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## GREEN SOLUTIONS FOR LOGISTICS CUSTOMERS

Case Study: DHL

**Business Economics and Tourism** 

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#### ABSTRACT

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Green awareness is a topic that has become very current due to natural disasters and growing awareness. Businesses have to take part in protecting the environment by carrying out their Corporate Environmental Responsibility (CER) which should be implemented in their strategy and practices. Simultaneously, customers increasingly look for the green alternative among products and services.

Logistics business is one sector which faces major paradoxes when trying to be environmentally friendly because its operations have a major negative impact. The topic of the thesis is to find out how an international logistics corporation DHL takes care of its environmental responsibilities. The aim is to find out what DHL does in practice, what kind of solutions they offer to their customers and explore how an employee sees the corporation's CER strategy and practices. The main data used is the CR report 2009/10 of DHL which is publicly available online. In addition, an employee of DHL is interviewed. The research method of the study is qualitative and in order to gain an understanding of the topic the data is analyzed in a descriptive way.

The results of the study show what the main environmental concerns of DHL are and what they do to take care of them. It shows the challenges it has to tackle trying to be environmentally responsible as well as their achievements. The study reveals the many strategic and practical things DHL does in order to be more green and the reasons why it is beneficial to the corporation to have a green reputation. The environmentally friendly services available for DHL's customers will be introduced. Researching a big corporation is difficult because the data available is strictly controlled. Yet, the main research questions will be answered.

Keywords Logistics, environment, corporate social responsibility, corporate environmental responsibility, green business

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Ympäristötietoisuudesta on tullut hyvin ajankohtainen aihe luonnonkatastrofien ja ihmisten lisääntyneen tietoisuuden myötä. Yritysten täytyy osallistua ympäristönsuojeluun kantamalla ympäristövastuunsa, jonka tulisi myös olla osa niiden strategiaa ja käytännön toimintaa. Samalla kuluttajat etsivät yhä enemmän ympäristöystävällisiä vaihtoehtoja tuotteiden ja palveluiden joukosta.

Yksi ala, joka kohtaa suuria ristiriitoja yrittäessään toimia ympäristöystävällisesti on logistiikkasektori, koska sen toiminnoilla on huomattavat negatiiviset ympäristövaikutukset. Tämän opinnäytetyön aihe on selvittää. miten kansainvälinen logistikkayritys DHL toteuttaa ympäristövastuunsa. Tavoitteena on selvittää, mitä DHL tekee käytännössä, millaisia ratkaisuja yrityksellä on tarjota asiakkailleen ja tarkastella, miten yrityksen työntekijä suhtautuu sen ympäristövastuustrategiaan ja käytäntöihin. Materiaalina on käytetty pääasiassa DHL:n yhteiskuntavastuuraporttia (CR report 2009/10), joka on luettavissa Lisäksi DHL:n haastateltu. verkossa. työntekijää on Opinnäytetyön tutkimusmenetelmä on laadullinen ja analysointitapa kuvaileva, jotta tutkimuskohteesta saadaan syvällisempi käsitys.

Tutkimuksen tuloksista selviää, mitkä ovat DHL:n tärkeimmät ympäristöön liittyvät haasteet ja mitä yritys tekee selvitäkseen niistä. Sekä yrityksen kohtaamat haasteet että saavutukset tulevat esille. Tulokset tuovat esille monia strategisia ja käytännön toimenpiteitä, joita DHL toteuttaa ollakseen ympäristöystävällisempi sekä syitä, miksi yritykset hyötyvät ympäristöystävällisen yrityksen maineesta. Myös DHL:n tarjoamat ympäristöystävälliset palvelut esitellään. Suuren yrityksen tutkiminen osoittautuu vaikeaksi, koska saatavilla oleva materiaali on tarkasti kontrolloitua. Siitä huolimatta tutkimuskysymyksiin saadaan vastaukset.

Avainsanat logistiikka, ympäristö, yritysten yhteiskuntavastuu, yritysten ympäristövastuu, ympäristöystävällinen liiketoiminta

## CONTENTS

## ABSTRACT

1 INTRODUCTION	9
1.1 The Aim of the Thesis	9
1.2 Research Questions	10
1.3 Research Methodology and Perspective	10
1.4 Structure of the Thesis	11
2 CORPORATE SOCIAL RESPONSIBILITY	13
2.1 Definition of CSR	13
2.2 Main Characteristics of CSR	14
2.3 Different Types of Social Responsibilities	15
2.4 The Importance of CSR in Businesses and Organizations	16
3 CORPORATE ENVIRONMENTAL RESPONSIBILITY	19
3.1 Definition of CER	19
3.2 Our Common Future and Sustainable Development	21
3.3 Ecological Footprint	22
3.4 Ecological Footprint Practices by Corporations	22
3.4.1 How Green is Green Enough	24
3.5 Green Services from Customers' Point of View	26
3.6 Components of CER	27
3.6.1 Environmental Awareness and Commitment to Continuous	
Improvement	27

3.6.2 Measurement, Auditing and Reporting of Environmental Performance28
3.6.2.1 Measurement of Environmental Performance
3.6.2.2 Auditing of Environmental Performance
3.6.2.3 Reporting of Environmental Performance
3.7 Transparency
3.8 Exceeding Compliance by Environmental Initiatives
3.9 The Paradox of Being a Green Logistics Company31
3.9.1 Costs as a Challenge for Being Green
3.9.2 Strategies to Cope With Environmental Constraints
3.9.3 Flexibility and Timing as a Challenge for Being Green
3.9.4 Network and Warehousing as a Challenge for Being Green
3.9.5 Reliability as a Challenge for Being Green40
4 CASE STUDY: DHL'S ENVIRONMENTAL PERFORMANCE AND GREEN
SOLUTIONS FOR CUSTOMERS41
4.1 Research Methodology41
4.1.1 Nature of the Study41
4.1.2 Data Collection
4.1.3 Limitations of the Study43
4.2 Overview of DHL44
4.3 DHL'S CR and CER Strategy
4.4 CER Report as a Part of DHL's CER Strategy46
4.5 The Environmental Concerns of DHL47

4.6 GoGreen Program as a Way of Conducting DHL's CER Practices
4.7 GoGreen Solutions for Customers
4.8 Climate Protection Projects of DHL55
4.9 DHL's CER Strategy from an Employee's Perspective
4.9.1 Definition of Corporate Social Responsibility57
4.9.2 The Role of Environmental Responsibility
4.9.3 DHL as a Green Logistics Company
4.9.4 CER Practices of DHL
4.9.5 Measuring, Auditing and Reporting Environmental Performance of
DHL
4.9.6 Green Values and Practices at the Workplace
4.9.7 Paradox of Being an Environmentally Friendly Logistics Company61
4.9.8 DHL's GoGreen Strategy from an Employee's Point of View61
4.9.9 Customers Interest in GoGreen Services
4.9.10 Small Unit in a Big Corporation63
4.10 Criticism towards DHL's Environmental Program63
5 CONCLUSIONS
REFERENCES
APPENDIX

### LIST OF FIGURES AND TABLES

Figure 1.	Types of Social Responsibilities	p. 15
Figure 2.	Paradox: Mobility and Costs	p. 35
Figure 3.	Flexibility and Time as a Challenge	p. 37
Figure 4.	Network and Warehousing as a Challenge	p. 38
Figure 5.	Network as a Challenge	p. 40
Figure 6.	Availability of GoGreen Products	p. 52
Figure 7.	GoGreen Labels	p. 53
Figure 8.	Climate Protection Projects Map	p. 56
Table 1.	Paradox of Being Green	p. 33
Table 2.	Measures to Cope With Environmental Constraint	s p. 36
Table 3.	GoGreen Products	p. 54
Table 4.	Climate Protection Projects	p. 56

## LIST OF APPENDICES

**APPENDIX 1.** Interview Questions

#### **1 INTRODUCTION**

The interest in Corporate Social Responsibility (CSR), which recognizes that companies have obligations to include notions of social and environmental concern, has increased considerably in recent decades.

The globalization of the world economy and the related trade liberalization has brought forward a discussion of the importance of business as an actor in the development of society. The aim of this thesis is to analyze the effectiveness of the CSR strategies with regards to the Corporate Environmental Responsibilities (CER) of the international logistics company DHL. The reason for choosing DHL out of all logistics companies was that I have worked for the company before. Another reason was that they have a wide range of material about their CER strategy and practices available. The scope of the study is DHL's attempt to be more "green" for example through their carbon-neutral services to customers and their commitment to improving their environmental policies and practices. Being a logistics company, DHL certainly faces challenges when it comes to being environmentally responsible while customers are seeking for "green" alternatives.

#### 1.1. The Aims of the Thesis

In their marketing communication, logistics companies like to boast of being environmentally friendly. The aim of the thesis is to find out what kind of solutions DHL has for its' customers as they growingly demand for environmentally friendly services. For the customers it's not enough to know that DHL "goes green". It is important to know what the company does in practice to exceed the compliances. Thus, DHL's attempts to protect the environment – their overall strategy and especially the solutions for the customers -will be discussed. The main points of DHL's CER strategy and practices will be introduced shortly. The strategies, practices and implementations will be analyzed based on material (CSR Report) available on the website of the corporation. Another, more practical aim of the thesis is to find out by interviewing an employee of DHL, how the environmental thinking shows at the workplace and how the green policies are being understood at an every-day level.

#### **1.2 Research Questions**

There's quite a big paradox involved when a logistics company tries to be green. As a logistics company DHL has an enormous network including warehouses, other facilities, planes and trucks and thousands of employees around the world. The business requires effective transportation between different continents. As a corporation, DHL aims at reducing costs and being profitable but at the same time it has to be as fast as possible and very reliable to satisfy the customers. The environmentally efficient ways of transporting and distributing shipments are few and they are slow. Thus, DHL's attempts of being more green are a big challenge and need a closer look.

In this study, the following issues are the main problems to be addressed. What are the challenges of CER in logistics business? Logistics business is based on transportation, which is harmful to the environment so there is a dilemma to start with. I want to discuss whether it's even possible for logistics to be truly green. The main aim is to take a look at how DHL assumes its' environmental responsibility. One of their ways of dealing with environmental constraints is to offer green services to the customers. The customers want to know what the GoGreen service of DHL involves. The focus will be on what kind of solutions they offer for the business and private customers for them to use express logistics services and yet to be environmentally friendly. Thus, what is achieved by the service in practice needs to be discussed.

#### **1.3 Research Methodology and Perspective**

Qualitative research is defined as a tool of research that is basically concerned with understanding rather than accurate measurement. In this study, I will employ qualitative research. This type of research requires a method that allows the data to be analyzed and explained in a flexible way. The data concerning DHL's environmental responsibility obtained from the company's website will be analyzed in a descriptive way in order to gain a deeper understanding of how CER aspects are taken care of by the corporation. The perspective from which the topic is looked at is how the potential and existing customers are informed about how DHL takes care of its' environmental responsibility and how the customers themselves can choose from the company's solutions to be more environmentally friendly. Another perspective that will be taken a look at is the perspective of one of the thousands of employees in the corporation. DHL's official communication promotes how environmentally friendly they are. What I want to find out is how an employee sees the big picture but also the environmental aspects of the practical work at a terminal of DHL. The general aim is to gain an understanding of how DHL has implemented the environmental responsibility in its business strategy through different solutions, one of them being the services to customers. The research methodology, the data collection and the validity of the study will be discussed more specifically in chapter 4.1.

#### 1.4 Structure of the Thesis

The structure of the thesis is as follows. Firstly, the introduction will discuss the aim, objective, scope and the research problems of the study. Secondly, the theoretical framework will be created to serve as a basis for the analysis. Various researches on CSR and its impact on the environment in the form of CER will be used as a resource for the theory. Firstly, what CSR involves and why it is important for businesses will be discussed. Secondly, CER and its' importance as well as the challenges it involves will be defined. The customers' point of view as well as the commitment of companies' to being environmentally friendly will be introduced.

