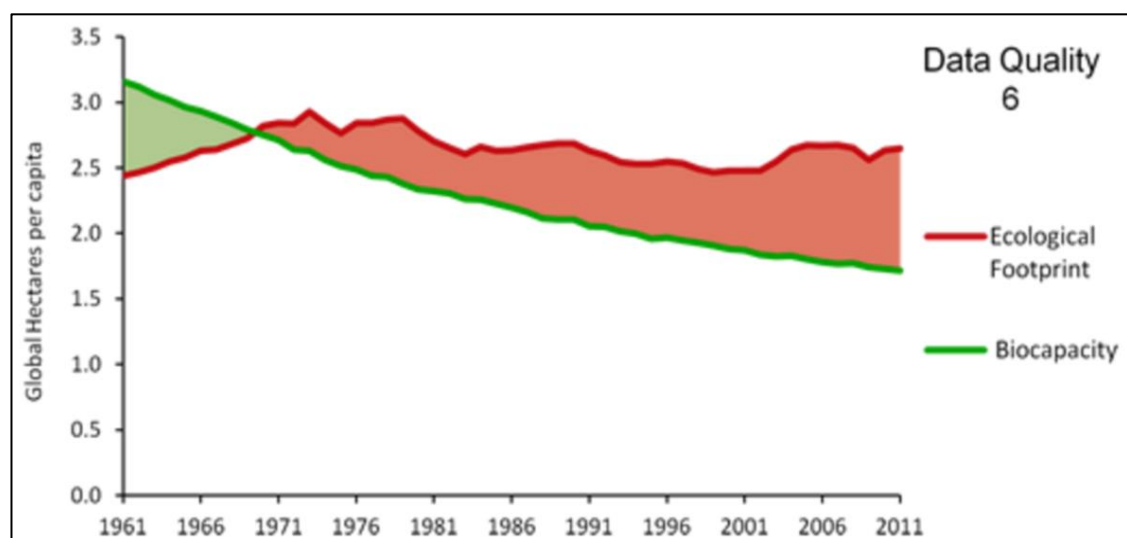Global Footprint Network. (Global Footprint Network 2015.)

**Figure 7. World Ecological Footprint and Biocapacity Development (Global Footprint
Network 2015a)**

As shown in Figure 7, it highlights the fact that since approximately five decades the ecological footprint has exceeded biocapacity. (Global Footprint Network 2015.)

As companies are the major users of natural resources, especially companies and therefore their entire supply chains are responsible to minimize the world's ecological footprint. This can only be achieved when integrating sustainable business practices in the whole supply chain as otherwise the problem is only transferred to other countries in which other members of the supply chain operate. This gains high importance, especially due to today's globalization.

Carbon footprint

The carbon footprint represents the amount of greenhouse gases, the main driver for climate change, which is emitted by any activity of an organization or individual. However, it is possible to apply the carbon footprint for countries, projects, products as well as services. Thereby, calculations are expressed in tons or kilograms. The term "carbon footprint" is derived from the fact that carbon is the most emitted greenhouse gas by human activities, besides methane and nitrous oxide. Indeed, greenhouse gases are seen as main driver for global warming. (Franchetti & Apul 2012, p. 7.)

The measurement of carbon footprints can be expressed in three different footprints, namely primary, secondary, and tertiary footprint. (Calder 2009, pp. 13 – 14.)

- The **primary footprint** measures a company's direct and therefore controllable emissions by taking into account all emitted CO_2 emissions on the manufacturing site and during transportation.
- The **secondary footprint** measures a company's indirect emissions caused by the whole life cycle of a product including its production, delivery, use, and breakdown.
- The **tertiary footprint** measures the emissions produced by outsourced contracting suppliers and employee commuting. (Calder 2009, pp. 13 – 14.)

Carbon footprint calculations require an exact identification of all produced emissions and are commonly based on standard tables which allow a company to read off emitted CO_2 releases required by a certain level of energy demand (Calder 2009, p. 14).

When calculating the carbon footprint of a product, it is necessary to take the entire supply chain into consideration which requires for example detailed information from the suppliers already in the procurement phase (BCS The Chartered Institute for IT 2012, p. 12).

Water footprint

The water footprint is a measurement of the amount of freshwater which is used, evaporated or polluted to produce the goods and services we use (Chandrappa & Das 2014, p. 8). The footprint can be measured with regard to different areas, e.g. cooking, washing, growing food, production of all different kinds of goods, and of course drinking water. It can be calculated for one individual, one product, an organization, a country, and even for the whole world and includes both direct and indirect water usage. Thereby, the direct water footprint reflects the amount of water which is directly used by an individual. Contrary, the indirect water footprint represents the accumulated water footprints of all products which are consumed by an individual. In general, a water footprint consists of three elements, namely green, blue, and grey. (Water footprint network n.d..)

- **Green water footprint** describes the amount of water which is evaporated from rain water that is stored in the soil (Chandrappa & Das 2014, p. 8). This footprint is especially important for agricultural and forestry products (Water footprint network n.d.).
- **Blue water footprint** summarizes the quantity of fresh water which is evaporated from the surface/groundwater (Chandrappa & Das 2014, p. 8). Irrigated agriculture, industry as well as domestic water consumption produce a blue water footprint (Water footprint network n.d.).

- **Grey water footprint** considers the volume of fresh water which is required to assimilate pollutants in order to satisfy water quality standards (Water footprint network n.d.).

When applying the water footprint to a company, the operational activities from the company itself represents its direct water footprint, whereas its supply chain activities are summarized as its indirect water footprint. In order to guarantee a water footprint which reflects the total amount of water usage and pollution of a product, a company must not only consider its direct water footprint but also its indirect water footprint by examining its supply chain. (Water footprint network n.d.a.) This avoids businesses externalizing their water footprint to other countries.

In conclusion, developing a sustainable supply chain offers companies the possibility to decrease their ecological, carbon, and water footprint, and simultaneously improve their end-to-end operations. In consequence, this leads to potential cost savings and increased profitability. (Sustainable Supply Chain Foundation n.d..)

5.2   Social bottom line

The social bottom line emphases on people. The social aspect is about the commitment to the living quality of human beings and a balanced power distribution within societies (Business Ethics n.d.; Carroll & Buchholtz 2014, p. 56). In addition, the social idea shall contribute to changes within the society regarding their norms and institutions. In particular, possible development should not be an exclusive right for selected people but for all individuals of a society. (Cavagnaro & Curiel 2012, p. 52.) With regard to businesses, they are expected to create an environment with benefits for all people (Carroll & Buchholtz 2014, p. 56).

Despite above given findings, the topic social sustainability has been treated with less intensity in studies as the focus in sustainability still was on environmental and economic issues. Nowadays, the awareness for treating all

sustainability spheres equally is experiencing a continuous growth. (Bhinge & Moser & Moser & Lanza & Dornfeld 2015, p. 323.)

Due to the nature of the social idea, it is difficult to find suitable measurement methods. However, following measures can help to visualize social commitment:

- Unemployment rate
- Relative poverty
- Employee relations
- Human rights
- Health and safety record
- Female labor force participation rate. (Slaper & Hall 2011, p. 5; Savitz 2013, p. 6.)

This approach picks up the idea of valuing employees as an important resource and key success factor for a company. Therefore, it is crucial for enterprises to operate in a way which contributes to the society's sustainability.

Customers have developed an increasing awareness regarding working conditions of employees in developing countries especially in view of child labor concerns. This increasingly forces companies to take responsibility as customers no longer accept companies which deny their possibility to intervene. In fact however, they can and even have to control and influence the working conditions which are provided by their suppliers. Social responsibility represents a phenomenon which is driven by individuals who care including not only customers but also employees, managers, owners as well as investors of a company. (Ashley & Crowther 2012, pp. 30 – 31.)

5.3 Economic bottom line

The economic bottom line emphases on profits. In particular, the economic bottom line involves the efficient usage of tangible and intangible assets as well as the financial income of a company (Carroll & Buchholtz 2014, p. 56). The economic dimension is long-term oriented to ensure the future existence of a firm and therefore fulfil all stakeholders' needs. Moreover, it defines a company's

ability to create a cash flow which ensures enough liquidity and therefore secure the further development of a firm. (McElroy & van Engelen 2012, p. 84; Longoni 2014, p. 1.)

A company's business practices are only economic sustainable if they contribute not only positively to the company's overall financial result but also to the economy as a whole (Chamberlain n.d.).

Following economic measures can be applied to identify a company's commitment regarding economic sustainability:

- Sales, profits, ROI
- Monetary flows
- Taxes paid
- Personal income
- Jobs created
- Cost of underemployment. (Slaper & Hall 2011, p. 5; Savitz 2013, p. 6.)

Obviously, both prior mentioned bottom lines are of major importance when applying sustainable business practices. Nevertheless, primarily the economic sphere, including the long-term existence of a firm, represents the requirement for operating both environmentally and socially successful. As soon as company is no longer able to generate profit in an economic desirable way, both other aspects cannot be achieved anymore.

6   Risk management in Supply Chains

There is no doubt that companies have always faced different risks. However, due to the ongoing globalization and current trends as for example outsourcing and low-cost country sourcing, supply chains are extended by various parties and therefore face increased risks. Through the steadily increasing interlinkage of businesses, supply chain networks become more vulnerable as even a local event has significant impact on all involved parties around the world. These global supply chains now face additional risks such as longer lead times, difficulties in supply due to global customs, foreign laws, currency exchange rate

fluctuations, and economic or political instabilities in the supplying country (Dittmann 2014, p. 6). As these events occur in more and more decreasing intervals and represent a substantial threat to a business' continuity (Paulson & Kouvelis & Li 2011, pp. 3 – 4), they cannot be neglected anymore but have to be managed effectively within the framework of Supply Chain Risk Management (SCRM).

The attempt of finding one unique definition for "risks" is not possible as each author focuses on different aspects. Generally, supply chain risks can be seen as unforeseen events which can interrupt the smooth flow of materials (Waters 2011, p. 14). However, independently on which definition one relies on, risks always consist of three common elements. These are likelihood of occurrence, consequences of a particular event, and the exposure or causal pathway which leads to this specific event. (Wu & Blackhurst 2009, p. 11.)

In particular, a classification based on the sources of risks leads to environmental, network, and organizational risks. Another definition divides risks into supply-related, demand-related, and contextual risks. (Sodhi & Tang 2012, pp. 13 – 14.) Furthermore, a categorization according to correspondent responsibilities can be applied including supply, process, demand, and corporate level risks. Thereby, a clarification is done which party in the supply chain should prevent arising risks. (Sodhi & Tang 2012, p. 22.) Moreover, supply chain risks can be categorized in external and internal risks. Governmental actions, infrastructure deficiencies, supplier difficulties, logistical problems, price, terrorism, natural disasters, and accidents represent examples for external risks. Whereby, policies, resources as well as time compression are internal risks in supply chains. (Buddress 2014, pp. 3 – 4.)

Additionally, sustainability risks have to be taken into account when conducting SCRM. Thereby, climate change and related extreme weather events, environmental damage as well as social, safety, and labor practice issues are examples for sustainability risks (Reed & Willis 2012, p. 40) which can be classified with the environmental and social pillar of sustainability. As business actions in one area always have consequences for other areas, companies should always consider SCRM and sustainability together. In other words, operating in an

environmental and social sustainable way decreases or even avoids upcoming supply chain risks. Besides, sustainable business practices, for example reducing waste, lead to an improved profitability which consequently has a positive impact on a company's economic sustainability and risk management. (Buddress 2014, p. 7.) In particular, companies which do not regulate their pollutions emissions contribute to the global warming. This in consequence can for example lead to more intensive and extreme natural disasters which directly and indirectly affects companies and their supply chains. In conclusion, sustainably operating companies can diminish their sustainability risks when combining SCRM and the three pillars of sustainability.

When supply chain risks are not managed properly, the business continuity is endangered. Particularly the trend of steadily increasing environmental risks requires a greater resilience of supply chains (Hohenstein & Feisel & Hartmann & Giunipero 2015, p. 90). Thereby, resilience describes the ability to adapt to disruptive phenomena (Bakshi 2008, p. 6). In particular, supply chains have to be designed in a way which allows an efficient and effective response to disruptive events. Supply chains with a high resilience can recover fast and use disruptive events to perform even better. Although companies apply SCRM they cannot avoid all potential risks. Therefore, it is crucial for companies to develop resilience throughout their supply chain to guarantee business continuity. Consequently, supply chain resilience is an important part of SCRM and has to be integrated and developed as well in order to cope with inter alia sustainable risks. (Hohenstein et al. 2015, p. 91.)

7 Empirical part

7.1 Methodology

The selection of the case companies is based on Gartner's Top 25 Supply Chain Businesses 2015 ranking. Gartner is the world's leading information technology research and advisory company (Gartner 2016). Among other rankings, it yearly identifies and ranks the top 25 enterprises which document their best practices in view of supply chains. This ranking includes 25 listed companies and two additional companies which have reached the master category. This category includes those companies which have been in the top five rankings for at least seven out of the past ten years. (Gartner 2016a.) These in total 27 companies represent the pool of possible companies which are examined in the sub research questions. Due to the broad pool of case companies, the authors do not provide a detailed introduction of the case companies but a brief overview regarding their industry and headquarters location.

Further, the authors formulated ten sub research questions which help to answer the main research question of this thesis, namely "How do Gartner's Top 25 Supply Chain Businesses 2015 integrate sustainability into their supply chains?". These sub research questions are primarily answered with the gathered information from the companies' websites, their sustainability reports, and code of conducts. Moreover, the questions are thematically divided into sustainability ranking and reporting, environmental, and social aspects. Questions 1 and 2 deal with sustainability ranking and reporting, questions 3 to 7 regard environmental sustainability, and questions 8 to 10 treat primarily social sustainability issues but also include environmental aspects. Due to the limited scope of the thesis, the authors do not discuss all 27 companies in each question. This is dependent on the nature of the questions if the consideration of all companies is necessary to fully answer the sub research question.

The authors decided to treat consumption measurements and footprints and green packaging in separate sub research questions in order to examine these topics in a more detailed way. This is firstly due to the personal interest of the authors in this topic. Secondly, as most natural resources are limited a company

can only guarantee its business continuity when regarding before mentioned topics. Therefore, the authors see special importance in considering these topics in comparison to other sustainability issues.

Finally, a summary of the empirical part completes the seventh chapter.

## 7.2 Brief overview of the case companies

Table 1 introduces the companies according to the ranking of Gartner's Top 25 Supply Chain Businesses 2015 and categorizes the companies into their operating industries. Additionally, the companies' headquarters are included in the table.

Gartner Ranking	Company name	Industry	Headquarters
Master	Apple	Electronic equipment	United States
Master	Procter & Gamble	Consumer goods	United States
1	Amazon.com	Retail	United States
2	McDonald's	Restaurants	United States
3	Unilever	Consumer goods	United Kingdom/ Netherlands
4	Intel	Electronic equipment	United States
5	Inditex	Textile	Spain
6	Cisco Systems	Other	United States
7	H&M	Textile	Sweden
8	Samsung Electronics	Electronic equipment	South Korea
9	Colgate-Palmolive	Personal care	United States
10	Nike	Textile	United States

| 11	The Coca-Cola Company	Food & beverage	United States
12	Starbucks	Restaurants	United States
13	Wal-Mart Stores	Retail	United States
14	3M	Other	United States
15	PepsiCo	Food & beverage	United States
16	Seagate Technology	Electronic equipment	United States
17	Nestlé	Food & beverage	Switzerland
18	Lenovo	Electronic equipment	China
19	Qualcomm	Other	United States
20	Kimberly-Clark	Personal care	United States
21	Johnson & Johnson	Other	United States
22	L'Oréal	Personal care	France
23	Cummins	Other	United States
24	Toyota Motor	Other	Japan
25	Home Depot	Retail	United States

Table 1. Overview of case companies (Gerhartz & Ziegler 2016, based on Gartner 2016a, case companies' websites)

The categorization was done by the authors and concludes that eight different industries can be distinguished (Figure 8). Thereby, the companies Cisco Systems, 3M, Qualcomm, Johnson & Johnson, Cummins, and Toyota Motor are comprised in the category "other" for simplification as the industries of these companies are only listed once.
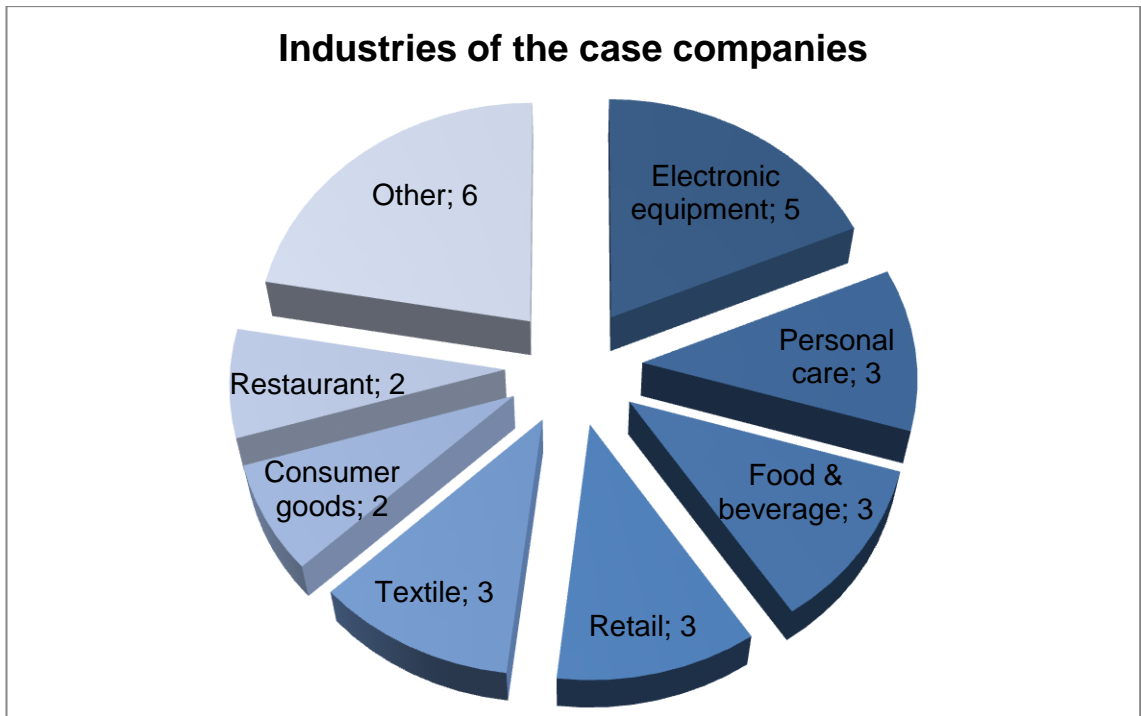
Figure 8. Industries of the case companies (Gerhartz & Ziegler 2016)

As shown in Figure 9, the majority of the case companies' headquarters is located in the United States, in particular 19 companies. Slightly more companies' headquarters are situated in European countries than in Asian countries.
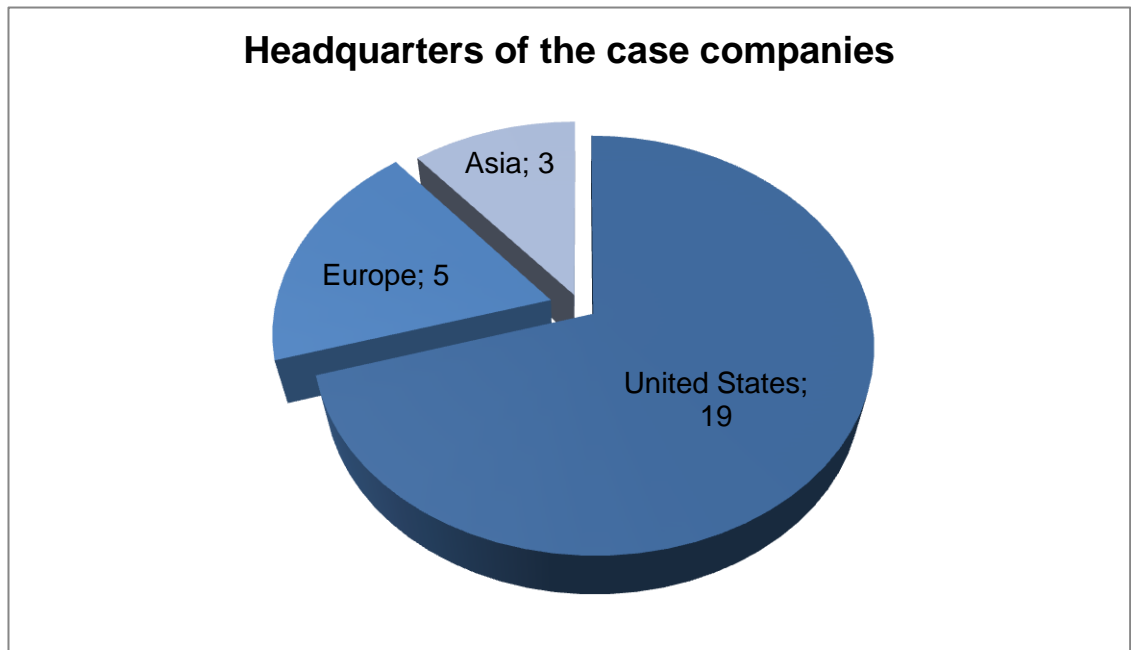
Figure 9. Headquarters of the case companies (Gerhartz & Ziegler 2016)

7.3 Sub research questions

In this chapter the authors examine the following ten predefined sub research questions which are studied in order to answer the main research question.

1. In which sustainability rankings are the companies listed?
2. Which of the companies use the GRI Sustainability Reporting Framework?
3. Which of the companies are ISO 14001 certified?
4. What do the case companies expect from their suppliers in view of sustainable business practices?
5. How is the customer as supply chain member integrated into the companies' sustainable business?
6. Do the case companies measure their own and/or their supply chain members' energy consumption, GHG emissions, and water consumption?
7. Which approaches do the companies in cooperation with their suppliers develop to integrate green packaging into their business?
8. Which of the companies participate in the UN Global Compact and/or use other industry related principles?
9. Which elements are included in the companies' code of conduct and do they have a supplier code of conduct?
10. Which programs are established by the companies to improve the living situation of communities worldwide?

7.3.1 Sustainability rankings

Sub research question:
In which sustainability rankings are the companies listed?

In the following the authors study two sustainability rankings to identify which case companies are listed in either one and/or the other sustainability ranking. For this purpose, the authors chose the Global 100 Most Sustainable Corporations Ranking 2015 published by Corporate Knights magazine and the 100 Best Corporate Citizens 2015 published by the Corporate Responsibility Magazine.

The magazine Corporate Knights is printed by the two divisions, media and research, of the Corporate Knights Inc. and publishes yearly inter alia the Global 100 Most Sustainable Corporations Ranking (Corporate Knights n.d.). Thereby, all firms in the "Global 100" ranking are required to have a market capitalization of at least 2 billion USD (CK Staff 2015). The ranking is based on a quantitative methodology by analyzing twelve Key Performance Indicators (KPIs), namely energy, carbon, water and waste productivity, innovation capacity, percentage tax paid, CEO to average worker pay, pension fund status, safety performance, employee turnover, leadership diversity, and clean capitalism pay link (CK Staff 2014). Depending on the company's industry, different KPIs are taken into account (Corporate Knights n.d.a). As these indicators are quantitative and clearly defined, the ranking guarantees an objective and replicable result (CK Staff 2015). The ranking only considers public available data, for example financial filings and sustainability reports (Corporate Knights n.d.a).

SharedXpertise Media LLC prints the CR Magazine which publishes the 100 Best Corporate Citizen's List (Corporate Responsibility Magazine 2016). Thereby, companies are ranked by the Methodology Committee according to seven data categories which are again divided into sub categories. These main categories are climate change, employee relations, environmental, financial, governance, human rights, and philanthropy and community support. These different categories are weighted differently by the committee depending on different relative values. The main aim is to create accountability and transparency. Therefore, the ranking only takes data into account which is publicly available, for example company websites and sustainability reports. (Corporate Responsibility Magazine 2016a.)

The following Table 2 shows which of Gartner's ranked companies appear in the sustainability ranking Corporate Knights Global 100 2015 or CR's 100 Best Corporate citizens 2015 and which position they are listed.