The empirical findings of DHL's environmental responsibility policies and practices will be conducted and analyzed from the perspective of both potential and existing customers. The customers need to find out what DHL does to be environmentally friendly and if the customer chooses to include himself by paying for a GoGreen service, what will be achieved through that. The main source of material for the analysis is the latest CSR report of DHL. The point of view of a "regular" DHL worker will also be taken a look at through an interview. Some criticism will be added to get an outsider's opinion about how DHL actually manages to be environmentally friendly. The aim is to get a picture of how DHL handles the dilemma of being a green logistics company. The overall results of the thesis and the conclusions will be summarized in the last chapter.

#### **2 CORPORATE SOCIAL RESPONSIBILITY**

In this chapter, the concept of corporate social responsibility (CSR) will be defined in chapter 2.1. After that, in chapter 2.2, the main characteristics of CSR will be introduced more specifically. In chapter 2.3, the different responsibilities that are included in CSR will be introduced and illustrated with figures and tables. Finally, in chapter 2.4, the reasons for a company implementing CSR will be introduced.

#### 2.1. Definition of CSR

Around the world, businesses are trying to balance conflicting demands from communities, government, advocacy groups and others about the role they play in economic advancement, environmental improvement, and social development. Just making good products that satisfy customers is not acceptable any more. Businesses are required to manage the social and environmental consequences of their actions beyond the requirements of the legal and regulatory settings in which they operate. (Leonard 2008) As Professor Herman Leonard (2008) states, the questions that Corporate Social Responsibility (CSR) has to answer, are: "How can businesses best respond to these demands? How can they develop strategies that help them to build business value at the same time they address this broader set of concerns? And how can government and other organizations that want to encourage corporations to accept broader responsibilities best work with corporations to produce better outcomes and less conflict?"

Even though CSR is a long-standing concept it can be defined in many different ways. For instance, according to the European Commission it is a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction on a voluntary basis (EU Green Paper, 2001, promoting a European framework for CSR). The World Business Council for Sustainable Development defines CSR as "the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of the workforce and their families as well as the local community and society at large" (WBCSD, 1999, 'CSR: meeting Changing Expectations). (Crane et al. 2008, 6) In this thesis, CSR will be seen as a range of measures to take care of the huge amount of responsibilities that every company has to carry out to be successful and ethical and thus an attractive option for the customers.

#### 2.2 Main Characteristics of CSR

In order to highlight the concept of CSR, the six main characteristics of CSR need to be introduced. First of all, practicing of CRS is voluntary. The activities of the company go beyond the requirement of the law. Many companies are used to considering responsibilities beyond the legal minimum, and are developing self-regulatory CSR initiatives which prevent additional regulations through compliance with societal moral norms. CSR also includes internalizing or managing externalities. Externalities are the positive and negative side effects of economic behavior that are borne by others but are not taken into account a firm's decision-making process (for example pollution). Companies can be forced by regulations to internalize the cost of externalities such as pollution fine so that the local communities do not have to bear the cost of companies' actions. Instead, through CSR a more voluntary approach would be applied in which a company can, for instance, develop and invest in clean technologies that prevent pollution. (Crane et al. 2008, 7–8)

An important aspect of CSR is that the stakeholders are included. Nowadays, the responsibilities of companies go beyond the shareholders, since corporations rely on other constituencies such as consumers, employers, suppliers, and local communities. Thus, CSR involves considering a range of interests and impacts among a variety of different stakeholders other than just the shareholders. As a result of balancing all the different stakeholders' interests alignment of social and economic responsibilities follows. While CSR goes beyond a narrow focus on shareholders and profitability, it should not conflict with profitability. It also brings to the attention the business case of CSR of how businesses can benefit economically from being socially responsible. (Crane et al. 2008, 7–8)

CSR presents the company's values. Not only is CSR about a particular set of

business practices and strategies that deal with social issues but it is also about a philosophy or a set of values that underlie these practices. Besides, CSR is not mainly about philanthropy and community projects but involves the entire operations of a company: its' core business functions including production, marketing and procurement. Besides, a company's human resource management, logistics, finances etc. impact upon society. (Crane et al. 2008, 7–8)

#### 2.3 Different Types of Social Responsibilities

According to Archie Carroll's (1989) pyramid, CSR is made up of four components, which are the following: economic, legal, ethical, and philanthropic, depicted in Figure 1 below:



Figure 1. Types of Social Responsibilities (Mbare 2004, 53)

The economic responsibilities are the foundation of Carroll's pyramid (1991). The principle role of businesses or organizations has been to produce goods and services that consumers demand, and to make profit in the process (Davidsson, 2004, cited by Mbare 2004, 53). In other words, businesses are trying to be profitable.

The legal responsibilities of businesses state that, not only are organizations or businesses expected to pursue the profit motives, they are also expected to accept and comply with the laws and regulations instituted by the government (Mbare 2004, 54). In other words, businesses are required by the society to play by "the rules of the game".

The ethical responsibilities embrace those activities and practices that are expected or prohibited by society even though they are not codified into law, even though economic and legal responsibilities embody ethical norms about fairness and justice. (Mbare 2004, 54) It simply tells businesses to do what is right and just, as expected or prohibited by society.

The discretionary/philanthropic responsibilities encompass those corporate actions that are in response to society's expectation that businesses should be good "corporate citizens". They include activities and programs to promote human welfare and goodwill. (Mbare 2004, 54) In other words, businesses are expected to be "good citizens" as desired by society.

#### 2.4 The Importance of CSR in Businesses and Organizations

A modern company cannot be successful without carrying out more or less all of the social responsibilities. By doing so, the company gives the potential and existing customers a positive image and in the best case becomes more profitable. Nowadays, to be attractive and maintain a good reputation, a company needs to be transparent and evolve their CSR strategies and practices as the demands of the society and customers grow.

CSR is increasingly being seen as an important and integral part of normal business operations. There are several reasons why corporate bodies or businesses would practice CSR. Reasons why responsible business helps to enhance business operations, in achieving a sustainable outcome are many. Firstly, by applying CSR a company creates shareholder value. Its' performance as a responsible business is a key to its' finance and stock market standings as inventors want invest in businesses that act with good corporate governance and social responsibility. This in the long run helps to protect it from instability and share price volatility. CSR also increases revenue base. It can enhance factors that bring

revenue in important ways. Businesses that practice CSR initiatives and causerelated marketing are able to build reputation and goodwill among suppliers and customers. Employees are likely to be motivated, committed and ready to make sacrifices as a team member. (Singapore Compact 2008)

CSR is also a part of strategic branding of a company. A company's reputation is fundamental in maintaining and attracting customers. Consumers nowadays are more sophisticated, being more selective and sensitive to a company's image and it CSR initiatives or the lack of them. Companies that have unique CSR profile serve as a strategic branding tool in differentiating from competitors. CSR also helps the company's operations efficiency. The efficiency of a business is about productivity and effective use of it resources. CSR helps to enhance efficiency through environment conservation and recycle initiatives, efficiency strategy. Good relationship between management and employees are also crucial in bringing about good customer services, productivity and product innovation. (Singapore Compact 2008)

When CSR is implemented correctly, it betters companies' access to capital. Thus, companies are able to grow and make timely investment. Those who are of good CSR standing are likely to secure equity and debt capital easily. Another capital that a company will gain by implementing CSR is human and intellectual capital, which is a valuable asset to a company. The practice of good work place conditions and relations can help a company to attract, keep and develop its' human capital, keeping operations and staff moral high. As a result, the company faces a lower business risk. Companies are being held accountable for their actions. By ignoring the importance of CSR the reputation, access to capital and long-time viability could be affected. Proactive interactions with external stakeholders can help to foster understanding, in preempting and minimizing the repercussions. (Singapore Compact 2008)

To summarize the rising importance of CSR in business world, Rod Lohin, Executive Director of the AIC Institute for Corporate Citizenship at the Rotman School of Management, states: "[...] is important because businesses are based on

18

trust and foresight. Establishing and keeping trust with customers, communities and regulators isn't simple and can be easily damaged or lost. To be successful in the long-term, companies need to think beyond what's affecting them today to what's going to happen tomorrow. This isn't just about addressing changes to technology or the needs of customers, but also taking into account alterations in social, environmental and governance issues." (Hsu 2010)

#### **3 CORPORATE ENVIRONMENTAL RESPONSIBILITY**

In the following chapters, Corporate Environmental Responsibility (CER) will be defined and discussed more closely. In chapter 3.1 the concept CER will be defined. In chapter 3.2 the idea of sustainable development will be introduced. In chapter 3.3 the idea of ecological footprint will be introduced. In chapter 3.4 the focus lies on how corporations implement their environmental responsibility in practice and finally question follows: how green is green enough. After that, in chapter 3.5, the point of view of customers and their willingness to participate in environmental responsibility will be discussed. In chapter 3.6 the following components of CER will be discussed: commitment to improvement and measurement, auditing and reporting of environmental performance. The topic of chapter 3.7 is going beyond compliance. In chapter 3.8, how environmental initiatives can help. Finally, in chapter 3.9, the topic is the paradox of being green.

#### 3.1 Definition of CER

The interest in CSR has been more focused on ecological issues in business from the late 1980s on. The ecological responsibilities have become a necessary part of doing business. Pollution prevention, waste minimization, energy conservation and recycling were the main concerns in terms of ecological responsibility. What makes the ecological responsibility more difficult to handle is that they have grown to deeper elements of sustainability, such as climate change, biodiversity and resource security. Thus, the issues are more complex and more challenging to solve. (Crane et al. 2008, 306–307)

The forces driving attention to ecological problems include spiraling consumption and resource use in developed countries, the rapid industrialization in Asia and Latin America and the increasing power of NGOs (non-governmental organizations) to affect public opinion and sustained attention from regulators. Even though companies now have environmental management tools and techniques (for example environmental management systems, life-cycle analysis, ISO standards etc.), they also have to face increasing expectations that require constant improvement. (Crane et al. 2008, 306–307) From a CSR perspective, ecological issues can be seen as a separate area of responsibility from workplace, marketplace and community issues, or as an issue that covers these and other areas. Quite a few CSR issues have an ecological dimension. It is difficult to make clear-cut distinctions between the different areas of responsibility – social, ecological and economic factors of CSR. (Crane et al. 2008, 307)

The climate change awareness combined with natural disasters has created the conditions for "green" getting a foothold in the psyche of people. The energy prices have increased and the environmental problems have hit our lives. People and businesses have become ripe for a green awareness pitch. At the same time, the businesses have begun to contemplate how to ride the green wave. More environmental requirements have arisen and greener product thinking has emerged. Once companies invest and convert their facilities and operations to be more resource saving and pollution preventing, they won't return to doing business in an unsustainable way. Even if energy prices dropped, waste is waste and savings are still savings. Businesses are competing to green more products and services, as consumer awareness pushes innovation and companies respond. Green business is without a doubt here to stay. (Carlson 2009, 25-27)

Businesses are the core of environmental debate and are central to both its' problems and solutions. There has been a small number of larger businesses which has been proactive in promoting environmental improvement across their activities, a small number have taken the thorough systematic approach which is necessary for their success in improving their environmental performance. (Welford 1994, 3) However, corporations and organizations are beginning to respond to expectations of CR by taking into consideration what is good for the environment, society and business, as well as how the performance can be measured and evaluated. For some companies improving the corporate environmental performance is simply "the right thing to do", while others views it as a strategic advantage to increase competitiveness. These companies want to know what is expected of them so that they can incorporate CER into their business strategies and become more competitive. (Jamison et al. 2005, 3)

There are lots of reasons for a business to try to be more "green". Energy prices are increasing and the environment is being polluted more and more. It is finally understood that the planet can't take all the pollution. Green business includes the pursuit of zero pollution, minimization of resource waste, reduction of toxics and less carbon emission. Green business, though, is much more than complying with environmental laws and building to be more energy efficient. It involves redesigning products, facilities and processes but also involves the people – the employees, the suppliers, the investors and the customers. (Carlson 2009, 4-5)

#### 3.2 Our Common Future and Sustainable Development

An important milestone in the development of CER has been the report of the Brundtland Commission, "Our Common Future". The report was published in 1987 by the Brundtland Commission, formally the World Commission on Environment and Development (WCED), which was created to address growing concern "about the accelerating deterioration of the human environment and natural resources and the consequences of that deterioration for economic and social development." In establishing the Brundtland commission, the UN recognized that environmental problems were global and determined that establishing policies for sustainable development was the common interest of all nations. (Wikipedia 2010)