Gartner Ranking	Company name	Corporate Knights Global 100 2015 ranking	CR's 100 Best Corporate Citizens 2015 ranking
Master	Apple	Not listed	Not listed
Master	Procter & Gamble	Not listed	51
1	Amazon.com	Not listed	Not listed
2	McDonald's	Not listed	Not listed
3	Unilever	22	Not listed
4	Intel	56	7
5	Inditex	Not listed	Not listed
6	Cisco Systems	69	33
7	H&M	75	Not listed
8	Samsung Electronics	45	Not listed
9	Colgate-Palmolive	72	76
10	Nike	Not listed	38
11	The Coca-Cola Company	Not listed	15
12	Starbucks	Not listed	Not listed
13	Wal-Mart Stores	Not listed	Not listed
14	3M	Not listed	30
15	PepsiCo	Not listed	55
16	Seagate Technology	Not listed	Not listed
17	Nestlé	Not listed	Not listed
18	Lenovo	73	Not listed
19	Qualcomm	Not listed	Not listed

20	Kimberly-Clark	Not listed	13
21	Johnson & Johnson	18	3
22	L'Oréal	14	Not listed
23	Cummins	Not listed	Not listed
24	Toyota Motor	Not listed	Not listed
25	Home Depot	Not listed	Not listed

Table 2. Sustainability rankings of the case companies (Gerhartz & Ziegler 2016, based on Gartner 2016a, CK Staff 2015a, Corporate Responsibility Magazine 2016b)

After considering Table 2, the authors conclude that a few case companies are listed either in one or even both sustainability rankings. Nevertheless, even if they are listed in both rankings, their ranking position can vary substantially. In total, 5 case companies are listed only in the Corporate Knights ranking and 6 case companies only in the Corporate Citizens ranking. Thereby, 4 companies are mentioned in both rankings, namely Intel, Cisco Systems, Colgate-Palmolive, and Johnson & Johnson. Nevertheless, 12 case companies are neither listed in Corporate Knights ranking nor in Corporate Citizens ranking (see Figure 10).
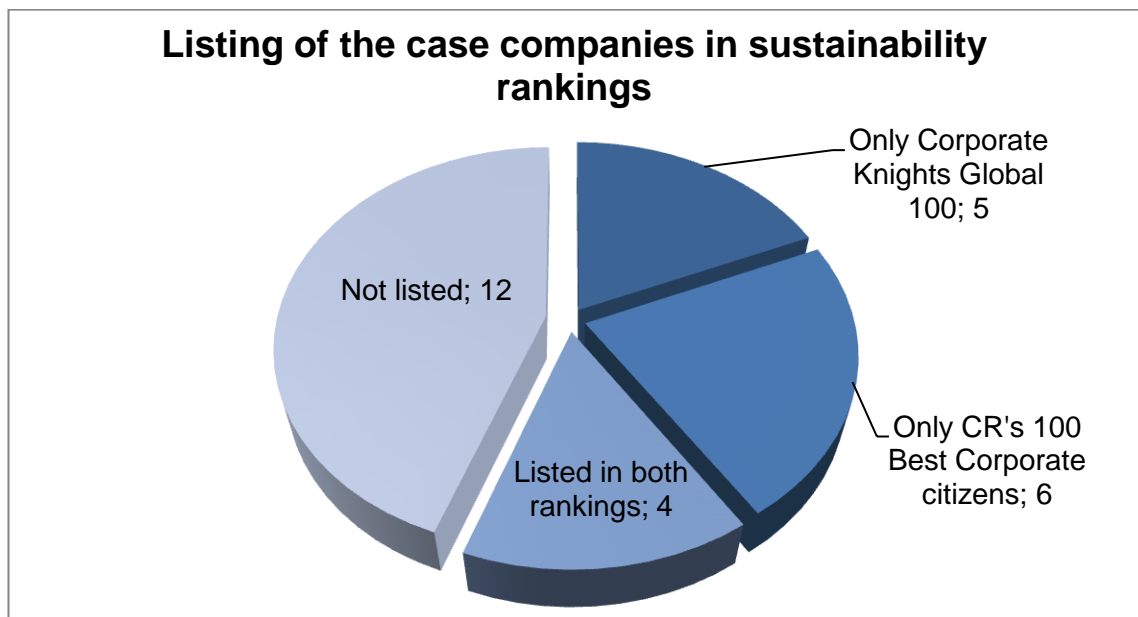
Figure 10. Listing of the case companies in sustainability rankings (Gerhartz & Ziegler 2016)

According to the authors, this fact is due to the different methodology approaches used in the rankings. In particular, the Corporate Knights ranking only takes partly the same KPIs for the different industries (Corporate Knights n.d.a). Contrary, the Corporate Citizens Magazine takes every category in every industry into account but weights the individual categories differently (Corporate Responsibility Magazine 2016a). Furthermore, the categories used for the rankings differ between both lists. Consequently, this of course leads to different ranking results. For instance, the company Intel is listed on the seventh position in Corporate Citizens ranking but only on position 56 in Corporate Knights ranking. Still, some companies are able to generate quite similar ranking results as for example the company Colgate-Palmolive which reaches 72 in Corporate Knights ranking and 76 in Corporate Citizens ranking.

Additionally to these two above mentioned rankings, the Dow Jones Sustainability Index (DJSI) is one of the most common sustainability rankings. It ranks the peer companies of 24 industries regarding their sustainability. Only one of the authors' case companies, namely Unilever, is listed in the Industry Group Leaders 2015 of the DJSI and therefore represents the leading sustainable company in its industry. (RobecoSam n.d..)

7.3.2 GRI Sustainability Reporting Framework

Sub research question:
Which of the companies use the GRI Sustainability Reporting Framework?

In order to create transparency regarding sustainability aspects, companies can publish sustainability reports. These can be named differently, for example corporate responsibility reporting and triple bottom line reporting. However, their common aim is to identify and show all economic, environmental, and social impacts which result from a company's operating business. A company's sustainability report provides a communication platform in order to demonstrate its sustainable performance as well as both its positive and negative impacts on its surrounding. Additionally, it allows the company to show its commitment towards a sustainable global economy and how it is linked to the company's overall strategy. (Global Reporting Initiative n.d.a.) Sustainability reports can be

written with the guidance of the Global Reporting Initiative Sustainability Reporting Framework which is one of the most commonly applied sustainability reporting frameworks (Global Reporting Initiative 2013).

The Global Reporting Initiative is an international independent organization. It is a leading organization in the topic of sustainability and promotes the usage of sustainable reporting in order to help businesses, governments, and other organizations to become more sustainable. GRI is an international not-for-profit organization which was founded in Boston in 1997. GRI's vision is that every enterprise takes sustainability into account during every decision making process. Therefore, they have established sustainability standards and a multi-stakeholder network. (Global Reporting Initiative n.d.b.)

G4 is the current used GRI sustainability reporting guidelines version which represents the fourth generation of the guidelines and was released in 2013 (Global Reporting Initiative n.d.b). The GRI guideline includes two different standard disclosures, the general standard disclosure and the specific standard disclosure (Global Reporting Initiative 2015).

General standard disclosure:

- Following categories are included: strategy and analysis, organizational profile, identified material aspects and boundaries, stakeholder engagement, report profile, governance, and ethics and integrity.
- These categories are illustrated by the abbreviations G4-1 to G4-58. (Global Reporting Initiative 2015.)

Specific standard disclosure:

- Following three indicator categories are included: economic, environmental, and social.
- The social category is divided again into four sub categories: labor practices and decent work, human rights, society, and product responsibility.
- These categories are illustrated by the abbreviations G4-DMA, G4-EC, G4-EN, G4-LA, G4-HR, G4-SO, G4-PR. (Global Reporting Initiative 2015.)

Table 3 shows which of the case companies published sustainability reports in accordance with GRI guidelines in the years 2014 and/or 2015.

Gartner Ranking	Company name	GRI reporting in 2014/2015?
Master	Apple	Yes
Master	Procter & Gamble	Yes
1	Amazon.com	No sustainability report at all
2	McDonald's	Yes
3	Unilever	Yes
4	Intel	Yes
5	Inditex	Yes
6	Cisco Systems	Yes
7	H&M	Yes
8	Samsung Electronics	Yes
9	Colgate-Palmolive	Yes
10	Nike	Yes
11	The Coca-Cola Company	Yes
12	Starbucks	No, but sustainability report
13	Wal-Mart Stores	Yes
14	3M	Yes
15	PepsiCo	Yes
16	Seagate Technology	Yes
17	Nestlé	Yes
18	Lenovo	Yes

19	Qualcomm	Yes
20	Kimberly-Clark	Yes
21	Johnson & Johnson	Yes
22	L'Oréal	Yes
23	Cummins	Yes
24	Toyota Motor	Sustainability report but not every location uses GRI framework
25	Home Depot	No, but sustainability report

Table 3. Application of GRI reporting in 2014/2015 published reports by the case companies (Gerhartz & Ziegler 2016, based on the case companies' websites and their sustainability reports)

After studying Table 3, the authors come up with four different categories regarding sustainability reporting (Figure 11).
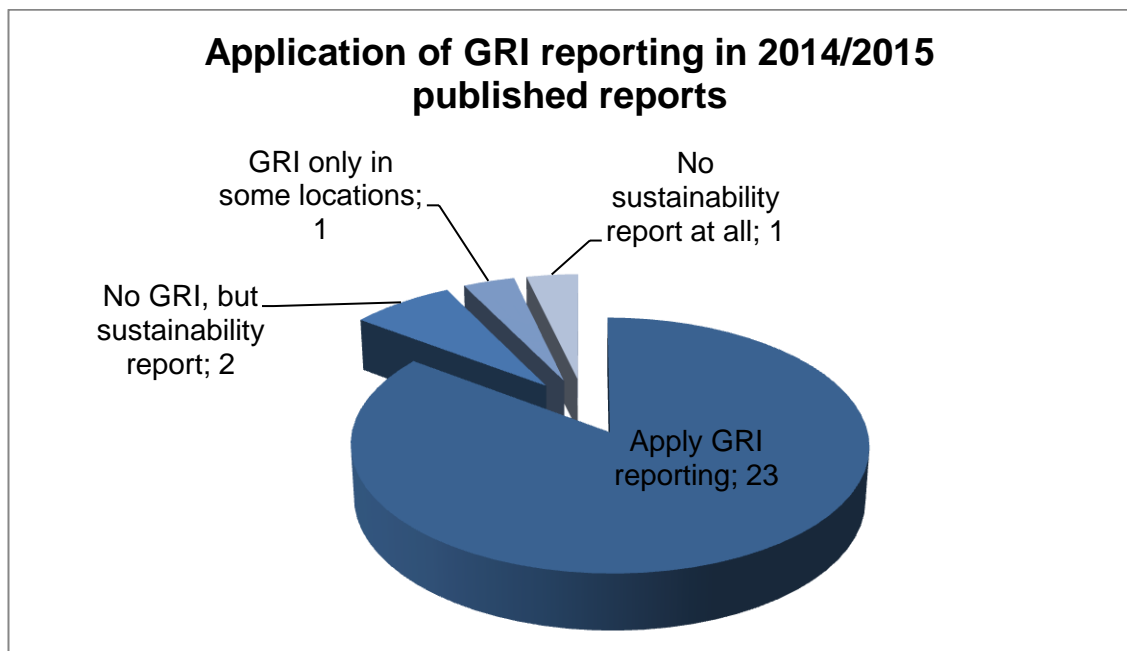
Figure 11. Application of GRI reporting in 2014/2015 published reports (Gerhartz & Ziegler 2016)

In total 23 of all case companies apply the GRI reporting guidelines in their sustainability reports. Further, 2 companies, Starbucks and Home Depot, do

publish sustainability reports but do not follow the GRI framework. Toyota Motor uses the GRI framework but only in some of their locations. However, Amazon.com as the only company of all case companies does not publish a sustainability report at all. Neither does the company deal with sustainability issues in its annual report.

7.3.3 ISO 14001 certification

Sub research question:
Which of the companies are ISO 14001 certified?

ISO is an independent and non-governmental organization which operates worldwide and develops international standards (ISO n.d.). Standards are documents which provide specifications, requirements, guidelines or characteristics that can be applied consistently to make sure that all materials, products, processes, and services fit their intention. ISO has published more than 19,000 international standards which can be applied by businesses. (ISO n.d.a.) When using international standards, companies can gain technological, economic, and social benefits. It helps companies to balance technical specifications and simultaneously improve the industry's efficiency and decrease barriers regarding international trade. Moreover, companies applying ISO standards create transparency for their consumers by ensuring product safety, efficiency, and environmental friendliness. In particular, companies can benefit from decreased costs, improved customer satisfaction, access to new markets, higher market shares, and environmental improvement. (ISO n.d.b.)

Each standard family regards different topics. Thereby, the most popular ISO standards are ISO 9000 (Quality management), ISO 1366 (Country codes), ISO 22000 (Food safety management), ISO 50001 (Energy management), ISO 31000 (Risk management), ISO 4217 (Currency codes), ISO 369 (Language codes), ISO 20121 (Sustainable events), ISO 27001 (Information security), ISO 45001 (Occupational health and safety), ISO 26000 (Social responsibility), and ISO 14000 (Environmental management) (ISO n.d.a).

In this chapter the authors concentrate on ISO 14001, Environmental management, which is applicable by any type of organization and is continuously

revised and improved by the ISO organization. The 14000 standard family includes practical tools for organizations to identify, manage, monitor, and control environmental responsibility in an integrated view. However, when an organization is ISO 14001 certified it means that it operates according to all requirements and specifications fixed in the standard. It can be easily integrated into any ISO management system and addresses all environmental aspects which occur during a business' operations. In particular, air pollution, water and sewage issues, waste management, soil contamination, climate change mitigation and adaption, and resource use and efficiency. (ISO 2015.)

In 2015, the current version of ISO 14001:2004 was extended by several aspects in order to meet current requirements and trends for environmental responsibility in a more appropriate way. In particular, 14001:2015 now requires the implementation of proactive initiatives. Furthermore, a focus on life cycle thinking was included, especially considering all aspects from product development until its end of life. Companies which are already ISO 14001:2004 certified have to adopt the new edition of the standard within the next three years. (ISO 2015.)