The Brundtland report deals with sustainable development and the change of politics needed for achieving that. The report's definition of sustainable development is often cited: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: 1) the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and 2) the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs." The targets of the Brundtland report were multilateralism and interdependence of nations in the search for sustainable development. It placed environment and development as one single issue. In addition, key contributions

of the report include the recognition that the many crises facing the planet are interlocking crises that are elements of a single crisis of the whole and of the need for the active participation of all sectors of society in consultation and decisions relating to sustainable development. (Wikipedia 2010)

#### **3.3 Ecological Footprint**

A concept worth mentioning in this context is the ecological footprint. Conceived in 1990 by Mathis Wackernagel and William Rees at the University of British Columbia, the Ecological Footprint is now in use by scientists, businesses, governments, agencies, individuals, and institutions working to monitor ecological resource use and advance sustainable development. The Ecological Footprint has emerged as the world's premier measure of humanity's demand on nature. It measures how much land and water area a human population requires to produce the resource it consumes and to absorb its' wastes, using prevailing technology. (Global Footprint Network 2010)

Businesses that look ahead and actively carry out their ecological responsibilities can gain a strong competitive advantage by using the concept to help improve their market foresight, set strategic direction, manage performance and communicate their strengths. By providing a common unit, the Ecological Footprint helps business to establish benchmarks, set quantitative targets and evaluate alternatives for future activities. The Ecological Footprint can be used to evaluate all company operations and it provides both general and detailed results. Ecological Footprint analysis reveals where regions, industrial sectors and companies will face increasing limits in resources such as energy, forest, croplands, pastures and fisheries. It also helps identify strategies that will succeed in a resource-constrained world, including products and services that will be most needed in the future. By measuring the Footprint of a population (an individual, business, city, nation or all humanity) we can assess our pressure on the planet, which helps us manage our ecological assets more wisely and take personal and collective action. (Global Footprint Network 2010)

#### 3.4 Ecological Responsibility Practices by Corporations

Sustainability of the environment is about the long-term maintenance of the earth's ability to sustain itself. Human progress, for example industrialization, poses a severe challenge for the sustainability. Thus, corporations have a range of responsibilities, because businesses (and any other institutions) extract resources, create pollution through its processes and products and generate wastes which pose a risk to the sustainability. To implement the ecological responsibilities, companies can take the following actions (Crane et al. 2008, 307) among others. One important measure is using natural resources efficiently and minimizing waste. The earth's resources and the capacity for absorbing waste are limited. Corporations have a role to play in ensuring that non-renewable resources, for example fossil fuels are preserved and renewable resources, for example soft woods are managed sustainably. (Crane et al. 2008, 307)

Companies also have to prevent pollution. Corporations, especially manufacturers, can cause a lot of pollution and so be responsible for minimizing pollution (end-of-pipe technologies) and the causes of pollution (clean technologies). Establishing product stewardship is crucial, too. Corporations can take a responsibility for a product's ecological impacts from resource extraction right through to disposal and reuse (a.k.a. "cradle-to-grave" approach to product management). (Crane et al. 2008, 308) The term "cradle-to grave" or 'life cycle' refers to the notion that a holistic assessment requires the assessment of raw material production, manufacture, distribution, use and disposal including all intervening transportation steps necessary or caused by the product's existence. The sum of all those steps is the life cycle of the product. The concept can be used to optimize the environmental performance of a single product or to optimize the environmental performance of a company. The goal of Life Cycle Assessment (LCA) is to compare the full range of environmental and social damages assignable to products and services, to be able to choose the least burdensome one. (Wikipedia 2010)

To implement the ecological responsibilities, companies need to evolve their products, processes and services: Progress to sustainability will require radical

transformation in the things that corporations do and produce. They have to innovate for the future. Managing climate change is important, too. Industrial processes and products produce greenhouse gases, which affect the livelihood of the earth. Companies have a responsibility to manage their "carbon footprint" by reducing their use of fossil fuels and changing for "carbon-neutral" products and processes. Ensuring resource security and resource justice is needed as well. Sustainability is not only about whether there are enough of natural resources, but also about who owns them and who can access them. Corporations are expected to play a role in ensuring that essential resources (water, oil, food) are available for those who need them. (Crane et al. 2008, 308)

In all of the areas mentioned above, corporations can play a significant role. The ecological responsibilities of corporations are not necessarily individualized responsibilities, but can be collective responsibilities that are shared with others. Co-operation with Non-Governmental Organizations (NGOs) and participation in regulatory initiatives of governments are common forms of CSR for corporations. Many initiatives can also require collaboration with other companies in the product supply chain. (Crane et al. 2008, 308)

#### 3.4.1 How Green is Green Enough

Today, it is a necessity for businesses to strive for being more "green" than before, possibly more green than the competitors in order to have an advantage in the market. Following the requirements of law is obviously no longer enough, but how green is green enough? What does actually "green business" mean? The concept could simply mean that a business

- reduces negative environmental impacts
- complies with environmental regulations
- has a slick green marketing campaign
- publishes a CSR report
- has good environmental management systems

- is ISO 14001 or otherwise green certified
- can sustain its operations into the future indefinitely
- enriches the world in which it operates

(Friend et al. 2009, 2)

In each business, just the big strategies and long-term policies are not everything. The employees have to be involved, too. At each workplace, green thinking has to become a part of daily life and practices. The essential things one needs to do are:

- drop the assumption that you have to choose between making money and making sense
- eliminate waste of all kinds
- use renewable to cyclical resources
- pay attention to the physical life of your business
- be forward thinking and future-oriented
- start with the attitude "where you are, with what you have" and do what you can

(Friend et al. 2009, 2)

As environmental awareness keeps on increasing and getting new forms, it must be difficult to define when being green is green enough from the point of view of the stakeholders, customers and employees. "Traditional" environmental management focused on reducing harm gradually and finding acceptable levels of damage that could be reached at an affordable price. For a truly sustainable business, "good enough" means operating in a way that helps both the economy and Earths' living systems continue functioning long into the future. The implications for the business strategy are profound. (Friend et al. 2009, 28)

Protecting the well-being of the planet is not only good for the planet itself. It is

also a practical business strategy that drives innovation and captures value that's otherwise ignored. Doing less harm is not good enough. Not when it is possible to regenerate and enrich the living systems on which the economy depends. Regulatory compliance is not good enough either. They will continue to rise as development increases and non-renewable resource supplies wane. Customers also demand more transparency and greener products while B2B relationships require increasingly better environmental performance. (Friend et al. 2009, 28)

For a company wanting to extract more value from the adoption of green practices it is necessary to make the environment a key element in the business model. (McKinnon 2010, 14) That is why in the next chapter, the customers' point of view will be discussed.

#### 3.5 Green Services from Customers' Point of View

A good question when it comes to the profitability of offering green services is whether the consumers really care. According a study by Accenture (Makower&Pike 2009, 25) sixty-four per cent of consumers worldwide say that they are willing to pay a higher prices – 11 per cent in average – for products and services that produce lower greenhouse gas emissions. Eighty per cent of European consumers are concerned about climate change, and seventy-five per cent feel that their personal actions help to reduce its impacts. And, finally, fifty-three per cent of global consumers – representing over a billion people – prefer to purchase products and services from a company with a strong environmental reputation, according to Tandberg. The reputation is a clear preference not only for the customers but also for its employees. According to the same survey eight out of ten prefer to work in an environmentally ethical company. (Makower&Pike 2009, 25) The numbers seem good from the perspective of businesses that want to invest into being more "green". It seems to be worth it.

But are the consumers and citizens really engaged to reward environmental leaders with their purchases and investments? Are they concerned enough and are the issues really sufficiently important to them that they are willing to act – and pay extra for having more green services and products? The answer is we don't

really know. Firstly, consumers look for ways to be more responsible and they look to companies and governments for solutions about what to do. They want to do things that are relatively easy and that don't require too many changes in habits or include additional costs. What they want is the companies to help in form of products and value propositions that enable them to understand the difference the customers will make if they buy the greener product. Secondly, which is sad, many consumers think greener goods start with a reputational deficit: they are inferior until proven otherwise. Thus, a product or service must promise additional benefits beyond the superior environmental attributes – it must be cheaper, easier to use, faster, more effective or just "cooler" to appeal to the customers. (Makower&Pike 2009, 29-30)

Greening is an opportunity. Businesses that have successfully positioned themselves as green leaders can use the environmental friendliness as a selling point. The market potential of green economy is enormous: there are big players in the market and smaller firms are also positioning themselves to grow market interest. Media, celebrities, politicians and social networks make the green wave stronger and cooler. Even though there's a gap between green concern and green consumerism, there's still interest and motivation among the customers. The range of green products and services is growing and is rapidly shifting from a movement to a market and from the margins to the mainstream. (Makower&Pike 2009, 30)

#### 3.6 Components of CER

There are many forms of CER, depending upon the priorities and perceived needs of the company that wants to implement the environmental responsibilities into the business strategy. In this chapter, the following components of CER will be introduced: environmental commitment and awareness, measurement, reporting and auditing of environmental performance.

# 3.6.1 Environmental Awareness and Commitment to Continuous Improvement

What genuine environmental commitment means has to be defined here. To

environment commitment, businesses must build demonstrate genuine sustainability into their targets and have processes to incorporate environmental considerations into all levels of business and decisions making. Integrated commitment means that every action whether small or large, is evaluated for its' environmental impact. An environmentally responsible company mentions protection of the environment as a strategic priority. It has a long-term vision of sustainability and takes into account the impacts of its actions on future generations. Companies must be able to examine and challenge their unsustainable practices, which involves repaying ecological debt to communities for past environmental damages. There should also be dialogue between local communities and stakeholders about company's operations, plans and development. (Jamison et al. 2005, 11-12)

Continuous Improvement (CI) is a planned process for reviewing and improving The environmental performance in a the quality of products and services. company's processes, operations and activities need to be constantly improved and the performance has to be tracked. Continuous improvements should be applied to all components of CER, for example transparency or reporting, whereby companies set targets and goals for continuous improvement and report on their progress. Improvement must be reported based on targets and results measured qualitatively (and quantitatively when possible) on specific practical measures for example reducing emissions. The company must compare these results against the starting point for any improvements and set targets. Continuous improvements can be monitored through formal management systems such as ISO 14001 Environmental Management System (EMS) standard. The standards include environmental performance auditing and feedback mechanisms to identify opportunities for improving performance and tracking. In a company that wants to be committed resources must be dedicated to educating and training employees, since they are invaluable asset in the continuous improvement process. (Jamison et al. 2005, 19-21)

#### 3.6.2 Measurement, Auditing and Reporting of Environmental Performance

The following questions are examples of questions that you can ask from

companies regarding their CER practices. How do they ensure that they get measurable materials from CER? What actions do they take to effectively measure and report on CER? Measurement, auditing and reporting are three main pillars of quantitative and qualitative environmental performance analysis. These three give the information required to accurately analyze performance and to identify future actions.

#### 3.6.2.1 Measurement of Environmental Performance

Credible, science-based principles of measurements should be adopted by companies. Holistic measurement tools (in the style of ecological footprint) are required to fully account for all environmental impacts from a company's daily operations and to facilitate assessment of cumulative impacts. A company should gather measurable results i.e. actual outputs and impacts to the environment, rather than estimations, for the purposes of tracking, evaluating and learning from its efforts. A common accepted and mandated set of indicators is needed to measure corporate performance on environmental, social and financial terms. An example of such indicators is the Global Reporting Initiative (GRI). (Jamison et al. 2005, 16)

#### 3.6.2.2 Auditing of Environmental Performance

Auditing and verification processes that feed into corporate and public awareness and understanding of environmental performance should be supported by all responsible companies. To ensure measurement and reporting credibility and promote greater transparency, it is important for the corporate auditing process to be verified by independent third parties. While internal auditing is encouraged to promote organizational learning and accountability, and to feed into the continuous improvement cycle, external auditors are required to ensure the reliability and extensiveness of the analysis. (Jamison et al. 2005, 17-18)

#### **3.6.2.3 Reporting of Environmental Performance**

Reporting is an important means of communicating information about CER performance. Useful reports use meaningful metrics, report actual, measurable

results and impacts on environmental issues, track and report trends over time; and report mistakes as well as successes. Reporting practices should respond to the needs of stakeholders in a timely manner, for example quarterly. Internal and external audiences have differing informational needs. For instance reports designed for internal audiences like employees should have the goal of improving performance. The internal reports should also include a response mechanism to promote internal corporate dialogue and communication among all levels in the company. External reporting must be posted publicly and include full disclosure of environmental performance. Companies should be encouraged to seek best practices to improve their corporate reporting. (Jamison et al. 2005, 16-17)

#### 3.7 Transparency

Companies are expected to be transparent through the full, accurate and timely disclosure of information about its operations. They should be willing to share non-confidential information, including raw data, in an easily accessible manner. Companies are also encouraged to openly acknowledge and fully disclose the past and present environmental impacts of the company and take full accountability for past actions. Transparency is essential in decision-making process and in stakeholder interactions to allow informed participation in decision-making processes. For instance, a company should provide interested stakeholders with information on how environmental, economic and social impacts and issues are incorporated in decisions. Also, companies must give feedback on how stakeholder input is incorporated into decisions. (Jamison et al. 2005, 18-19)

#### **3.8 Exceeding Compliance by Environmental Initiatives**

Exceeding compliance by environmental initiatives is a high benchmark that encompasses more than achieving slightly more than regulatory compliance and avoiding fines or penalties. It involves implementing environmental initiatives to achieve a superior level of performance. For companies to go beyond compliance, its' CER leaders should have practical environmental measures that lead to real performance. Companies should also adopt new and innovative processes, tools and operating philosophies to enhance environmental performance. They should measure, monitor and report on aspects of the company that make it beyond compliance in order to improve claims and exceed regulatory requirements in their stakeholder engagement and reporting practices. Companies are expected to develop performance metrics for evaluating their beyond compliance activities and they should report on these in a published sustainability or environmental reports. They are expected to implement practical environmental performance measures, such as pollution prevention, eco-efficiency concepts, toxics elimination and supply chain management that reduce environmental impacts and cost, but which are not regulatory requirements. (Jamison et al. 2005, 22-23)

#### 3.9 The Paradox of Being a Green Logistics Company

For a logistics company, being environmentally friendly is very challenging. Logistics implies a degree organization and control over freight movements. Greenness is a code word for a range of environmental concerns. The concept of "green" has a positive meaning. Green logistics should suggest an environmentally friendly and efficient transport and distribution system. The application on green logistics, though, is challenging. (Rodrigue et al. 2009)

Greenness has been an issue in the transportation industry since the late 1980s. It grew out of the growing awareness of environmental problems. The transportation industry is a major contributor to environmental issues through its modes, infrastructures and traffics. The transportation industry has the responsibility and the opportunity to present a more environmentally friendly face. How the logistics industry has responded to the environmental responsibilities is not unexpected, given its commercial and economic imperatives. By virtually overlooking significant issues, such as pollution, congestion, resource depletion, means that the logistics industry is still not very 'green'. (Rodrigue et al. 2009)

Although there is a trend for governments to make the users pay the costs of using the infrastructures, logistical activities have often escaped these initiatives. The focus of environmental policy is pretty much on private cars. While there are increasingly strict regulations being applied to air transport, trucking, rail and maritime modes are not being equally strictly controlled. Diesel fuel, for instance, is cheaper than gasoline, despite the negative environmental implications of the diesel engine. Yet, trucks contribute on average 7 times more per vehicle-km to nitrogen oxides emissions than cars and 17 times more for particulate matter. The trucking industry is likely to avoid the bulk of environmental externalities it creates. (Rodrigue et al. 2009)

The hub structures supporting many logistical systems result in a land take that is exceptional. Airports, seaports and rail terminals are among the largest consumers of land in urban areas. The dredging of channels in ports, the provision of sites, and operating expenses are rarely completely reflected in user costs. In Europe, national and regional government subsidies are used to assist infrastructure and superstructure provision. The trend in logistical operations easily perceive green logistics as a mean to internalize cost savings, while avoiding the issue of external costs. The top environmental priority is commonly reducing packaging and waste. These observations support the paradoxical relationship between logistics and the environment that reducing costs does not necessarily reduce environmental impacts. (Rodrigue et al. 2009)

In table 1 and the following chapters, the paradoxes will be discussed.

Dimension	Outcome	Paradox
Costs	Reduction of costs through improvement in packaging and reduction of wastes. Benefits are derived by the distributors.	Environmental costs are often externalized.
Time/Flexibility	Integrated supply chains. JIT (just-in- time) and DTD (door-to-door) services provide flexible and efficient physical distribution systems.	Extended production, distribution and retailing structures consuming more space, more energy and producing more emissions (CO2, particulates, NOx, etc.).
Network	Increasing system-wide efficiency of the distribution system through network changes (Hub-and-spoke structure).	Concentration of environmental impacts next to major hubs and along corridors. Pressure on local communities.
Reliability	Reliable and on-time distribution of freight and passengers.	Modes used, trucking and air transportation, are the least environmentally efficient.
Warehousing	Reducing the needs for private warehousing facilities.	Inventory shifted in part to public roads (or in containers), contributing to congestion and space consumption.

#### Table 1. Paradox of Being Green

Environmental aspects of logistics have become a visible issue. Instead of focusing on the outbound movement of finished products (physical distribution), the focus has shifted to companies' entire transport, storage and handling systems (integrated logistics) and later to the interaction with businesses upstream and downstream (supply chain management). Thus, the scope of green logistics research has extended. Other big contextual trends include the growth of environmental awareness, the proliferation of environmental regulations and the development of national and international standards for environmental reporting and management. Many companies now adopt the regulations as part of their corporate social responsibility programmes. (McKinnon 2010, 8)

#### **3.9.1** Costs as a Challenge for Being Green

The purpose of logistics is to reduce costs, especially transport costs. One of the

further objectives of the services they provide is service reliability, including flexibility. Logistics companies are highly supportive of strategies that enable them to cut transport costs in a competitive environment. Sometimes, the costsaving strategies pursued by logistic operators can cause a paradox with environmental considerations. Environmental costs are often externalized, which means that the benefits of logistics are realized by the users (and eventually to the consumer if the benefits are shared along the supply chain). The environment, though, assumes a wide variety of burdens and costs. Society and especially many individuals are becoming less willing to accept these costs. Instead, there's more and more pressure on governments and corporations to include more environmental considerations in their activities. (Rodrigue et al. 2009)

Environmental accounting and evaluation of the costs involved is a challenging process and it is not an exact science. The environmental costs of a logistics company can be divided into the following categories: internal costs, compliance costs, contingent costs, image and relationship costs and external costs. Internal costs concern the input costs (materials, labour) related to what is being produced. Most companies are well aware of the costs as they directly disburse them. Compliance costs concern the expenses that don't contribute to the output but are related to the regulatory framework. Emission standards, for instance, are common and all come with costs assumed by firms to insure compliance. Compliance may be beneficial if it implies subsidies, lower levels of taxation or insurance payments. In logistics business, there is a risk of accidents or hazardous materials releases. Contingent costs imply a form of risk management where a low level of compliance can be weighted in terms of the risks, such as being fined. Image and relationship costs require attention, too. Otherwise the company may suffer from significant costs in terms of lower sales and litigation. It is a costly factor, but if it is done well it can lead to positive impacts if the company and products are perceived as environmentally friendly. External costs relate to the costs that are not externalized, implying that they are assumed by the community and not the firm. Growth often results in a higher level of usage of transport infrastructures, more emissions and higher risk for accidents. All the

costs are usually assumed by the wider economy and can thus be considered to be outside the firm. (Rodrigue et al. 2009)

In a logistics company, mobility and costs have to be kept in balance. Mobility is mainly supported by engines that consume vast quantities of energy, mainly petroleum. Mobility comes with a cost, partially assumed by the users (for example fuel, insurance, etc.). Environmental impacts, however, are mostly assumed by the society. In Figure 2 below, the paradox between mobility and costs is being illustrated. (Rodrigue et al. 2009)

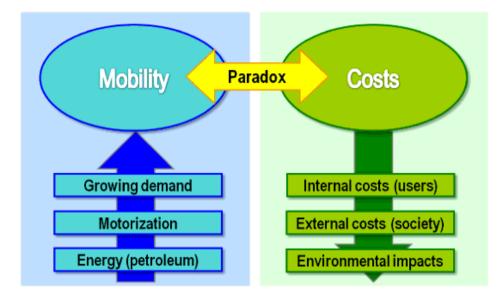


Figure 2. Paradox: Mobility and Costs (Rodrigue et al. 2009)

#### 3.9.2 Strategies to Cope With Environmental Constraints

In a logistics company, several strategies can be used mitigate environmental constraints. The measures can be seen in table 2 below:

Objective	Strategy	
Shipping less	Demand responsive systems. Reduce returns.	
Changing suppliers	Reassessing sourcing both at the global and domestic level	
Shipping scheduling	Allow greater shipping time and outside rush periods	
Efficient packaging	Reduce the shipment size (volume) of the same load	
Modal shift	Use a mode or a route that is more energy and environmentally efficient	

Table 2. Measures to Cope with Environmental Constraints.

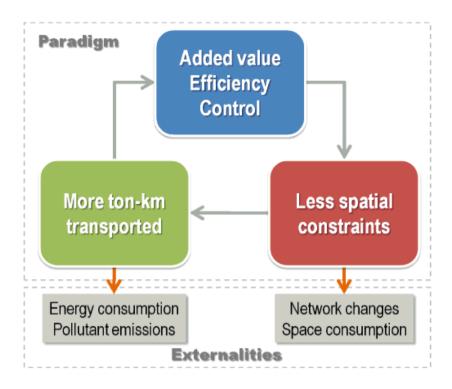
Shipping less is a setting of demand responsive systems where supply chains are integrated so that the goods being delivered are the outcome of an expressed demand. Besides, by improving the level of order fulfilment returns can be reduced.

Changing suppliers is another measure. It's important to reassess sourcing both globally and locally. Suppliers have to be chosen well. While a supplier with lower costs are considered, if factors such as higher transport costs, more inventory in transit, longer response times and a higher level of unreliability are considered, other suppliers may be more advantageous.

Shipping scheduling of flows can be adapted to insure a greater level of existing asset utilization. Greater shipping time outside rush periods can be applied to achieve results.

Efficient packaging reduces the size of shipments (volume) of the same load. Thus, less packaging is being used or how the good is packaged is being changed.

Modal shifts mean that a mode or a route is used which is more energy and environmentally efficient. It may involve a change in the routing of cargo. (Rodrigue et al. 2009)



# 3.9.3 Flexibility and Timing as a Challenge for Being Green

Figure 3. Flexibility and Timing as a Challenge (Rodrigue et al. 2009)

As depicted in Figure 3, time is crucial in logistics. By reducing the time of flows, the speed of the distribution systems is increased. Efficiency is achieved by using the most polluting and least energy efficient transportation modes. The major increase in air freight and trucking is partially the result of time constraints of logistics. The time constraints are the result of flexibility of the industrial production and of the retailing sector. DTD (door-to-door) services combined with JIT (just-in-time) strategies are needed to satisfy the requirements, which lead to a vicious circle. The more those strategies are used, the worse the consequences for the environment are. The main drivers of supply chain management are added value, efficiency and control. With added value economic opportunities arise with activities related to transhipment, transloading, consolidation and deconsolidation. Striving for efficiency requires improvement of cost and performance attributes through better modal options. In the process, energy consumption and pollutant emissions increase. (Rodrigue et al. 2009)

#### 3.9.4 Network and Warehousing as a Challenge for Being Green

Logistics is a big factor in globalization and international flows of commerce. In modern logistics systems economies, the speed and reliability of deliveries reduce the need to store, as it is based on the reduction of inventories. Having less warehousing is an advantage. The inventories are actually in transit, especially the roads, which contributes to congestion and pollution. Consequently, the environment and the society are assuming the external costs instead of the logistics companies. In some sectors extra links between the manufacturer and consumer are added to the logistical chain through an additional external movement of products in the production line, though. (Rodrigue et al. 2009) See Figure 4 below.