Companies which are ISO 14001 certified can show their commitment towards meeting legal requirements. Moreover, they can increase the involvement of the board and the engagement of all employees and can positively influence their reputation and increase their stakeholders' confidence. Further, by integrating environmental issues into the overall business management, companies can reach strategic business objectives. Additionally, due to improved efficiency and cost savings, companies can gain competitive as well as financial advantage. Finally, companies can act as a role model and encourage their suppliers to improve their environmental performance as well. (ISO 2015.)

Following, the authors examine which of the case companies apply ISO 14001 and therefore are ISO 14001 certified.

Gartner Ranking	Company name	ISO 14001 certified 2014/2015?
Master	Apple	Yes
Master	Procter & Gamble	Yes
1	Amazon.com	No
2	McDonald's	Yes
3	Unilever	Yes
4	Intel	Yes
5	Inditex	Yes
6	Cisco Systems	Yes
7	H&M	No
8	Samsung Electronics	Yes
9	Colgate-Palmolive	No
10	Nike	No
11	The Coca-Cola Company	No
12	Starbucks	No
13	Wal-Mart Stores	No
14	3M	Yes
15	PepsiCo	Yes
16	Seagate Technology	Yes
17	Nestlé	Yes
18	Lenovo	Yes
19	Qualcomm	No
20	Kimberly-Clark	Yes

21	Johnson & Johnson	Yes
22	L'Oréal	Yes
23	Cummins	Yes
24	Toyota Motor	Yes
25	Home Depot	Yes

Table 4. ISO 14001 certified case companies in 2014/2015 (Gerhartz & Ziegler 2016, based on the case companies' websites and their sustainability reports)

The findings of Table 4 are summarized in Figure 12 which shows the proportion of companies ISO 14001 certified and not certified.

ISO 14001 certified case companies

Not certified; 8

Certified; 19

Figure 12. ISO 14001 certified case companies 2014/2015 (Gerhartz & Ziegler 2016)

As shown in Figure 12, in total 19 case companies are ISO 14001 certified, whereas 8 companies are not. These include Amazon.com, H&M, Colgate-Palmolive, Nike, The Coca Cola Company, Starbucks, Walt-Mart Stores, and Qualcomm.

7.3.4 Supplier integration in sustainability issues

Sub research question:

What do the case companies expect from their suppliers in view of sustainable business practices?

In order to guarantee and promote sustainability throughout the entire supply chain, companies have established different requirements, code of conducts, and programs. Following, the authors examine which practices the case companies apply to ensure working together with sustainable suppliers.

Compliance with the company's individual code of conduct

According to all companies' websites, all current and future suppliers have to comply with the code of conduct established by each individual company.

Electronic Industry Citizenship Coalition (EICC)

The EICC Code of Conduct comprises several standards within the supply chain of the electronic industry which regards social, environmental, and ethical issues. This EICC Code of Conduct is based on several international standards, namely Universal Declaration of Human Rights, International Labor Standards (ILO), OECD Guidelines for Multinational Enterprises, ISO standards and more. The current version 5.1 went into effect on January 2016. In general, four major different categories are treated within the EICC Code of Conduct, including labor, health and safety, environment, and ethics. Moreover, this Code of Conduct is available in various languages which allows an understanding and application worldwide. Furthermore, EICC offers Validated Audit Processes, different types of assessments as well as reporting tools. (EICC 2016.)

Following case companies situated in the electronic industry implemented the EICC Code of Conduct. Consequently, also their suppliers have to meet all included requirements.

- Apple
- Intel
- Cisco Systems

- Samsung Electronics
- Seagate Technology
- Lenovo
- Qualcomm. (EICC 2016a.)

<u>CDP</u>

The CDP is an organization which motivates companies as well as cities to disclose their environmental impacts to make data for their customers available. Within CDP's supply chain program, CDP provides the supply chain disclosure platform where information about suppliers' approaches regarding climate change and water management can be gathered. Thereby, suppliers are asked by their customers to answer a questionnaire regarding their commitment towards climate change and water management whereby CDP provides assistance. (CDP 2016.)

Following case companies use the CDP's supply chain program and benefit from their suppliers' environmental data.

- Unilever
- Colgate-Palmolive
- The Coca Cola Company
- Wal-Mart Stores
- PepsiCo
- Nestlé
- Johnson & Johnson
- L'Oréal
- Toyota Motor. (CDP 2016.)

<u>Company specific approaches</u>

H&M has established an auditing team which examines the working conditions at its supplier factories. Moreover, it controls whether they comply with the code of conduct which is compulsory for all its suppliers. Besides, production offices conduct tests whether used chemicals meet given requirements. (H&M n.d..) Since February 2016, H&M's suppliers have to sign H&M's newly established

Sustainability Commitment, additionally to the organizational code of conduct, which is based on the same standards as H&M's code of conduct. The Sustainability Commitment focuses majorly on fair living wages, environmental performance expectations, and animal welfare standards throughout H&M's value chain. (H&M n.d.a.) Additionally, since 2014 H&M has established an important partnership with the International Labour Organisation (ILO) in order to increase overall sustainability in the garment industry on a global, national, and enterprise level (H&M n.d.b, p. 47). This shall ensure sustainable working conditions throughout the whole supply chain.

In order to become a supplier of **Inditex**, the minimum requirements of Inditex have to be signed which includes an initial CSR audit. Thereby, not only the supplier itself but also its facilities and factories are object of the CSR audit. The audit aims to monitor whether the supplier complies with Inditex's Code of Conduct for Manufacturers and Suppliers in all practices. After the initial CSR audit, frequent and continuous audits take place to guarantee an ongoing compliance with the Code of Conduct. These CSR audits examine different areas, namely inspection of all facilities, documentary due diligence, waste management, emissions, water and energy usage as well as interviews with factory managers, employees, union representatives, and health and safety staff. CSR audits are conducted by both internal CSR teams of Inditex and independent external auditors. (Inditex n.d..) These CSR audits are part of Inditex's six phases compliance program which represents the selection process for new suppliers (Inditex n.d.a).

As mentioned earlier, all suppliers of **Lenovo** have to follow the EICC Supplier Code of Conduct. In order to improve the company's supply chains performance, Lenovo continues to support and participate in the EICC Carbon Reporting system. In particular, their supplier plants are audited by EICC certified auditors. Lenovo expects its suppliers to submit Green House Gases and water information by using reporting tools provided by EICC. Moreover, to steadily improve the overall supply chain sustainability performance and share strategies and requirements regarding sustainability, Lenovo holds yearly supplier conferences. (Lenovo 2016.) Additionally, Lenovo has special environmental

requirements for materials, parts, products, and packaging which have to be met by their suppliers (Lenovo 2016a).

All suppliers of **Apple** have to follow Apple's Supplier Code of Conduct and secondly Apple's Supplier Responsibility Standards (Apple Inc. 2015, p. 6). These do not only have to be followed by the supplier itself but also by their subcontractors as well as their next-tier suppliers (Apple Inc. 2016, p. 3). In order to monitor their compliance, Apple conducts supplier audits. To ensure that every supply chain member is capable of understanding Apple's code of conduct, the company requires its suppliers to train their employees regarding the code of conduct. Moreover, Apple succeeds in improving their supply chain's sustainability by raising the number of conflict-free verified smelters. (Apple Inc. 2015, pp. 8 – 19.)

Also all suppliers of **Cisco Systems** have to follow the EICC Supplier Code of Conduct. However, these requirements shall only represent minimum standards which have to be met by all suppliers. Furthermore, Cisco System applies a business scorecard in order to control its key suppliers regarding different issues, namely technology, cost, quality, responsiveness, and collaboration. Thereby, the topic sustainability embodies about 3 to 8 % of a supplier's overall score. In terms of sustainability, the following topics are regarded. (Cisco 2015, p. 138.):

- Acknowledgement of the code
- Green House Gases (GHG) reporting through the Carbon Disclosure Project (CDP)
- Data on labor issues, such as injury and illness rates, working hours, and employee turnover
- Acknowledgement of the Cisco Controlled Substances Specification, including compliance with environmental regulations such as the European Union (EU) Restriction of Hazardous Substances Directive (RoHS)
- Completion of a Conflict Minerals Disclosure. (Cisco 2015, p. 138.)

By using this scorecard, Cisco Systems was able to increase sustainability results throughout its supply chain year by year (Cisco 2015, p. 139).

Procter & Gamble established a Supply Chain Environmental Sustainability Scorecard in order to track and measure environmental sustainability improvements in its supply chain. This allows the company to improve its environmental sustainability performance throughout its end-to-end supply chain. The Supply Chain Environmental Sustainability Scorecard includes different types of sustainability measurements, for example energy usage, water usage, hazardous waste usage, and greenhouse gas emissions. Taking all measurements into account the company is able to assess its overall environmental footprint. Based on the measurements a supplier is rated on a scale from one (far below expectations) to five (far exceeds expectations). Due to this fact, suppliers are encouraged to increase their commitment towards sustainable business practices in order to reach higher rankings in the scorecard. (Procter & Gamble 2011.)

Walmart requires its suppliers to meet Walmart's Standards for Suppliers Manual. Among others the standard obliges suppliers to determine a company representative who is responsible for examining whether the company complies with all applicable laws and standards. The aim of the Standard for Suppliers Manual is to secure workers' well-being and safety throughout Walmart's entire supply chain. Furthermore, Walmart requires all facilities to offer a worker helpline, where workers can report their concerns anonymously in their mother tongue. Additionally, in order to monitor the suppliers' compliance with the Standards for Suppliers in their facilities, Walmart conducts responsible sourcing audits which are carried out by third-party audit firms. The suppliers receive the results and have to correct deficiencies. (Walmart 2016.)

7.3.5 Customer integration in sustainability issues

Sub research question:

How is the customer as supply chain member integrated into the companies' sustainable business?

In order to guarantee sustainability throughout the entire supply chain, also customers are required to participate and contribute to a more sustainable supply chain. Therefore, companies established different programs to integrate their

customers in order to achieve a more sustainable supply chain. Following, the authors show various programs of some case companies.

In the beginning of 2013, **H&M** started its global garment collection initiative which asks customers to bring their old and used garments to H&M stores, no matter from which brand the garments are. The company in turn offers its customers a discount for their next purchase in an H&M store. Simultaneously the customer contributes to the saving of natural resources and reduces his individual environmental impact due to the fact that textile waste is minimized and reused. (Godelnik 2012.) In particular, the initiative provides three different options for using the collected garments. They can either be re-worn and therefore sold as second hand, be reused and turned into other products or be recycled and turned into textile fibers. (H&M n.d.c.) H&M's overall goal of the global garment collecting initiative is to create a closed loop system. This allows the textile industry to reduce the amount of used resources substantially and massively decrease the amount of material which goes to landfill. In particular, old textiles are used as sources for new products and no longer end as waste in the end of their life cycle. (H&M n.d.d.) Consequently, H&M succeeds in integrating its customers into its sustainable supply chain approach and promotes the idea of a green supply chain.

Also **Inditex** is starting to introduce garment collection systems by installing in-store clothing recycling containers which was announced at Inditex's Annual General Meeting in 2015. This project is established in cooperation with Caritas and the Red Cross as well as with other charities. Thereby, the company encourages its customers to deal with garments efficiently and integrates them into their sustainable supply chain. (Inditex 2015.)

Apple established different reuse and recycling programs to integrate its customers into its sustainable supply chain. In particular, the company provides its customers with free shipping on e-waste returns, organizes collection events for old devices, and runs continuous take-back programs in cooperation with universities and governments. (Apple Inc. 2015a, p. 19.) Furthermore, Apple offers their customers the possibility to bring back their devices to any Apple store. If the device can be reused, the customer receives an Apple Store Gift Card in the

amount of the device's current market value which can be used to buy a new device. In case the device cannot be reused, Apple recycles it responsibly for the customer without charging an additional recycling fee. (Apple 2016a.) By applying these programs Apple succeeds in integrating its customer in its sustainable supply chain.

Cisco Systems implemented its Customer Return Programs, Cisco Technology Migration Program (TMP), and the Exceptional Pick-Up Program (EPUP). This shall attract customers to return functional, used equipment to Cisco. As incentive, customers receive an additional discount when purchasing new Cisco equipment. (Cisco 2015, p. 84.) Furthermore, Cisco also offers a Take-back and Recycle Program for all equipment which is either old, damaged or has no reuse value. The returned items are recycled by authorized recyclers. Thereby, TMP and EPUP, as reuse option are prioritized by Cisco and only non-reusable products are recycled. In conclusion, Cisco Systems offers its customers a suitable solution for every product's end of life cycle case. This allows the company to integrate its customers into its sustainable supply chain. (Cisco 2015, pp. 119 – 120.)

Also **Samsung Electronics** tries to reach its customers as part of its green supply chain by offering different recycling and take-back programs. Firstly, the company established different Samsung Recycling Direct Locations all over the globe in cooperation with local recycling partners. Secondly, Samsung offers its customers the S.T.A.R. Toner Recycling Program which allows users to send back their old and empty toners to the company free of charge. Thirdly, the company offers a Mobile Take-Back Program as well as a Mail Back Program. These programs allow customers to send back any Samsung branded product at the end of their life cycle to Samsung which recycles them responsibly. Moreover, the company also provides its customers with a Battery Recycling and Packaging Take-Back program. (Samsung 2015.) With all these programs Samsung integrates its customers into their sustainability issues.