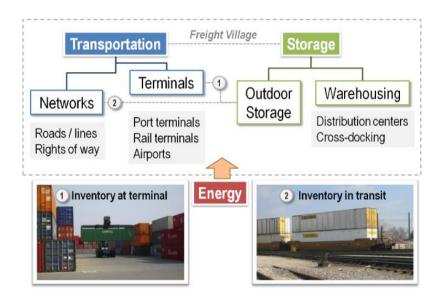


Figure 4. Network and Warehousing as a Challenge (Rordigue et al. 2009)

Another environmental issue that the increased demand for transport causes is its' land take and need for new infrastructures. Airports and ports, for instance, require large amounts of land. The question is whether the environment and society can provide such amounts and whether the transport industry should have an option for massive hubs and load centres. (Rodrigue et al. 2009) Land take of logistics has two main factors, transportation and storage.

Both transportation modes and terminals consume a large amount of space for their infrastructures. The infrastructures take land as roads and ports, especially in metropolitan areas where the material flows are major. The actual transportation land take for freight distribution is difficult to assess. That is because the facilities, such as roads and airports, are mainly used for passengers' movements.

The need for different storages takes a lot of land, too. Various facilities are needed to hold freight in inventory, also facilities for bulk (for example bulk storages for waste). Especially distribution centres are space-consuming. That is because a wide range of added value activities are performed, including consolidation and deconsolidation, cross-docking and storage.

The hub-structure of transport networks is characteristic of modern logistics, especially in air, rail and maritime freight transportation. It reduces costs and improves efficiency. The negative aspect if the structure, though, is that the flows, modes and terminals tend to be less environmentally friendly. The hub-structure concentrates traffic at a small number of terminals, which causes local environmental problems, such as noise, air pollution and traffic congestion. Thus, even though the level of total externalities may be smaller by using hub networks, a large amount of the environmental externalities are assumed by the hub itself. (Rodrigue et al. 2009)

The link between transportation systems and the environment can be summarized as follows (see Figure 5 below). The choice of network structure affects the spatial distribution of emissions. In a centralized network, the traffic and emissions are concentrated at specific locations, hubs, but they use less energy. A diffused network may be perceived at a local level as more environmentally friendly even though it consumes much more energy. Traffic involves the level of emissions and energy consumption since it is related to the utilization level of a transportation system. The choice of transportation mode is related to the type of emissions. Different modes have different energy requirements and levels of efficiency. A trucking-based transport system has different environmental problems than a transport system leaning on public transit (for example trains). (Rodrigue et al. 2009)

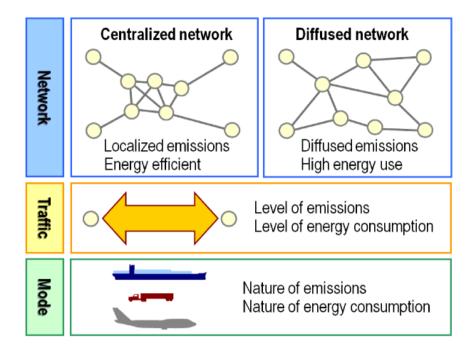


Figure 5. Network as a Challenge (Rodrigue et al. 2009)

## 3.9.5 Reliability as a Challenge for Being Green

The core of logistics industry is the importance of service reliability. The success of a company is based on its' ability to deliver on time without breakage or damages. Logistics providers realize the objectives by utilizing the most reliable modes of transportation. The logistics industry is built around air and truck shipments which are the two least environmentally-friendly modes. The least polluting are being perceived the least reliable in terms of on-time delivery, safety and lack of breakage. Ships and railways have a reputation for poor customer satisfaction. (Rodrigue et al. 2009)

# 4 CASE STUDY: DHL'S ENVIRONMENTAL PERFORMANCE AND GREEN SOLUTIONS FOR CUSTOMERS

In this chapter, I will firstly discuss the research methodology behind the study. Being a qualitative, descriptive research there are certain characteristics and limitations to it that need to be admitted. In the following chapter, I will introduce DHL as a business and give an overview of how CR is taken care of by the corporation. Secondly, the environmental concerns of DHL are introduced. After that, the focus will be on the environmentally friendly solutions it has to offer for its' customers. The material for the analysis is DHL's CR Report 2009/10. Finally, an interview will be conducted to gain an "insider's" (a DHL employee) opinion. Because DHL is a logistics company, greenness is not easy. That is why some criticism and evaluation conducted by an outsider organization will be added to the analysis. Some of my personal viewpoints and criticism will also be introduced as the analysis follows.

#### 4.1 Research Methodology

The main aim of the thesis is to find out how DHL takes care of its' environmental responsibility and what kind of solutions it has to tackle the challenges, including the solutions to its customers. Another perspective that will be taken a look at is the perspective of an employee in order to gain a deeper understanding of how CER aspects are taken care of by DHL. The perspective from which the topic is looked at is how the potential and existing customers are informed about the CER policies and practices of the corporation.

#### 4.1.1 Nature of the Study

From the viewpoint of objectives of the study, the study is a descriptive research. The main purpose of a descriptive research is description of the state of affairs as it exists at present. The idea is that the researcher has no control of the variables, but he rather reports what is happening. (Kothari 2008: 3) In the beginning of the study, I had to think of what would be the area of interest. The aim is to describe the area in question, that is, the CER policies and practices of DHL. The aim is

not to get statistical results or to find cause and effect relations. Simply, a description of how CER is carried out by DHL combined with some criticism will be the result. I admit the study remains small-scale. It is a research, on the basis of which the topic could be more thoroughly researched. It can be seen as a test that shows the possibilities to conduct a study about the topic.

From the perspective of application the study is applied. It is done in order to understand a phenomenon. A qualitative approach is applied in the sense that research is a function of researchers' insights and impressions. The research generates results in non-quantitative form. (Kothari 2008: 5) The approach is very flexible so that the variety within the phenomenon can be described. The flexible approach also allowed me to change the goals of the study as the work progressed. Because the study was going to be qualitative, I could not predetermine the exact nature and extent of the research problem in the beginning. In reality, the possibilities for a student to conduct a research about policies of a big, international corporation were much more limited than I initially thought. As most companies DHL has a policy about which information it publishes on its website as well as a policy about how its employees can be interviewed. The study is an analytical research in the sense that I am trying to use facts and information which is already available and analyze them to make a critical evaluation of the material (Kothari 2008: 3).

#### 4.1.2 Data Collection

The nature of the study also makes a difference in data collection. Descriptive research involves gathering data that describe events and then organizes, depicts, tabulates and describes the data collection. It often uses visual aids (graphs, charts) that help the reader to understand the data distribution. The data has to be reduced and organized into patterns that emerge during analysis and the patterns help to comprehend the implications of a qualitative study. (AECT 2001) The study population, from which the required information could be found from to answer my research questions, was one thing that changed in the course of writing the study. Initially, the aim was to focus more on interviewing DHL's employees about how they see the CER strategy and practices of the corporation. It turned

out to be complicated to carry out: finding the right contact persons within the organization was difficult. Thus, only the people I knew from the company came in question. And yet, the policy of DHL turned out to be that the answers to my questions had to be controlled and checked by several people in the company.

The techniques of a descriptive research include depth interviews, observations, surveys and portfolios (AECT 2001). The method used mainly in this study was gathering information from documents and materials. Because the method of this study is flexible, I had to accept the fact that the study population will be very limited. Instead of my initial plans, I decided to focus on what the internal reports of DHL tell about its' CER policies and practices and what kind of solutions they have available for customers who seek "green" options from logistics companies. The data about those aspects was obtained from the official website of DHL. Again, the information is not "neutral" because it has been written by the corporation itself, which is a fact that I had to bear on mind throughout the study.

#### 4.1.3 Limitations of the Study

As stated above, the study is small-scale and can be described as a test of how it is to research the topic and try to involve a big corporation into it. The study relies on many sources from the internet, such as DHL's website and some other sources, which could be seen as non-reliable. The reliability of DHL, at least, is questionable in the sense that all the data gathered both from the internal reports and from a single interview is strictly controlled. No negative sides of the phenomenon or failures of the CER practices are introduced in the official reports. Had the interviews been more, such as hundreds, something could be stated about how the employees of DHL see the strategy and policies of the corporation. Now that there is only one interview conducted, that does not really give a realistic image. The shortness of the study as well as my non-expert background also cause certain limitations: being a bachelor's thesis no major conclusions can be drawn based on it.

Descriptive studies report summary data such as measures of central tendency. Rich descriptions of phenomena can also emerge from qualitative studies, interviews and case studies. They can yield data that lead to important recommendations. Yet, one has to admit the limitations: one cannot try to draw conclusions that show cause and effect, because that is beyond the bounds of the statistics employed. (AECT 2001) The conclusions drawn based on this study will be introduced in chapter 5. They will summarize the main points of DHL's CER policies and practices, the solutions and viewpoints of one of their employee, combined with some criticism towards the phenomenon of trying to be a "green" logistics company. Shortly, my impressions about the data will be put together.

#### 4.2 Overview of DHL

DHL is the global leader in international express and logistics industry which was founded over 40 years ago. DHL is a part of Deutsche Post DHL. In 2009, the Group generated revenue of more than 46 billion Euros. (DHL 2010, 12) DHL offers integrated services and tailored, customer-focused solutions for managing and transporting letters, goods and information: express, air and ocean freight, overland transport, contract logistics solutions and international mail services. The corporation comprises four divisions: Global Forwarding Freight, Supply Chain, Global Mail and Express which all operate under the control of their own divisions headquarters. The group management functions are performed by the corporate center. DHL's international network links more than 220 countries and territories with around 500000 employees and more than 1 million customer contacts per hour. (DHL 2010, 11)

#### 4.3 DHL's CR and CER Strategies

DHL is running an environmental management program to manage the impact of its' business operations on the environment. Environmental responsibility is a key part of how DHL operates, especially since the 1990s. In 2009, CEO Frank Appel announced the commitment to environmental and social issues as a part of the new corporate strategy. The group-wide environmental principles are documented in DHL's Environmental Policy. The goals of it are to strive to minimize their impact on the environment, to be transparent about what they do, to deliver value to the environment and the group and to show a clear way towards an environmentally responsible future. At the same time, the company can reduce costs, add value and create new market opportunities. (DHL 2010)

DHL's CEO Frank Appel states that DHL has committed itself to sustainable development. The approach of DHL, called "Respect and Results" includes that DHL aims to achieve their business objectives in a manner that protects the environment and gives back to the communities. DHL's CR strategy is described with the motto "Living Responsibility". It has three core programs: GoGreen (environment), GoHelp (disaster management) and GoTeach (education). According to Appel those are the areas in which DHL's employees and services can make an impact. The programs seek to improve the conditions for the global community and the planet. DHL's CR approach has been recognized: in 2009, DHL received the German Sustainability Award (Deutscher Nachhaltigkeitspreis) and an excellent rating in the Dow Jones Sustainability World Index. The GoGreen program was ranked best-in-class. Despite the successes, DHL faces challenges, too. "Combating climate change by becoming more carbon-efficient, and delivering sustainable value to society and communities will require more from all of us [...]", states Appel. (DHL 2010) Since DHL has made the environment such an evident part of its' business strategy it should be one of their main values. CSR strategy is not only about a particular set of business practices and strategies but also a set of values that underlie those practices.

DHL is trying to be transparent as a part of its' CR strategy. In order to be transparent, both non-confidential information and confidential information should be shared, including raw data, in an easily accessible manner. Companies are also encouraged to openly acknowledge and fully disclose the past and present environmental impacts of the company and take full accountability for past actions (see Jamison et al. 2005, 18-19) Non-confidential information including raw data is easily available on the website. The impacts of its' business are acknowledged even though DHL as a logistics company will always face the dilemma of being "green". Instead, DHL is not informing about the impacts of their operations in the past on the website. Certain information is probably either confidential or considered not to be meant for customers' needs. In the overall

communication, the focus is on the future and the actions done in the recent past. The report used as a data for the analysis, for instance, only covers one year.