Lenovo established Asset Recovery Services (ARS) for its business customers. Thereby, large enterprise customers are provided with an end-to-end solution by Lenovo. For consumer customers the company offers product take-back and

recycling programs which allows customers to return their end of life products to Lenovo. The company then responsibly takes care of reusing or recycling used computers or their environmental disposal. Thereby, Lenovo aims for a closed loop recycling which is achieved by reusing recycled materials and parts for new products. This closed loop recycling approach is only possible by integrating both business and consumer customers into Lenovo's sustainable supply chain. (Lenovo 2016b.)

After the detailed research the authors come to the conclusion that primarily only companies which belong to either the textile or electronic equipment industry integrate their customers as supply chain member into their sustainable business practices. After examining H&M, Inditex, Apple, Cisco Systems, Samsung Electronics, and Lenovo as selected examples, this is mostly achieved by offering the customers a way of returning their end of life products and responsibly taking care of their reuse, recycling and/or disposal. Consequently, both the textile and electronic equipment industry aim to achieve a closed loop system as show in Figure 13.
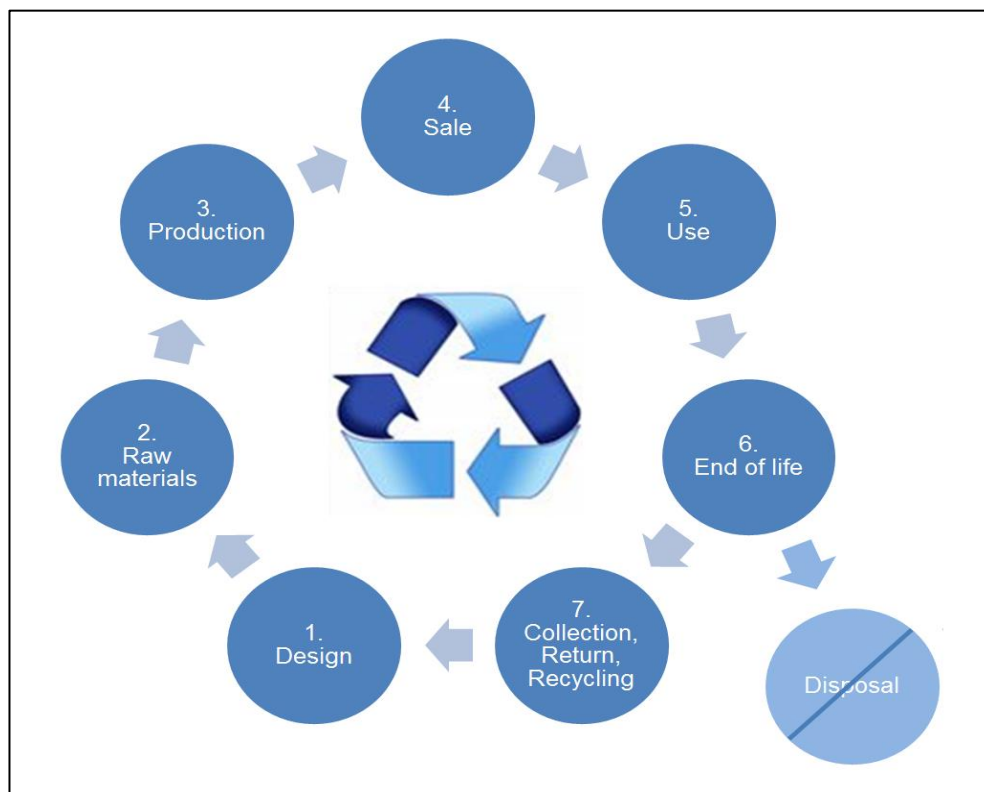
Figure 13. Closed loop recycling system (Gerhartz & Ziegler 2016, based on H&M n.d.d)

According to the closed loop recycling system, companies avoid product disposals but collect, reuse, and recycle products in the end of the products' life cycle. These materials and parts are used for the design and production of new products. (H&M n.d.c; H&M n.d.d.) In order to ensure this system, many companies established different programs to involve their customers in their sustainable supply chain and encourage them to return end of life products instead of disposing them. This allows companies to minimize raw materials usage as they stay in the loop and do not have to be newly sourced. This system improves a company's environmental, social, and economic bottom line. In particular, the environment can be protected due to lower raw material usage and simultaneously less waste to landfill. For instance, the textile industry can minimize its cotton use which production is very water intensive. Furthermore, companies can positively contribute to the society as for example less rare earth metals are needed for production in the electronic industry, which often are sourced in critical areas. Finally, in terms of economic sustainability recycling does not necessarily increase a company's profit. However, as the topic sustainability has become of major importance in Western societies, companies can benefit from an improved reputation which can in the end lead to higher revenues.

7.3.6 Energy & water consumption and GHG emissions measurement

Sub research question:

Do the case companies measure their own and/or their supply chain members' energy consumption, GHG emissions, and water consumption?

As introduced in chapter 5.1.2, footprint indicators represent an appropriate measurement to indicate a company's and its supply chain's impact on the environment and society. These indicators are often used by businesses in order to create transparency.

Table 5 shows which of the case companies measure their own and/or their supply chain members' energy consumption, GHG emissions, and water consumption and document them in their sustainability reports or on their websites.

Gartner Ranking	Company name	Energy consumption	Carbon footprint/ GHG emissions	Water footprint/ consumption
Master	Apple	Yes	Yes	Yes
Master	Procter & Gamble	Yes	Yes	Yes
1	Amazon.com	No	No	No
2	McDonald's	Yes	Yes	Yes
3	Unilever	Yes	Yes	Yes
4	Intel	Yes	Yes	Yes
5	Inditex	Yes	Yes	Yes
6	Cisco Systems	Yes	Yes	Yes
7	H&M	Yes	Yes	Yes
8	Samsung Electronics	Yes	Yes	Yes
9	Colgate-Palmolive	Yes	Yes	Yes
10	Nike	Yes	Yes	Yes
11	The Coca-Cola Company	Yes	Yes	Yes
12	Starbucks	Yes	Yes	Yes
13	Wal-Mart Stores	Yes	Yes	Yes
14	3M	Yes	Yes	Yes
15	PepsiCo	Yes	Yes	Yes

16	Seagate Technology	Yes	Yes	Yes
17	Nestlé	Yes	Yes	Yes
18	Lenovo	Yes	Yes	Yes
19	Qualcomm	Yes	Yes	Yes
20	Kimberly-Clark	Yes	Yes	Yes
21	Johnson & Johnson	Yes	Yes	Yes
22	L'Oréal	Yes	Yes	Yes
23	Cummins	Yes	Yes	Yes
24	Toyota Motor	Yes	Yes	Yes
25	Home Depot	Yes	Yes	Yes

Table 5. Measurement of energy and water consumption and GHG emissions (Gerhartz & Ziegler 2016, based on the case companies' sustainability reports and their websites)

As illustrated in the table above, all case companies beside Amazon.com conduct energy and water consumption as well as GHG emissions measurements. This result shown in Table 5 highlights the importance of these measurements in nowadays business and, according to the authors these measurements can be seen as basic requirements for today's businesses. This is due to the fact that most case companies are not even listed in sustainability rankings as examined in chapter 7.3.1. However, customers are developing a steadily increasing demand for companies to operate in a more sustainable way. In consequence, companies are expected to fulfil at least minimum requirements regarding sustainability.

Thereby, the case companies apply different calculations. In particular according to the case companies' sustainability reports, consumption measurements are conducted for single products and/or single facilities and/or the entire supply chain. Additionally, measurements can be conducted on a regional or worldwide

basis. All these companies which measure their consumption have set internal and overall supply chain goals regarding a consumption reduction and consequently minimize their negative environmental and social impact. Particularly with regard to the goal of minimizing the supply chain's carbon footprint, most companies make great efforts in establishing renewable energy sources in their business operations.

As shown in Table 5 it is remarkable that Amazon.com as single case company does not provide any consumption measurements. However, the Amazon company AWS (Amazon Web Services) shows the first commitment regarding sustainability. Hereby, AWS aims to use 100% renewable energy for their cloud operations. (Richard 2016.) In conclusion, the authors expect increasing pressure for Amazon.com in the long-term from stakeholders, in particular from shareholders and customers, to become a more responsible and sustainable company.

7.3.7 Green packaging

Sub research question:
Which approaches do the companies in cooperation with their suppliers develop to integrate green packaging into their business?

All products have to have a certain packaging. As packaging represents a substantial source of waste companies have developed green packaging approaches which aim to reduce, reuse, and recycle packaging materials.

Amazon.com established a Frustration-Free Packaging which was designed to firstly ease the opening process for customers and secondly reduce environmental harm (see Figure 14). This was achieved by minimizing the overall used packaging material and by making the packaging 100% recyclable. The Frustration-Free Packaging led to a complete elimination of plastic components. In cooperation with Amazon's supply chain, manufacturers can use Amazon's free lab analysis and feedback to develop Frustration-Free Packaging for their products. (Amazon 2016.)

Figure 14. Amazon.com's Frustration-Free Packaging (Clifford 2010)

At **Coca-Cola,** bottles represent the primary packaging. For this reason, the company has been developing a fully recyclable PET bottle which components are partially based on plants. Coca-Cola's PlantBottle was introduced in 2009 (see Figure 15). However, until now only 30% of the bottle packaging can be based on plants. Nevertheless, the company is aiming to achieve a 100% plant based bottle with several cooperation partners within its supply chain. Even though only 30% of the original PET plastic bottle can be replaced by natural components until now, Coca-Cola was able to achieve a substantial reduction in oil consumption and CO_2 emissions. (The Coca-Cola Company 2012.)

Figure 15. Coca-Cola's PlantBottle (The Coca-Cola Company 2012a)

Procter & Gamble's overall packaging goal is to make packaging as efficient and sustainable as possible. One of the company's approaches is to sell their products in a higher concentration so that smaller packages and therefore fewer materials are needed. Another approach of Procter & Gamble is to use renewable materials for their packaging based on sustainably grown and harvested sugar cane. Two of the company's global brands already succeeded in solely using this new packaging form and consequently reduced plastic consumption. As shown in Figure 16, Pantene Pro V Nature Fusion, represents one of these brand examples for sugar cane packaging. (Procter & Gamble 2015.)

Figure 16. Procter & Gamble's sugar cane packaging (Green Diary 2014)

Apple is continuously developing new packaging formats for their products in order to minimize their packaging material needs. For example, compared to the first generation iPhone packaging, the company succeeded in decreasing the packaging volume for its iPhone 6 by 34%. This packaging size development can be seen in Figure 17. Additionally, over two thirds of the paper packaging used for Apple's products is sourced either from certified sustainably managed forests or recycled materials. In order to guarantee the sustainability of needed paper and cardboard, Apple closely cooperates with its raw material suppliers. (Apple Inc. 2015a, p. 11.)

Figure 17. Apple's iPhone generations packaging development (Moss 2014)

As seen in Figure 17, Apple did not only reduce the packaging size but also decreased the packaging weight which consequently leads to fewer emissions during transportation. Moreover, the company originally used metallic applications to indicate the brand and model name. With the introduction of the iPhone 5 Apple replaced this method by only printing the name on the packaging. (Moss 2014.)

3M developed in cooperation with Scotch a 100% repulpable box sealing tape (see Figure 18). The tape can be completely included in the recycling process as it becomes a seamless part of the packaging. Therefore, 3M's repulpable tape technology contributes to a more environmental friendly packaging solution. (3M 2016.)

Figure 18. 3M's Repulpable Box Sealing Tape (3M 2016)

The authors conclude that not all case companies have developed new green packaging innovations but almost all companies at least partly use recyclable materials for their product's packaging. In general, all companies are trying to find solutions how to reduce and minimize their packaging material needs. These aims can only be achieved by close cooperation between the company and its manufacturers and suppliers throughout the entire supply chain.

7.3.8 UN Global Compact and other industry principles

Sub research question:

Which of the companies participate in the UN Global Compact and/or use other industry related principles?

The UN Global Compact represents a policy framework based on principles which helps companies to primarily take care of their social bottom line in order to promote sustainability. In particular, the UN Global Compact is the world's largest corporate sustainability initiative with more than 8,000 participating companies. Its aim is to create awareness for firms to operate in a more sustainable way. Therefore, the UN Global Compact developed ten principles based on global principles and declarations, inter alia Universal Declaration of Human Rights and United Nations Convention Against Corruption. These ten principles cover the following four topics, namely Human Rights, Labor, Environment, and Anti-Corruption. Participating companies are expected to yearly actively document their efforts in order to stay a listed participant. Otherwise, when documentation is missing or uncomplete these companies are delisted. (UN Global Compact n.d..)