#### 4.4 CER Report as a Part of DHL's CER Strategy

Reporting is an important means of communicating information about corporate environmental performance. The CR Report of DHL used for the analysis is available on the website of the corporation. It is there to present the CR strategy of DHL and to illustrate the progress and the challenges trying to fulfill the goals. The Report covers all of the DHL divisions in the period from January to December 2009. The Report is prepared with reference to the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines and to the GRI Sector Supplement for the Logistics and Transportation Sector. The GRI defines three levels of application in CR reports: C, B and A, with A being the most comprehensive. According to DHL its' Report complies with a B+ level of application. DHL's CR reports since 2006 have been reviewed by an independent third party. (DHL 2010)

DHL can be given positive feedback for the way they seem to audit and report the environmental impacts of the business. Gathering measurable results and using indicators to measure the corporate performance on environmental, social and financial terms is needed to qualify as a responsible business. Using GRI as an indicator of how comprehensive the report is a good way of accounting the environmental impacts of the business. The use of a third party to verify the audit process is also important. DHL's not been using a third party for long but is now doing it in order to ensure measurement and reporting credibility and promote greater transparency. Of course, some of the data is still confidential and only for internal use due to the differing needs of internal and external audience. (see: Jamison et al. 2005, 16-18) To my understanding, the Report publicly available on DHL's website contains "meaningful metrics, report actual, measureable results and impacts on environmental issues, track and report trends over time; and reports mistakes as well as successes", as a good reporting practice requires. Instead of using the concept of "ecological footprint" DHL discusses "carbon footprint" much more. Critically said this shows how the carbon-efficiency is the

main goal of the environmental strategy of DHL. According to the Global Footprint Network (2010) businesses (in this case DHL) could gain a strong competitive advantage by using the concept of Ecological Footprint to help improve their market foresight, set strategic direction, manage performance and communicate their strengths. It would also help them to establish benchmarks, set quantitative targets and evaluate alternatives for future activities. (Global Footprint Network 2010)

#### 4.5 The Environmental Concerns of DHL

Decades ago, as the environmental concerns arose, the main environmental concerns of companies were energy saving, waste minimization, pollute prevention, nature conservation and recycling. These days. ecological/environmental responsibility covers deeper elements such as climate change, sustainability and resource security which are more complex and challenging to solve. As the main environmental concerns DHL defines the most important environmental aspects of its business and operations as following: emissions to air (particularly emissions of CO2 which is a greenhouse gas), use of energy, use of natural resources (particularly fossil fuels and paper) and aircraft noise. (DHL 2010) As an actor in transportation industry, DHL (see: Crane et al. 2008, 307-306), DHL contributes strongly to environmental issues through its modes, infrastructures and traffic. Yet, it has to try to give an environmentally friendly image to its customers and stakeholders.

To implement the ecological responsibilities, companies can try to use natural resources efficiently (for instance try to minimize waste and to prevent pollution). It is also possible to try to ensure that natural resources are managed sustainably and efficiently, for example by investing into clean technologies, reducing fossil fuels and using renewable resources. (See: Crane et al. 2008, 307-308) DHL is trying it's best to use these measures.

For each of the most important environmental aspects above, DHL has developed their objectives to implement the mentioned measures. DHL states that in order to tackle the aspects "emissions to air" and "use of energy" it is committed to improving their carbon efficiency. DHL was the first global logistics company to set themselves a quantified CO2 efficiency target. The aim is to reduce the emissions and use of energy by 10% by 2012 and 30% by 2020 (compared to 2007). Tackling climate change is only a part of the responsibilities: every company should have a responsibility to manage their "carbon footprint" by reducing their use of fossil fuels and changing for "carbon-neutral" products and processes. (See Crane et al. 2008, 308) DHL aims at both improving their carbon efficiency and at reducing the emissions.

The measures taken to reach the goal of reducing emissions and use of energy include more efficient transport, optimized planning, alternative sources of energy and innovative technologies. As Crane (2008, 308) states, companies need to innovate their products and services in order to be environmentally responsible. To manage the "use of natural resources" in responsible way DHL has its' own Environmental Management System, the 6-Step Approach which in addition to promoting best-practice environmental management at the site or local level, also covers global climate protection issues such as using fossil fuels. DHL also has a group-wide paper policy which promotes the use of recycled paper and an ongoing aircraft replacement program (replacing older aircraft with newer, more efficient and quieter aircraft). (DHL 2010) Despite the extensive policies and practices of DHL one concept that is not used in their report is Life Cycle Assessment (LCA). DHL could attempt to take a responsibility for their products (shipping) by analyzing the impacts of it ("cradle to grave" –approach). As a result, the customers would be able to compare the range of products and choose the least burdensome one. Of course, that would require that other logistics companies also joined the movement and all of them would need close cooperation and an extensive database. Thus, it is not a very realistic idea and it is up to the customer to compare which logistics company operates in the most "green" way.

#### 4.6 GoGreen Program as a Way of Conducting DHL's CER Practices

Because DHL is a logistics company and transports billions of items each year, they have developed one of the world's largest private transportation networks. The network includes hundreds of cargo aircraft, over 120000 vehicles and trailers and operational facilities in almost every major city. The operations have a considerable impact on the environment. DHL's Environmental Responsibility is covered by its' program called GoGreen which minimizes the impact of their actions on the environment by using resources in a responsible manner. Due to the demand from their customers and to their growing market share they expect the business to keep growing. The alternatives to fossil fuel powered transportations are few so DHL has tried to find ways to improve its carbon efficiency rather than reducing its absolute CO2 emissions. The company has to realistically estimate how to reduce their emissions' impacts. They acknowledge that their CO2 emissions are directly linked to their consumption of fuels and energy and thus to their operating costs. Improving the CO2 efficiency translates into lower costs and contributes to their economic success. (DHL 2010) This reveals the fact that practicing CSR and CER businesses can be economically beneficial to the business (see Crane et al. 2008, 7-8). Practicing environmental responsibilities also helps the company's operations efficiency, for example through environment conservation and recycle initiatives (see: Singapore Compact 2008).

A major dilemma that DHL faces is the fact that its' customers need express delivery time-critical items to make their businesses succeed. The transportation industry is a major contributor to environmental issues through its modes, infrastructures and traffics. (Rodrigue et al. 2009) The customers need the fast and efficient ways of distributing the shipments, which extend production, distribution and retailing structures. The need to use aircrafts and diesel vehicles for shipping, for instance, means that the company consumes more space, more energy and produces more emissions (CO2, particulates, NOx, etc.) (See: Rodrigue et al. 2009). Because of the harmful load on the environment, DHL's long-term strategy (Strategy 2015) includes a promise to offer both simplifying services and sustainable solutions to the customers. In many cases there are no alternatives to transportation by air. In order to minimize all environmental impacts DHL works with their customers, with other airlines and with their own management teams. Customers also have access to a range of products to reduce and offset their carbon emissions. The carbon-neutral shipping services and products are known as GOGREEN services (see more in chapter 4.6). When the shipments are less time-sensitive, DHL has alternatives such as rail or ocean transport. Their SeAir product offers solutions to substitute transportation by air partially or entirely by sea which is a more CO2-efficient way. (DHL 2010)

It is important to report the environmental data of the businesses. DHL has put a lot of effort into building up their carbon accounting and controlling system. DHL openly admits that their operations cause environmental impacts other than just CO2 emissions. They use many other natural resources, too. It is a part of DHL's CR strategy to manage their overall environmental impact. A lot of data is being analyzed to manage the impact. The primary focus of the measurement and reporting activities is currently carbon emissions. DHL is, though, trying to improve the management and reporting of their environmental impacts at the site, country and global level, which are more difficult to calculate and track. Measuring and monitoring the CO2 emissions, for instance, should be transparent. DHL is developing a carbon accounting and controlling system which aims to report CO2 emissions in detail at regular intervals. DHL's own CO2 emissions are being reported internally. DHL's CO2 data is consolidated to an annual carbon footprint of the company. (DHL 2010)

There are many other environmental aspects or issues involved in logistical operations. One of them is that airports, seaports, railways and terminals have a very high land take. They are among the largest consumers of land in urban areas. The trend of hub formation is not green at all. Thus, logistics companies are not very green. Another issue that is not highlighted in DHL's marketing communication is that while there are strict regulations being applied to air transport, rail, maritime traffic and trucking do not face such regulations. Diesel fuel which is harmful to the environment is cheaper than gasoline. The trend from government these days is to make the users pay the costs of using the infrastructures. Yet, the focus is still on private cars. Logistical activities have often escaped these initiatives. Thus, the paradoxical relationship between logistics and the environment remains. (see: Rodrigue et al. 2009) Despite the sometimes extensive positive attempts, logistics business is still not very green.

#### 4.7 GoGreen Solutions for Customers

One of the main strategic priorities of DHL is to offer their customers "simplifying services and sustainable solutions". Customers are increasingly asking for green solutions. DHL's GoGreen program offers eco-friendly products and services for their customers so that they also achieve their own environmental targets. Not only is it done because of protecting the environment but it also gives the company a competitive advantage in the market. These strategies are also a part of strategic branding of a company. A company's reputation is fundamental in maintaining and attracting customers. Consumers nowadays are more sophisticated, being more selective and sensitive to a company's image and its' CSR initiatives or the lack of them. (see: Crane et al. 2008, 7–8) DHL has many ways of helping their customers to minimize their environmental impact. That is the Customer Promise contained in DHL's long-term business strategy, Strategy 2015. The environmental impact of logistics can be reduced by different solutions. For instance, DHL can analyze the supply chain of their customer and offer more CO2 efficient modes of transport (rail, ocean) or more environmentally friendly ways or organizing their supply chains. The analyzing may even extend to their customers' buildings such as warehouses being equipped with efficient lighting systems or facilities that save energy. (DHL 2010)

Another solution for reducing the CO2 emissions DHL offers is a wide range of carbon-neutral GoGreen products and services which can help to minimize the carbon footprints of the shipments. With GoGreen the CO2 emissions generated during the handling and transportation of customers' shipments are measured and offset through climate protection projects (more in chapter 4.7) In order for a shipment to become a GoGreen shipment a specific process has to be realized. Firstly, DHL calculates the CO2 emissions for the shipment, accounting for fuel use for the transport and energy use for its' handling at their facilities. Secondly, the CO2 emissions are reduced through internal measures, for example by using hybrid vehicles. To offset the majority of the emissions, DHL invests in external climate protection projects. DHL also certifies the CO2 neutral shipping to their GoGreen customers. In order to keep the high quality standards, SGS annually

verifies the emissions calculations, reductions and offsetting for GoGreen service. The verification is done according to the principles of ISO 14064. (DHL 2010) Services like GoGreen are definitely beyond the legal minimum required from DHL. It is a self-regulatory initiative which, through more voluntary approach, does some good to the environment to "neutralize the damage". (see; Crane et al. 2008, 7–8)

The GoGreen service has been available since 2005. In 2010, DHL has offset 38500 tonnes CO2 verified by SGS (Société Générale de Surveillance) for their customers and sent more than 700 million GoGreen shipments. For the customers, using GoGreen shipments gives a positive addition to their image. According to the CR Report of DHL the most prominent GoGreen customer has been the UN Climate Change Conference (COP15) in Copenhagen in December 2009. DHL was the official partner sponsoring the carbon-neutral shipping of the delegates' documents and parcels with GoGreen. (DHL 2010) In Figure 6, the countries where GOGREEN products are available are marked.



Figure 6. Availability of GoGreen products (DHL 2010)

DHL has a way of marking the shipments with a GOGREEN label stamped on a shipment (see Figure 7). On top of the shipment, the following labels may be seen to indicate it is carbon-neutral.



# Figure 7. GoGreen Labels (DHL 2010)

In table 3, the different GOGREEN products and other eco-friendly services for both private and business customers are summarized. The services available in Germany are many. For international customers, the selection may not be available at all or only a few of the solutions are possible. Why GoGreen services and products are not more widely available, has not been mentioned. Of course, the service has only been available for about 6 years and the network will probably be more extensive in the future. It is a disadvantage, though, that DHL's customers in certain areas do not have a possibility to minimize the carbon footprints of their shipments or to use some other of the eco-friendly services mentioned below.

GoGreen is not the only service DHL offers, though. As stated, they also offer customized measures to improve their customers' transport efficiency and help them to reduce their own CO2 footprint and costs. For Fujitsu for instance, DHL implemented supply chain optimization measures such as the shift from road to rail transportation and the practice of 3R (Reduce, Reuse, Recycle) for packaging materials. Thus, Fujitsu was able to reduce carbon emissions by 20% (300 tonnes each year), aiming to reach 40% by 2010. DHL also develops green direct marketing solutions. It can mean reducing the environmental footprint of direct marketing activities, such as the use of printed mail, telephone, mobile phone and

field marketing. The environmental objectives include, for instance, using recyclable mail packs, using recycled papers and being able to unsubscribe from receiving direct marketing communication from the sender. (DHL 2010)

 Table 3. GoGreen Products (DHL 2010)

GOGREEN products for private customers	GOGREEN products for business customers	Other eco-friendly services
Online Franking	DHL Express	Electroreturn
DHL Online Franking allows for small packages and parcel stamps to be easily and conveniently ordered and paid for online. Clients can add the <i>GOGREEN</i> service and send their small packages or parcels carbon neutral.	The GOGREEN <i>c</i> arbon neutral shipping option is available not only for DHL Express business customers based in Europe, but also for those in Asia Pacific.	Customers of DHL can return old electronic devices and empty print cartridges free-of-charge for recycling. This helps to minimize the environmental impact and reuse valuable raw materials. These shipments are CO <sub>2</sub> -neutral.
Pluspäckchen	Business mail	Packstation
The Pluspäckchen Gogreen is a medium-sized parcel which includes both packaging and postage. It can be used to send parcels up to 20 kg anywhere within Germany.	Business customers in Germany can send their mail carbon neutrally and show their commitment to preserving the environment with the GOGREEN label printed on the envelope.	The Packstation service is built around a network of parcel machines throughout Germany. The Packstation is open at all times and it cuts down on car traffic by 35,000 kms per year. This reduces emissions of carbon dioxide, particulates and other pollutants.
Plusbrief	DHL Parcel	Charity stamps
The Plusbrief is an envelope with its own printed stamp. It is carbon-neutral, at no extra cost for customers. Plusbrief is made with paper from sustainably managed forests and is certified by the Forest Stewardship Council (FSC).	This carbon neutral shipping option for business customers in Germany was launched as the pilot "Green Parcel" in June 2005.	DHL has sold charity stamps for environmental protection projects since 1992 in cooperation with the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). They carry a surcharge of 25 Euro cents.
Mail stickers		
GOGREEN stickers allow individual letters to be sent carbon-neutrally from Germany to destinations all over the world.		

#### 4.8 Climate Protection Projects of DHL

The way DHL gets carbon credits to offset the CO2 emissions from transporting the customers' shipments is generating them from the climate protection projects DHL invests into. The projects chosen must be of the highest standards. The minimum level is VER (Voluntary Emission Reduction) with Gold Standard, a standard implemented by an international non-profit organization. Most of the projects DHL supports comply with the Clean Development Mechanism (CDM) and provide CER (Certified Emission Reduction), an official carbon credit of the UNFCCC (United Nations Framework Convention on Climate Change). In practice, a small part of the CO2 emissions offset is done using credits from internal reduction measures selected using measures adapted from the CDM principles. DHL uses the carbon credits only for GOGREEN prepaid products where DHL pays for the climate investment. The principle of carbon offsetting is not a part of DHL's efforts to reach their CO2 efficiency target but it is only used to offer carbon-neutral services to their customers. (DHL 2010) Questions like how many percent of the actual CO2 emissions of the operations the projects cover for or how big a difference the projects actually make remain unanswered. Despite the GOGREEN projects a lot of CO2 emissions are not being neutralized and a lot of emissions will still be created on a daily basis, more than the projects of DHL can ever cover for. Even so, it is a step towards a more extensive environmental protection and a step towards more alternatives and innovations among all of the logistics companies.

The climate protection projects for GoGreen customers, summarized in table 4, include projects in the following countries and with the following goals. The areas where the projects are being done are shown in figure 8 below.

Climate Protection Project	Goal	
A hydro power plant in Brazil	to replace fossil fuels with renewable energy sources as sources for electricity	
A biomass power plant in India	to reduce emissions by using biomass waste for power generation	
A wind farm in East China	to replace fossil fuels with renewable energy sources	
Biogas vehicles in Sweden and Switzerland	reducing local, harmful, health-affecting emissions and global greenhouse gas emissions and generating carbon credits by using heavy biogas vehicles which replace standard diesel delivery and pick-up trucks	
Hybrid vehicles in Germany, United Kingdom and Japan	reducing fuel consumption and this way CO2 emissions by replacing standard vehicles with hybrid vehicles. Gaining significant performance data for future development of hybrid technology	
Fuel cell vehicle in Japan	deploying a fuel-cell vehicle to replace standard diesel, petrol pick up and delivery trucks and gaining performance data for future development of fuel cell technology	

# Table 4. Climate Protection Projects. (DHL 2010)



Figure 8. Climate Protection Projects Map (DHL 2010)

#### 4.9 DHL's CER Strategy from an Employee's Perspective

In order to find out how an employee of DHL sees the environmental strategy of the corporation and the practices to I improve the environmental performance. Because of DHL's policies the interview had to be conducted in written form, not face to face. The answers of the employee had to be approved by two people: Communications Manager and Head of Business Development. That shows in the answers: they are very formal, official and positive throughout. In next chapter, some criticism towards the answers and DHL's CER practices follow, but firstly the answers will be introduced and discussed.

#### 4.9.1 Definition of Corporate Social Responsibility

When discussing the topic Corporate Social Responsibility it is important to define what one means with it. As discussed before, it includes many types of responsibilities. The answer of the DHL employee was the following:

"DHL itself and as part of Deutsche Post DHL is a very socially responsible company and is constantly seeking for new ways to reflect positively on the environment and society as a whole. This is well integrated into daily life for me as an employee, both with real, hands-on activities and programs but also more abstractly, through ethical values and atmosphere."

From the answer you see that the respondent realizes that it involves commitment to continuous improvement, because DHL "constantly seeking new ways to reflect on the environment and society". To her, social responsibility is not just the values but also how one behaves. One needs to take up certain activities to make the values reality.

#### 4.9.2 The Role of Environmental Responsibility

When asked why it is important for DHL to act in an environmentally responsible way, the respondent emphasizes on it being a duty and a way to be successful.

"Deutsche Post DHL believes corporate social responsibility and respect for the communities where we operate is a duty and it is also part of our mission statement "We want to make a positive contribution to our world". We also believe that business success and corporate responsibility go hand in hand – it is thus a win-win situation."

The respondent admits that implementing CSR affects the success of the business. Calling it a win-win situation is realistic: of course the environment and society benefit the more efficiently CSR is being practiced. What the businesses find hard to admit is how they want to create a brand that says the business is "green". Image is everything, and CSR and CER activities are used as a way to polish the image and attract customers as well, not just to do good things.

#### 4.9.3. DHL as a Green Logistics Company

When asked, how the concepts of sustainable development and ecological footprint go together with DHL as it is a logistics company, the answer is:

"We live in a world where there always will be a need for transport and logistics. As in any other area, you can do things in a "good way" or in a "bad way". I would say that not many other logistics companies take CSR as seriously as Deutsche Post DHL."

The response shows that the DHL employee understands that transportation and logistics contribute negatively to the environment and climate. How you operate makes a difference, though. The respondent makes a strong statement claiming that DHL takes CSR more seriously than other logistics companies. I guess that is the image she has gotten from the employer side and it is quite correct.

#### 4.9.4 CER Practices of DHL

In order to know how aware of the CER practices of DHL the employee is, she was asked which practices she is familiar with. The answer shows she possibly did some research before responding because she is able to give numbers that an average employee may not remember.

"One of Deutsche Post DHL's three main corporate responsibility programs is GoGreen, which is aimed at improving our CO2 efficiency with 30% by 2020, starting from the 2007 baseline. Our customers also have the opportunity to choose GOGREEN (carbon neutral shipments) as an additional service. This means that the customer can buy this service and make good for the CO2 emissions their shipment is causing. DHL uses the GOGREEN service charge to invest in different environmental projects. Besides this, we are as employees always encouraged to reduce our ecological footprints by making changes in our daily work (and private) life."

DHL's GoGreen program is the aspect they want to emphasize on in their communication. GoGreen, as the respondent says, aims at improving the CO2 efficiency by 30%. The respondent works at the operations level so she is definitely familiar with the service customers can pay for to have a carbon neutral shipment. She mentions the environmental projects discussed earlier so she knows the idea of the GoGreen service. The last sentence shows that DHL communicates to their employees that just the activities at the workplace are not enough. Environmental activities don't just include the environmental projects, but your private life as well.

# 4.9.5 Measuring, Auditing and Reporting Environmental Performance of DHL

An important aspect of CER activities is how they are being measured. Someone or some instance needs to have the role of keeping records of which activities are used and have numeric data as well. An external auditor is also needed because the results have to be objective. I asked the DHL employee how environmental performance is being audited, measured and reported at her workplace. I also asked if they have ways of being more "green" at the workplace (including the office, warehouse functions and transportation). The answer was:

"As part of the GoGreen project, our CO2 emissions are measured and reported monthly. Also electricity, heating and water usage are reported and followed and appropriate measures are taken when necessary. Daily life changes at the office include paper usage (2 side printing set as default), avoidance of unnecessary usage of electricity plus different campaigns and competitions such as "bike to work" and saving of electricity in your home."

It is good to realize that the employee is aware of how frequently their emissions are being measured and reported. How it happens in practice remains unclear, probably because she is not the person responsible for that. DHL seems to keep record of the usage of energy and resources, since the usage of electricity, heating costs and water usage are being reported. The employees are encouraged to make small decisions that impact the negative load on the environment. To me, the answer shows how significant a role environment has both in the corporate strategy and at a smaller unit of the corporation. How well every single employee takes up the activities is impossible to say, but at least you can't blame them for trying hard.

#### 4.9.6 Green Values and Practices at the Workplace

Having a functioning Corporate Environmental Strategy includes what the employees of the corporation do in practice and how well aware of the values and goals they are. Being green involves small basic activities that can make a big difference if they are practiced constantly. Employees can make a positive impact and, for instance, reduce heating costs and paper or fuel consumption etc. Since the respondent is working as a supervisor position I wanted to find out how she promotes green thinking and practices at her workplace through some own initiatives and solutions. The answer was:

"Several times a year we have team meetings and workshops about actions for being more environmentally friendly. Decisions that have been made include among others instructions for paper printing, usage of lights in the terminal and office, heating of the loading docks, importance of closing the terminal doors during winter time and usage of air conditioning and heating in the office."

The activities she responds are without a doubt important. Paper and energy usage are some of the easiest things to affect if all the employees live up to the expectations. Meetings and workshops can be effective only if after them the employees are being monitored and kept on the right track. The answer does not tell who actually makes sure the plans become reality and what happens if people fail to do what is expected from them. I'm bringing up this point because there are always people who are not as committed as they're supposed to be. Being green should be the duty of every single employee.

# 4.9.7. Paradox of Being an Environmentally Friendly Logistics Company

As discussed widely before, logistics companies have quite a big dilemma to solve when they want to improve their environmental efficiency. All of the activities (warehousing, transportation) and functions make a negative impact on the environment. Yet, it would be hypocrite to say that express logistics services should be banned, for instance, because of the negative impacts. I asked the DHL employee whether there are paradoxes in the process of DHL trying to be environmentally friendly. The answer is very optimistic and once again promotes DHL's performance:

"At a glance, being a company that obviously has its share in making ecological footprints but at the same time having comprehensive CER practices can seem very paradoxical. However, it is a fact that most businesses in today's world are having an impact on the environment and the true questions is how much do we do to prevent it? I firmly believe that if every company in the world were as socially responsible as Deutsche Post DHL, the future would look much brighter. Therefore, I am very proud to be part of this corporation."