The following Table 6 shows which of the case companies participate in the UN Global Compact.

Gartner Ranking	Company name	UN Global Compact?
Master	Apple	No
Master	Procter & Gamble	No
1	Amazon.com	No
2	McDonald's	No
3	Unilever	Yes
4	Intel	Yes
5	Inditex	Yes
6	Cisco Systems	Yes
7	H&M	Yes
8	Samsung Electronics	No
9	Colgate-Palmolive	No
10	Nike	Yes
11	The Coca-Cola Company	Yes
12	Starbucks	Yes
13	Wal-Mart Stores	No
14	3M	Yes
15	PepsiCo	Yes
16	Seagate Technology	Yes
17	Nestlé	Yes

18	Lenovo	Yes
19	Qualcomm	Yes
20	Kimberly-Clark	Yes
21	Johnson & Johnson	Yes
22	L'Oréal	Yes
23	Cummins	No
24	Toyota Motor	No
25	Home Depot	No

Table 6. UN Global Compact participation (Gerhartz & Ziegler 2016, based on UN Global Compact)

As shown in Figure 19, the research has led to the finding that 17 of the case companies participate in the UN Global Compact while 10 case companies do not participate. Due to the fact that the majority of case companies are partici-pating members of the UN initiative, one can see the importance and influence of the Compact on nowadays business.

Participation in UN Global Compact

No; 10

Yes; 17
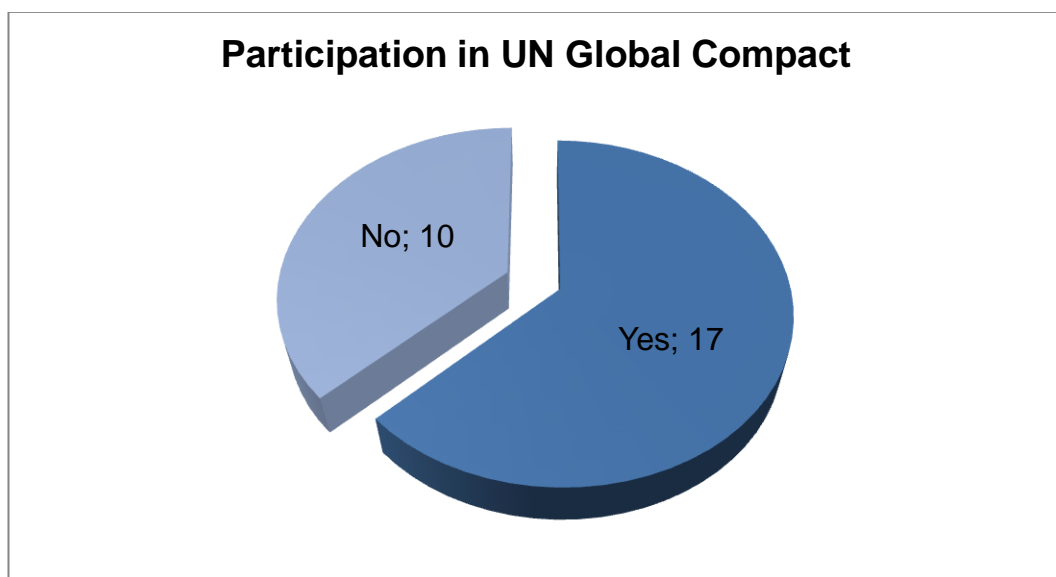
Figure 19. Participation in UN Global Compact of the case companies (Gerhartz & Ziegler 2016)

According to the authors, it is obvious that when companies only focus on their internal processes and operations they cannot guarantee to fulfil the ten principles of the UN Global Compact. This requires the engagement and commitment of all supply chain members to ensure an overall contribution to advance societal goals. Only when all supply chain members cooperate with each other advancement in the fields of Human Rights, Labor, Environment, and Anti-Corruption can be achieved.

Besides the United Nations Global Compact, depending on the case companies' operating industry different industry specific standards, programs, and initiatives can be applied by the companies to promote sustainability throughout the supply chain.

As illustrated in Figure 20, the mentioned case companies integrate following industry specific standards, programs, and initiatives into their business practices. Of course, the below presented programs and initiatives as well as the industries included in Figure 20, represent only a small extract of potential examples. Within the different industries there is a variety of special programs and initiatives. However, the authors concentrate in the following only on programs and initiatives in which industry related case companies are active participants.

Textile Industry

The **Leather Working Group (LWG)** is a multi-stakeholder group which established and promotes a protocol to examine whether suppliers meet environmental compliances in the leather industry. In particular, companies can use the protocol to audit and rate their suppliers. LWG's aim is to create awareness as well as transparency regarding environmental issues in the textile industry's supply chain regarding leather manufacturing. Additionally, LWG offers all members of the supply chain possible guidelines to improve their practices in the leather industry. Among the case companies, Inditex, H&M, and Nike are members of LWG and its auditing tool. (Leather Working Group 2010; Leather Working Group 2010a; Leather Working Group 2010b.)

Figure 20. Industry specific standards, programs, and initiatives (Gerhartz & Ziegler 2016, based on the case companies' and initiatives' websites)

The **Better Cotton Initiative (BCI)** is a not-for-profit organization which promotes sustainable production of cotton throughout the global cotton supply chain (Better Cotton Initiative n.d.). The holistic approach of BCI's Better Cotton Standard System covers all three bottom lines of sustainability in order to make cotton production more sustainable (Better Cotton Initiative n.d.a). In particular, cotton farmers are trained for example regarding cotton growing and the responsible use of pesticides and water (Confino 2011). The authors conclude that the more members of this initiative promote its idea and integrate it into their business practices, the more pressure can be put on the global cotton supply chain. Like in the LWG, the three case companies Inditex, H&M, and Nike are participating members of the BCI.

Personal Care Industry

The **Roundtable on Sustainable Palm Oil (RSPO)** is a not-for-profit global multi-stakeholder initiative. In cooperation with stakeholders of the palm oil industry, RSPO establishes and implements global norms and standards regarding sustainable palm oil. By applying given environmental and social criteria, producing companies can achieve the certification "Certified Sustainable Palm Oil" (CSPO). Following these criteria ensures environmental as well as social enhancement in palm oil manufacturing regions. Due to the high number of participating members worldwide, this initiative effects not only sustainable production but also sourcing and usage of palm oil. In particular, this initiative covers a broad range of the palm oil supply chain with various backgrounds including farmers, traders, manufacturers as well as retailers. Therefore, all steps within the certified sustainable palm oil supply chain are involved. Among the case companies, Procter & Gamble, Unilever, Colgate-Palmolive, and L'Oréal use Certified Sustainable Palm Oil in their products. (Roundtable on Sustainable Palm Oil 2016; Roundtable on Sustainable Palm Oil 2016a; Roundtable on Sustainable Palm Oil 2016b.)

The **European Partnership for Alternative Approaches to Animal Testing (EPAA)** is a unique collaboration of the European Commission, various European trade associations, and enterprises from different industries. The goal of all members is to gather and share knowledge and information as well as

acceptance for the development of new alternative approaches to animal testing. All participating members promote the idea and are committed to replace, reduce, and refine (3Rs) the animal use in regulatory testing. Unilever, Colgate-Palmolive, Kimberly-Clark, and L'Oréal are engaged in this partnership. (European Commission 2016; European Commission 2016a.)

Electronics Industry

The Electronic Industry Citizenship Coalition (EICC) and the Global e-Sustainability Initiative (GeSI) established in 2008 the **Conflict-Free Sourcing Initiative (CFSI)**. This initiative regards a broad variety of industries which face conflict minerals within their supply chains. Regarding the case companies operating in the electronics industry, all examined companies, namely Apple, Intel, Cisco Systems, Samsung Electronics, Seagate Technology, Lenovo, and Qualcomm are actively participating in the CFSI. One of the most important programs of the CFSI is the **Conflict-Free Smelter Program (CFSP)** which provides companies with a third-party audit in order to examine if smelters and refiners source solely conflict-free materials and therefore can be validated as "conflict-free" according to present global standards. The information of the audits helps companies to guarantee conflict-free materials usage within their supply chain. All above mentioned case companies which are engaged in the CFSI participate as well in the CFSP. (Conflict-Free Sourcing Initiative 2016; Conflict-Free Sourcing Initiative 2016a; Apple Inc. 2015, p. 21; Intel Corporation 2015, p. 87; Cisco 2015, p. 132; Samsung Electronics 2014, p. 72; Lenovo n.d., p. 48, p. 58; Seagate n.d., pp. 16 – 17; Qualcomm n.d., p. 27.)

The research led to the conclusion that the majority of case companies is committed to industry specific programs and initiatives to promote sustainable business practices throughout the entire supply chain. Moreover, most case companies have also set internal company and supply chain sustainability standards or even launched own programs and guidelines.

7.3.9 Code of conduct

Sub research question:

Which elements are included in the companies' code of conduct and do they have a supplier code of conduct?

Due to the risen consumer pressure on companies in the past decades regarding CSR issues and corporate ethical behavior, these topics have become as important as the company's profit for a wide range of firms. For this purpose, companies have come up with corporate code of conducts. In general, a code of conduct defines a bundle of rules and regulations which have to be followed responsibly by an individual or member of an organization. Whereas a corporate code of conduct comprises a company's public policy in terms of ethical standards applied to business practices. A company's code of conduct has to be actively communicated, accepted, followed, and further spread throughout all organizational levels. It has to be integrated into a company's daily business, particularly in every business activity. (Idowu & Capaldi & Fifka & Zu & Schmidpeter 2015, p. 154.) These standards are one of a company's CSR tools which contribute to the development of a socially responsible culture within an organization (Erwin 2011, p. 535).

In the following, the authors research which case companies published a code of conduct and/or a supplier code of conduct. Moreover, it is examined which companies, operating in the electronics industry, integrated or even adopted the EICC Supplier Code of Conduct.

The results of this research are summarized in Table 7.

Gartner Ranking	Company name	Code of conduct	Additional own supplier code of conduct	EICC Supplier Code of Conduct
Master	Apple	No	Yes	Integrated
Master	Procter & Gamble	Yes	No	-
1	Amazon.com	No	Yes	-
2	McDonald's	Yes	Yes	-
3	Unilever	Yes	Yes	-
4	Intel	Yes	No	Adopted
5	Inditex	Yes	Yes	-
6	Cisco Systems	Yes	No	Adopted
7	H&M	Yes	Yes	-
8	Samsung Electronics	Yes	Yes	Integrated
9	Colgate-Palmolive	Yes	Yes	-
10	Nike	Yes	No	-
11	The Coca-Cola Company	Yes	Yes	-
12	Starbucks	Yes	Yes	-
13	Wal-Mart Stores	Yes	Yes	-
14	3M	Yes	Yes	-
15	PepsiCo	Yes	Yes	-

16	Seagate Technology	Yes	No	Adopted
17	Nestlé	Yes	Yes	-
18	Lenovo	Yes	No	Adopted
19	Qualcomm	Yes	No	Adopted
20	Kimberly-Clark	Yes	No	-
21	Johnson & Johnson	Yes	Yes	-
22	L'Oréal	Yes	No	-
23	Cummins	Yes	Yes	-
24	Toyota Motor	Yes	Yes	-
25	Home Depot	Yes	No	-

Table 7. Case companies' Code of Conducts (Gerhartz & Ziegler 2016, based on the case companies' websites)

Figure 21 shows those companies that operate in non-electronics industries. In total 13 companies developed both a code of conduct and their own organizational supplier code of conduct. Whereas, 5 companies established only a code of conduct, namely Procter & Gamble, Nike, Kimberly-Clark, L'Oréal, and Home Depot. These companies require their suppliers to comply with their organizational code of conduct. Amazon.com as single company uses only a supplier code of conduct.

Figure 22 regards those companies which operate in the electronics industry. Intel, Cisco Systems, Seagate Technology, Lenovo, and Qualcomm belong to those companies which formulated a corporate code of conduct and adopted the EICC Supplier Code of Conduct as guidelines for their suppliers. Samsung Electronics developed as well its own code of conduct and a supplier code of conduct. However, this supplier code of conduct integrates the principles of the EICC Supplier Code of Conduct. Apple as single company has only published a

supplier code of conduct which is based on the EICC Supplier Code of Conduct as well.

Non-electronics industry - code of conduct & supplier code of conduct

Only supplier code of conduct; 1

Only code of conduct; 5

Code of conduct & own supplier code of conduct; 13
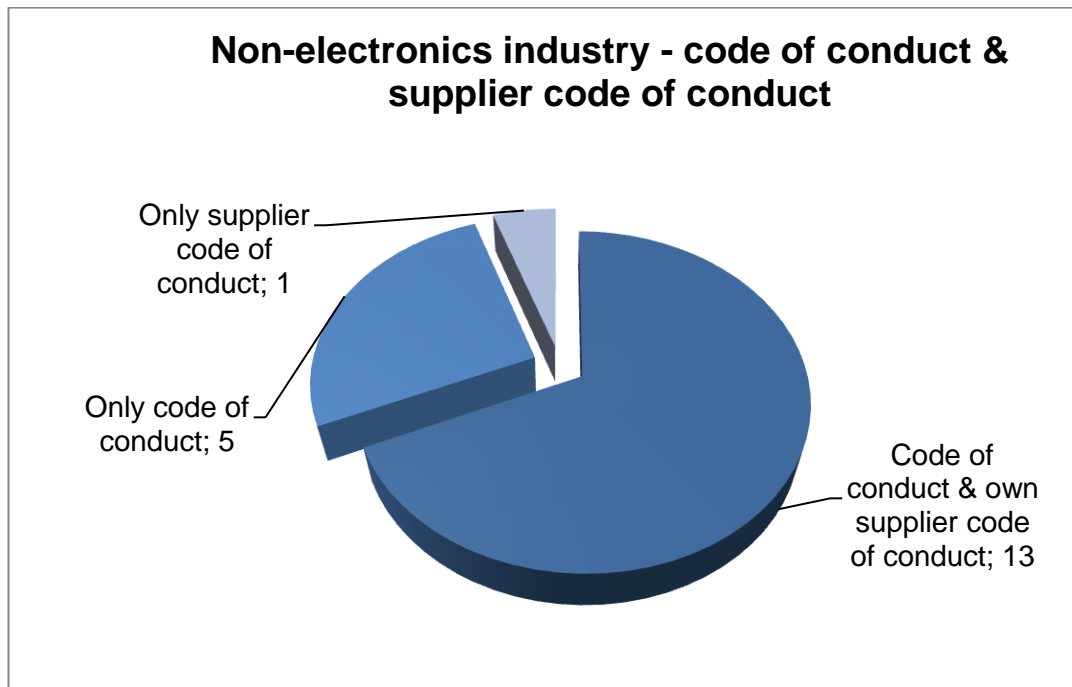
Figure 21. Non-electronics industry - code of conduct & supplier code of conduct (Gerhartz & Ziegler 2016)

Electronics industry - code of conduct & supplier code of conduct

Only supplier code of conduct (EICC integrated); 1

Code of conduct & own supplier code of conduct (EICC integrated); 1

Code of conduct & EICC Supplier Code of Conduct; 5
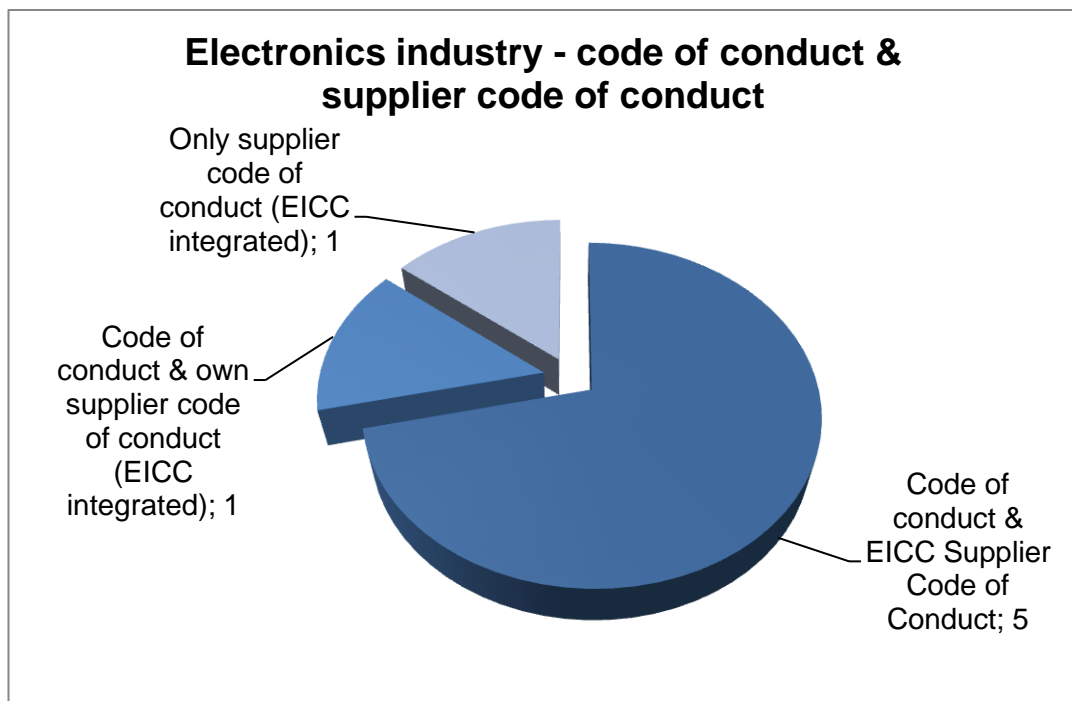
Figure 22. Electronics industry - code of conduct & supplier code of conduct (Gerhartz & Ziegler 2016)

All following findings are based on the opinion of the authors. After examining the case companies' code of conducts, the following findings can be seen as common aspects which are included in the individual corporate code of conducts. This shall give an overall insight and a general overview which issues can be treated by companies within a code of conduct. All in all, the following explanations represent only an extract of possible topics in a code of conduct.

A code of conduct, often also named as code of ethics, addresses in general all parties which are touched by a business. Therefore, a code of conduct is often divided into different relationships a business can face. Figure 23 illustrates the different types of relationships which occur during business activities and which are dealt within a code of conduct. As highlighted, employees, customers, shareholders, business partners, suppliers, communities and society, environment, and government and law represent a company's potential pool of business relationships. As the relationships with all parties are covered by the code of conduct, the entire supply chain of a company is automatically involved.
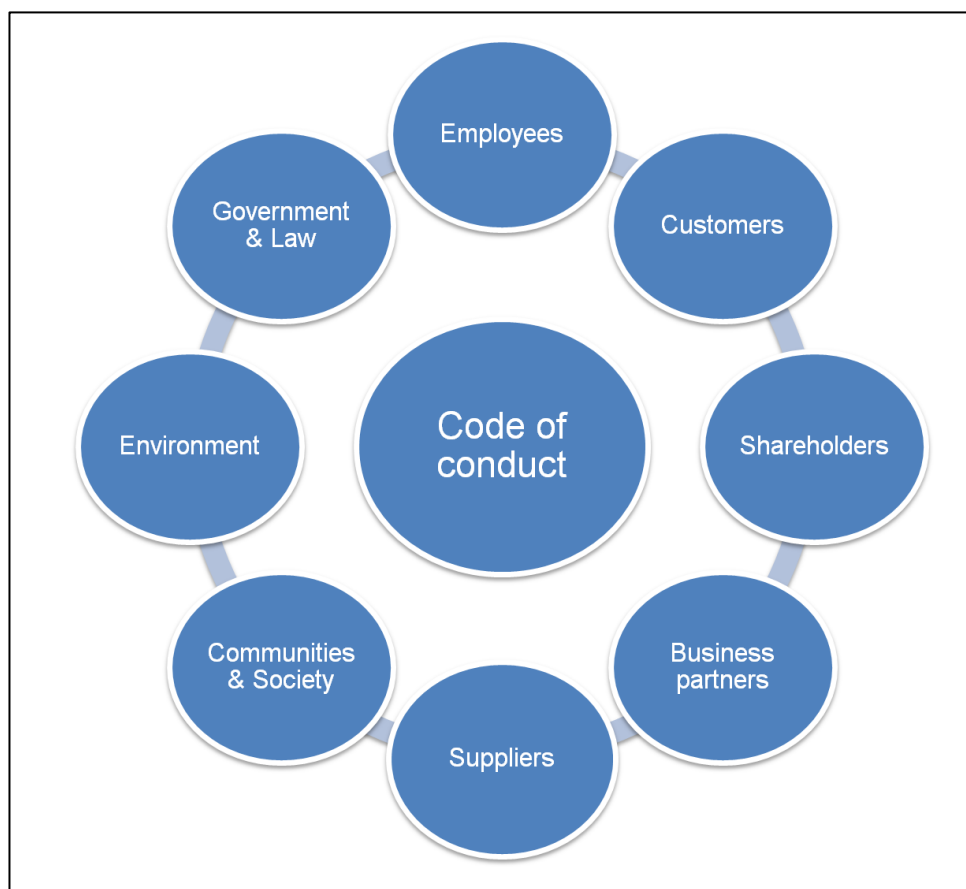
Figure 23. Relationships covered within a code of conduct (Gerhartz & Ziegler 2016)

Within these relationships different principles have to be applied covering a variety of issues and responsibilities. Nevertheless, due to the thesis topic, the authors only concentrate on those principles which help to secure a company's sustainability. In particular, the focus lies on those topics and principles in the code of conduct which address the social and environmental bottom line of businesses. The research led to the conclusion that companies commonly establish following principles in their code of conducts.

Principles referring to the social bottom line

- Protect and follow Human Rights
- Build trust
- Equal opportunities for all parties
- Guarantee healthy working conditions
- Obey safety and health laws and standards
- Freedom of association
- Fair payment
- Anti-discrimination
- Anti-corruption and fraud
- No child labor
- Prohibition of drugs and alcohol consumption

Principles referring to the environmental bottom line

- Adhere to environmental laws and regulations
- Combat climate change
- Responsible handling of natural resources
- Maintain audit programs
- Develop environmental friendly processes
- Comply with standards regarding animal care

Of course, the above mentioned principles are only a selection of all issues in a code of conduct which address the topic of sustainability. However, these principles represent standards which are usually integrated into the examined code of conducts. Moreover, companies integrate commonly shared values like respect, trust, honesty, dignity, and integrity into their code of conducts. All parties

are required to adhere to these principles and values in order to promote sustainability on a supply chain and global level.

With regard to supplier code of conduct, it includes also the mentioned issues of the corporate code of conduct. However, its focus mostly lies on working conditions, prohibition of child labor, providing a safe and healthy working environment, and protecting the environment throughout the entire supply chain. In addition, the supplier code of conduct also requires suppliers to monitor and report their compliance with the code. Furthermore, the topics of confidentiality of information and protection of technology and intellectual property are treated. All in all, the supplier code of conduct represents a tool to guarantee social, environmental, and economic sustainability in the supply chain.

7.3.10 Programs for communities worldwide

Sub research question:
Which programs are established by the companies to improve the living situation of communities worldwide?

As the case companies are international firms with high revenues, they aim to return some of the money by establishing social as well as environmental programs in order to improve the living standard of individuals and communities. Following, the authors introduce some examples of social and environmental programs and initiatives developed by the case companies. Figure 24 illustrates some examples of programs and topics which have been established by the case companies. The fact that some case companies are not mentioned does not necessarily mean that they do not have any social programs. Besides, the below mentioned programs represent only an extract of a wide range of different initiatives established by the case companies.

Founded in 1984, the **Coca-Cola Foundation** currently focuses on the three topics empowering women, replenishing water, and enhancing the well-being of people as well as communities. For example, the initiative supports women in Vietnam to set up their own microbusiness. Additionally, rainwater-harvesting structures are developed in several European water poor areas. In order to increase the well-being and living standard of Africans, the foundation established

a leadership program for young African leaders. All in all, the foundation's aim is to invest at least 1% of the corporation's yearly operating income into the social projects of the Coca-Cola Foundation. Within this foundation, Coca-Cola has various programs and partnerships with a variety of different organizations. (The Coca-Cola Company n.d., p. 28.)

Coca-Cola Foundation	•Women •Water •Well-being
H&M Conscious Foundation	•Education •Water •Women
PepsiCo	•Water •Education
Colgate	•Bright Smiles, Bright Future (BSBF) •Clean Hands, Good Health
Unilever	•Global Business Coalition on HIV/AIDS, Tuberculosis and Malaria
Samsung Electronics	•Samsung Care Drive •Nanum Village
McDonald's	•Ronald McDonald House Charities (RMHC)
Walmart	•Women's Economic Empowerment initiative
Intel	•Intel She Will Connect program

Figure 24. Examples of social and environmental programs and initiatives developed by the case companies (Gerhartz & Ziegler 2016, based on the case companies' sustainability reports)

The **H&M Conscious Foundation** was founded with the aim to promote long-lasting positive change for people and communities, even beyond the

company's value chain. The foundation developed three focus areas, including education, clean water, and strengthening women. In particular, in partnership with UNICEF, the H&M Conscious Foundation encourages early childhood care and education in order to make equal opportunities possible. Furthermore, the foundation, in cooperation with WaterAid, delivers water, sanitation, and hygiene education to schools to improve health and education and thereby transform the children's future. The third focus area concentrates on strengthening the women's position in poor communities worldwide. This goal is achieved through the cooperation between the international humanitarian and development organization CARE and H&M's Conscious Foundation. Women are empowered economically by providing access to knowledge, tools, and skills as well as start capital to start up or expand their businesses in developing countries. (H&M n.d.b, pp. 109 – 111.)

PepsiCo and its initiative **PepsiCo Foundation** cooperated with the Columbia Water Center and started projects to improve the water situation worldwide. Thereby, more than four million people in Brazil got access to fresh water by establishing water-allocation plans. Moreover, Indian farmers were provided with tools to decrease their water consumption. PepsiCo developed another project with UNESCO and Myanmar Ministry of Education, namely Center of Excellence for Business Skills Development (CEBSD). The CEBSD offers the youth in Myanmar to be trained in business skills which consequently helps to improve their future employment prospects. (PepsiCo n.d., pp. 20 – 21.)

The **Colgate Bright Smiles, Bright Futures (BSBF)** is an oral health education program which was established in 1991. Due to the fact that many children worldwide lack basic dental care, caries has become a major health problem among children. In order to overcome this issue, within the BSBF program, Colgate hands out toothbrushes, toothpaste as well as information material in over 30 languages that can be used both in schools and at home. So far, Colgate has been successful in reaching 800 million children in over 80 countries. This makes the BSBF program to one of the world's most prosperous oral health care program. Moreover, Colgate-Palmolive launched the **Clean Hands, Good Health** program in Latin America, Africa, and Thailand. Within this program,

Colgate-Palmolive provides health and hygiene education, especially about handwashing. Thereby, the importance of using soap is promoted by distributing educational materials and soap samples. (Colgate-Palmolive Company 2015, pp. 23 – 27.)

In partnership with various organizations, **Unilever** founded the **Global Business Coalition on HIV/AIDS, Tuberculosis and Malaria**. The coalition's target is to raise awareness, educate, and prevent these diseases. In particular, Unilever has developed a program in Sub-Saharan Africa to combat HIV/AIDS by providing free HIV tests and offering appropriate treatment and care for persons affected by HIV/AIDS. (Unilever 2015, p. 41.)

Samsung Electronics founded the **Samsung Care Drive** program which is mainly provided in China, Russia, and Africa. It is a mobile medical center with medical staff on board offering basic health check-up services for communities which lack access to basic infrastructure. Furthermore, the company is engaged in its program **Nanum Village**. This program aims to establish comprehensive infrastructure in isolated, underprivileged, and low-income communities primarily in African countries. (Samsung Electronics 2014, pp. 84 – 85.)

McDonald's initiated the **Ronald McDonald House Charities (RMHC)** to make it possible for families to support their children during serious illnesses which can only be treated far away from home. Thereby, RMHC has established different programs which help to keep the families together with their children. Across 60 countries, McDonald's has integrated Ronald McDonald Houses, Rooms, and Care Mobiles near top children hospitals to support the families. (McDonald's 2015, p. 33.)

In order to empower women worldwide, **Walmart** started its global **Women's Economic Empowerment initiative**. The initiative defined three core areas, namely sourcing, training, and diversity and inclusion which can lead to a significant improvement of the women's living standard worldwide. Therefore, one of Walmart's goals is to increase its sourcing volume from women-owned businesses. This allows Walmart to directly support women and strengthen their economic position. (Walmart n.d., pp. 68 – 69.)

Intel launched the **Intel She Will Connect program** with the aim to close the Internet gender gap firstly in Sub-Saharan Africa as the lack of Internet access for women is the greatest in this area. Young women are acquainted with digital literacy skills and learn to understand the benefits of using the Internet. The program is promoted by Intel in cooperation with several international partners. (Intel Corporation 2015, p. 72.)

After examining the different programs of the case companies, the authors conclude that the case companies are committed to a variety of different programs, initiatives, and foundations. These projects are not restricted to their supply chains but also reach communities and individuals that are not directly touched by the business. Nevertheless, many companies focus on the same core issues but developed different approaches to cope with these. In particular, the authors identify the topics education, women, health, and water as key areas of sustainability programs fostered by companies.

7.4 Summary of the empirical part

After the examination of the sub research questions, the authors come to the conclusion that the degree of sustainability in the case companies varies substantially. In the following the answers to the sub research questions are briefly summarized to give a compact overview.

The majority of case companies are listed in either one or even two sustainability rankings. Beside one case company, Amazon.com, all examined companies publish a sustainability report and most of them even use the GRI Sustainability Reporting Framework.

In view of environmental sustainability, the majority of case companies are ISO 14001 certified which shows their commitment towards environmental responsibility. In order to secure sustainability throughout the entire supply chain, all case companies have various requirements for their suppliers to be followed. For this purpose the companies use different tools including for example code of conducts, CDP's supply chain program, audits, and supplier scorecards. Customers as downstream element of the supply chain are integrated into the sustainable supply chain by being offered various programs. Recycling, take-back,

and return programs are the most common examples of integrating the customer in sustainable business practices. Thereby, the primary goal is to create a closed loop recycling system. By integrating both the upstream and downstream members of the supply chain, namely suppliers and customers, companies succeed in maintaining and continuously improving their sustainability throughout the entire supply chain. All companies besides Amazon.com measure and document their supply chain's energy and water consumption and GHG emissions. This creates transparency of their commitment towards sustainability for all stakeholders. Furthermore, in cooperation with suppliers many companies have established green packaging approaches. Thereby, the focus lies on the minimization of packaging materials in general, increase of the amount of recyclable materials, the development of higher concentrated products to save packaging, and the reduction of plastic packaging and replacement by natural components.

The UN Global Compact, a company's code of conduct, and programs and initiatives for communities represent possibilities for companies and their supply chains to show primarily social but also environmental commitment towards sustainability. The majority of companies participate in the UN Global Compact. Nevertheless, many companies also apply industry related principles. Moreover, all companies published either a code of conduct and/or a supplier code of conduct which commonly include principles referring to both the social and environmental bottom line. Many companies have established own programs, initiatives, and foundations with the aim to enhance the living standard of individuals and communities worldwide. Primarily, these sustainability programs focus on following common key areas, namely education, women, health, and water and are often initiated by the company, its supply chain partners, and cooperating organizations.

All in all, this research shows that even companies which are not necessarily known for their sustainable business practices already show (high) commitment towards social and environmental responsibility. Nevertheless, some approaches rather represent the basic sustainability requirements expected by the society and stakeholders from international firms.

8 Summary and discussion

This thesis has been studied with the aim to figure out how Gartner's Top 25 Supply Chain Businesses 2015 integrate sustainability into their supply chains. To answer this main research question, ten sub research questions have been formulated regarding different sustainability areas, including primarily the environmental and social bottom line. Based on Gartner's ranking, the authors were provided with a pool of 27 case companies which were considered in order to examine and answer the sub research questions.

Beforehand, the theoretical part was used to clarify and introduce the elements of the thesis topic, namely sustainability and supply chains. In particular, the authors introduced sustainability in general as well as its history and development in terms of environmental and social responsibility. Further, supply chains were defined and their importance within today's business was highlighted. At first, the two terms sustainability and supply chains were introduced separately and then combined to create the topic sustainability in supply chains. Thereby, the concepts of Corporate Social Responsibility as well as the benefits of integrating sustainable business practices throughout the supply chain were explained. In the next step, the authors described the main framework of sustainability, namely the triple bottom line which consists of the environmental, social, and economic bottom line. Within this subject, the authors pointed out how businesses and their supply chains are affected by the triple bottom line. Although the application of the triple bottom line framework helps companies to minimize risks, they still face various risks due to the nowadays ongoing globalization process and fragile business context. These have to be managed by establishing an appropriate risk management which increases a company's and its supply chain's resilience to cope with arising risks. All in all, the theoretical part sets the basis for and contributes to a better understanding of the empirical part.

To answer the main research question, the authors examined the sub research questions by considering the pool of case companies within the empirical part. After treating the sub research questions, the authors came to the conclusion that there are different approaches and degrees of how companies can

integrate sustainability into their supply chains. In particular, the authors found the following answers.

In general companies can publish sustainability reports in order to identify and show all economic, environmental, and social impacts which result from a company's and its supply chain's operating business. Thereby, the GRI Sustainability Reporting Framework provides reporting guidelines and is one of the most commonly used sustainability frameworks by companies within their sustainability reports.

Particularly to show their environmental commitment, firms can achieve the ISO 14001 certification to decrease their negative environmental impact while simultaneously increase their positive reputation and stakeholders' confidence as well as strengthen their competitive advantage. Moreover, energy as well as water consumption and GHG emissions represent an appropriate measurement to indicate a supply chain's impact on the environment and the society. These measurements and their documentation are important to create transparency and help to define measurable targets regarding the minimization of negative impact. In order to guarantee sustainability throughout the entire supply chain, both suppliers and customers as supply chain members, have to be involved. With regard to suppliers on the one hand, companies can apply different tools including for example code of conducts, CDP's supply chain program, audits, and supplier scorecards. On the other hand, customers can be integrated through recycling, take-back, and return programs. Furthermore, companies are more and more developing approaches in cooperation with their suppliers to promote new packaging solutions in terms of green packaging. These solutions primarily concentrate on the reduction of packaging materials in general, maximization of the amount of recyclable materials, the development of higher concentrated products to save packaging, and the minimization of plastic packaging and replacement by natural components.

To focus primarily on the social bottom line of a supply chain, companies have discovered different approaches. In particular, companies can participate in the UN Global Compact which represents a policy framework based on global principles and declarations. By publishing a yearly documentation about their

progress, businesses show their ongoing commitment and simultaneously ensure that their business practices in their entire supply chain follow these principles. Additionally, supply chains of different industries can engage in specific industry related principles which focus on the critical aspects within the industry. In order to integrate sustainability into their supply chains, companies have also set internal standards valid for all supply chain members. A company's code of conduct is another tool for firms to communicate and spread a company's public policy in terms of ethical and environmental standards. As all supply chain members are expected to comply with the code of conduct it is possible to guarantee end-to-end sustainability. Some companies even publish a supplier code of conduct which addresses the specific circumstances of the supply chain to ensure sustainability among upstream supply chain members. Special engagement beyond the actual operating business can be demonstrated by establishing social and environmental projects with the aim to improve the living situation of individuals and communities worldwide. Hereby, companies have the possibility to either join existing initiatives or establish new programs and foundations.

Through these approaches enterprises can emphasize their engagement and commitment towards sustainability not only in their company but also throughout the entire supply chain. All these above highlighted approaches represent possible ways of how companies can integrate sustainability into their supply chain and simultaneously give the answer to the main research question.

Of course, there is a variety of multiple other ways to promote sustainability in supply chains. However, the topics treated within this thesis cover a broad range of sustainability aspects in supply chains since both the environmental and social bottom lines are considered. Due to the frame of this thesis not every case company was considered in every question. Therefore, presented programs and initiatives only represent a selected extract and give only insights but no complete picture. Even the considered companies established such a variety of programs that not all could be completely discussed.

As the pool of case companies consists only of international firms these have more influence on their suppliers due to their size. Moreover, they are in the

demanding position which allows them to put pressure on their suppliers to ensure sustainability throughout the supply chain. Nevertheless, these companies are expected by their stakeholders to operate in a sustainable manner. Due to the size of the companies and their supply chains, a worldwide and comprehensive promotion of sustainability is possible. Even though most sustainability approaches can reduce costs in the long-term they initially require financial efforts. These costs can be financed more easily by large international enterprises.

According to the International Trade Union Confederation's Frontlines Report 2016, 19 out of the 27 case companies are mentioned to be among the 50 top companies global supply chains. These are Apple, Procter & Gamble, Amazon.com, McDonald's, Unilever, Intel, Inditex, Cisco Systems, H&M, Samsung Electronics, Nike, The Coca-Cola Company, Starbucks, Wal-Mart Stores, 3M, PepsiCo, Nestlé, Johnson & Johnson, and L'Oréal. Due to their global and huge supply chain network, these companies have the resources and reach to influence and improve working conditions as well as social and environmental impacts all around the globe. (Burrow 2016, pp. 3 – 13.) However, based on the complexity of the supply chain network, companies and their suppliers often work with subcontractors which can lead to hidden workforce. Therefore, creating supply chain transparency becomes more and more difficult with every additional tier. These business practices represent one reason why a system of poor and unworthy working conditions, including low wages, few rights, and unsecure jobs, can be established even though the companies try to eliminate these practices by requiring their suppliers to sign various contracts and codes (Burrow 2016, pp. 3 – 13).

Due to the limitations of the thesis, the authors used only public sources, namely primarily the case companies' websites and their sustainability reports as well as the code of conducts for answering the sub research questions. This consequently only leads to a biased presentation of information as the companies want to present themselves in a positive way to enhance their reputation and corporate image. Indeed, there are various sources which reflect those business practices more critically. However, the time frame of the thesis did not allow the authors to integrate and discuss these in an extensive way.

All in all, this thesis contributes to a better understanding of the theoretical framework of sustainability and shows which approaches, programs, and tools companies can apply in order to integrate sustainability throughout the entire supply chain. This study has shown that many companies already successfully apply the framework of the triple bottom line but can still deepen their commitment towards environmental and social sustainability.

Nevertheless, by establishing programs and foundations and applying approaches and principles which address the triple bottom line, companies have already been able to contribute substantially to a more sustainable world.

Figures

Tables

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