Maybe the question should have been more concrete because the answer is so politically correct. The paradoxes are so many. In any case the employee admits that businesses without a question have an impact on the environment. It is up to the company to choose how to operate and how to prevent causing harm to the environment.

## 4.9.8. DHL's GoGreen Strategy from an Employee's Point of View

Despite the efforts the corporation makes to spread awareness of the environmental strategies an average employee may be less aware of the success of them. It is important that the employees, at least, have an access to some data that shows whether their efforts have paid off or not. I asked the DHL employee how well she thinks DHL has succeeded in its' GoGreen strategy.

"The GoGreen strategy is in my opinion a true success. It is still a long way to go before 2020 and the objective to improve CO2 efficiency by 30%, but we are constantly moving in the right direction. In fact a first milestone was already reached at the end of 2010 when the interim objective to improve CO2 efficiency by 10% was exceeded... one year ahead of plan!"

An average employee may not remember the numbers but maybe she has made some research before answering the question. The answer shows that the efforts have paid off, since they are ahead of the original schedule. For the sake of the environment I sincerely hope they will keep on the right track and achieve the goal by 2020.

#### 4.9.9. Customers Interest in GoGreen Services

Since one of the main pillars of DHL's CER strategy is offering the carbon neutral shipments to the customers it will be interesting to know how successful the products actually are. All customers are definitely not willing to pay an extra fee to do the right thing or to "buy a good conscience" for themselves. Of course, DHL also has lots of other businesses as their customers, who want to promote their own social and environmental responsible behavior by using carbon neutral shipments. Thus, I asked the DHL employee how the interest has been:

"Perhaps the most tangible indicator of customers' interest is shown through demand for our carbon neutral service (GoGreen). Right now the share of GoGreen shipments is approaching 25% of all our Express shipments in Finland. I think this demonstrates customers do care about the environment and they want to counterbalance the CO2 emissions they are causing."

Looking at the answer and how small the number 25 % may seem you cannot help thinking that the carbon neutral shipment is definitely a success. Without the service 0 % of the shipments would be carbon neutral. Isn't 25 % way better? The answer does not show how rapidly the number has been growing but yet it tells

that having the option is important. These days the environment is a big issue but is the interest in environmental issues going to keep on growing or reducing in the future? For the sake of the planet's ecosystem's well-being we can only hope it will keep on growing.

#### 4.9.10. Small Unit in a Big Corporation

There are thousands of employees working for Deutsche Post DHL. Thus, it is a massive corporation. The employee I interviewed works at a unit with some tens of employees. Since the bigger picture of the CER and CSR strategies come from the corporate level less independent decisions can be made at such a small unit. I asked the respondent how she sees the role of their unit in the CSR/CER of the corporation.

"We can all make an impact, and we must have the courage to start small. Deutsche Post DHL is completely dependent on each and every terminal, each and every worker to contribute to the success of our CER strategy. No change is too small and no positive contribution is insignificant, this is what we have always been taught."

The last sentence of the answer shows the attitude is correct: "No positive contribution is insignificant". One may easily think that since the power is being used elsewhere one person's decision makes no difference. The respondent emphasizes on the fact too that all DHL units make a bigger network so all pieces of it make a difference. Not only the big ones who can, for instance, reduce their fuel or energy consumption a lot should be active but all units need to be included.

#### 4.10 Criticism towards DHL's Environmental Program

These days more or less all businesses like to boast by being environmentally friendly. It is difficult for a consumer to know who actually does what for the environment and how effective the measures they take really are. Thus, it is important to have external auditors and critics towards environmental initiatives. In order to have a more objective perspective to DHL's environmental program some critical points of view will be introduced shortly.

It is not easy to find objective information about how successful environmental programs of businesses are. The company itself, like DHL, can inform about the results of different auditing procedures on the reports on the website, for instance. But how likely is it that they also share the less flattering information and more negative issues?

Climate Counts is a non-profit organization working in collaboration with Clean Air-Cool Planet to bring consumers and companies together in the fifth against global climate change. They published a scoreboard in 2009, which evaluates businesses based on their efforts to review, reduce and report their impacts on the climate. DHL was successful: they were the best on the scoreboard. Compared to year 2009's scoreboard, DHL has made significant gains following the improvement of its measurement efforts. DHL has set stronger reduction goals, reported on reductions and taken stronger stances on positive policies related to climate change. DHL Express UK, for example, has a strategy to continue to improve its environmental credentials every year as a part of the GoGreen program. The strategy includes a Carbon Management Strategy and the target is to reduce carbon emissions by 10% by 2010 against 2007 baseline. The means to achieve the goal are the strong carbon reduction performance at DHL and the innovative management of its fleet network. DHL was also the first logistics company to set specific carbon efficiency targets and the first express logistics company to offer carbon neutral shipments. (Eye For Transport 2009) DHL attempts to improve its carbon efficiency and that of its' subcontractors by 30 percent by the year 2020 (Press Release Point 2009). Thus, DHL has been a major contributor to logistics companies to take environmental issues seriously. Without specific goals it would be impossible to evaluate the success. And being the first company to introduce carbon neutral shipments showcases that DHL has been a trendsetter in the business that has got a lot of followers.

In the report, Climate Counts scored companies on 22 criteria in four categories: review, reduction, policy stance and reporting. DHL was awarded for the completion of measurements of the impact it has on global warming since 2001. The evaluation highlighted their setting of clear and absolute goals to reduce CO2

emissions, investment in renewable energy and efficiency programs, and the offer of products that balance greenhouse gas emissions caused by cargo transport. DHL's support of climate-specific employee awareness programs was also recognized, as well as their detailed public information on its efforts to address global warming. (Eye For Transport 2009).

One of the key elements when evaluating the harmfulness of business operation and the successfulness of the measures taken to improve environmental efficiency is measurement. For its part, DHL has taken important steps towards automating its sustainability data. In mid-2009, the firm completed a carbon accounting project that uses the group's financial accounting infrastructure to collect data on carbon emissions from its operations across 220 countries. The infrastructure enables the firm to better manage its carbon footprint by measuring emissions of its delivery van fleets across each continent. For instance, the carbon dioxides emitted when sending a parcel from A to B can be tracked. The senior expert on the GoGreen Program, Michael Lohmeier, says it is because the finance system has the highest auditable standards.

The most effective way for DHL Express to improve the carbon efficiency of its air fleet is to invest in newer, more efficient aircraft. It continually replaces older aircraft and assigns new aircraft to its' intercontinental routes through its cooperation with Polar Air Cargo. In 2009, DHL started to utilize new wide-body freighters on its Euro-Asia routes. DHL has also piloted an initiative to improve the loading density of its cargo aircraft. Thus, the space is used more efficiently, which will lead to a reduction of flights. In the area of surface transport DHL Express' ongoing vehicle replacement program helps to improve the emissions standards of its conventionally-fuelled vehicles. They are testing electric vehicles, for instance. It also works with its customers to use rail and water transport options which have lower CO2 emissions per weight carried. In their own buildings, DHL Express undertakes assessments to see how it can reduce energy consumption. They have introduced measures such as lighting, heating and building controls. DHL also purchases energy from renewable sources when possible. (Press Release Point 2009)

The consumer shipping industry, also known as logistics or express delivery industry, has a considerable climate impact. In another scoreboard, Climate Counts (2010) has evaluated how the industry has begun to address its climate impact. It definitely has, but has far to go. On the scoreboard, DHL comes second after UPS. On a scale from 0 to 100 points they achieved 74 points, whereas UPS got 76. That means, their commitment to fighting global warming is second highest in the industry. Climate Counts used 22 criteria to determine if companies have:

1 measured their climate "footprint"

2 reduced their impact on global warming

3 supported (or suggest intent to block) progressive climate legislation

4 publicly disclosed their climate actions clearly and comprehensively

GreenOrder, a leading sustainability strategy firm, assisted in the development of the scoring system and verified the results. (Climate Counts 2010)

# **5 CONCLUSIONS**

The main goal of the study was to find out what one big corporation, DHL, does to be more environmentally friendly. There are many paradoxes that a logistics company has to tackle, one of them trying to be fast and effective and yet not harm the environment too much. Through the description I got an idea of how "greenness" shows in the strategy, policies, services and every-day functions of DHL.

Because the research methodology was flexible, the focus of the thesis shifted a bit during the writing process. The study became a small-scale qualitative research, which uses data obtained from DHL's CR report as a main source. The source gave satisfactory answers to my research questions, because there was a lot of non-confidential information, including raw data about its' environmental program is available on its website. Another source, which turned out to be more complicated, was interviewing DHL employees. Eventually, only one person could be interviewed (not face to face) and her answers had to be checked by DHL authorities. The answers came out positive and matched perfectly well with the information available on the website. Public information that the corporation itself publishes does not reveal the whole truth, because it is completely controlled by the corporation. Some things remain confidential for sure and are only available for the internal communication of the corporation. The CR report used as the main source of information is not extensive enough since it only covers one year of DHL's operations. Admitting failures and challenges is a part of being truly transparent. DHL mentions some challenges on a few occasions, but an extensive evaluation about how successful its' policies and practices actually are and what they failed to do, is nowhere to be seen.

The main concerns of corporations in terms of ecological responsibility have become more diverse and challenging to solve. It's not just about recycling the waste or saving energy but managing bigger phenomena, such as climate change. Despite the tools (such as ISO standards) the environmental issues are difficult to manage. To logistics companies, being green is a big challenge, because all the operations have a negative effect on the environment. The paradoxes are many: time, costs, warehousing and network structure of logistics companies, to mention a few. No logistics can be done without harming the environment so how far do the corporations have to go in order to be greener? DHL has committed itself to carrying out its social and environmental responsibilities, the latter taken care of with an environmental management program. It is not only good for the environment, but the business itself benefits as well. Simultaneously, DHL also tries to add value to their business by implementing environmentally friendly activities and new services. It can get a competitive advantage in the market through positive branding and attract more customers than its competitors. Thus, for a corporation, carrying out its' environmental responsibility can turn out to be a win-win situation, if implemented properly.

There are different programs used to implement the CR strategy of DHL, GoGreen being the one to take care of the environmental responsibilities. Within the program, DHL does a lot of things right: it reports the results in a timely manner, uses metrics and several external auditors to ensure validity and transparency. DHL also commits itself to continuous improvement as a part of the strategy. The successes of GoGreen have been awarded several times (for example receiving a sustainability award and an excellent rating in a sustainability index). In addition, DHL has got positive feedback for the completion of measurement of the impact it has on global warming. They have clear and absolute goals to reduce CO2 emissions, investment in renewable energy and efficiency programs and products that offset the carbon emissions. Their employee awareness programs and detailed public information about the efforts to be more green count as successes as well. DHL continues to work on more and more factors that have a negative effect on the environment: the corporation has a carbon accounting project, it is replacing old aircraft, testing electric vehicles, reduces energy consumption in its buildings etc. No one can blame the corporation for not having diverse tools to tackle the challenges.

Out of all the diverse services and green activities, the main goal of DHL's GoGreen program is to be carbon-efficient. DHL has a strategy of reducing its emissions and it offers alternatives to its customers: for instance, for less time-

sensitive shipments, rail or ocean transport can be used and there is a service of planning the customers supply chain again available. Other factors of logistics, such as warehousing or land take, are barely mentioned in the CR report, though. Whether it is because they do not see other factors than CO2 emissions as such a big factor or because of some other reason is impossible to tell. Cutting down CO2 emissions can translate into lower cost, because the emissions are linked to the consumption of fuels and energy. DHL faces a major dilemma because its business success is based on time-critical deliveries and the customers expect them to be fast and efficient. There are a lot of decisions to make about which goals are sensible both from the corporations' point of view and also what makes a positive difference for the environment.

Both private and business customers are increasingly aware of social and environmental matters. They are seeking for "green" alternatives to their products and services. As mentioned above, DHL's main goal is to reduce its CO2 emissions. In addition to all the different practices, DHL's customers have a chance to pay for an extra service, GoGreen, with which they can to offset the carbon emissions of the shipment. In practice, the emissions generated during the handling and transportation are offset through climate protection projects. For a customer though, it can be difficult to comprehend how the corporation really makes sure that the harm done to the environment is being neutralized. According to DHL, SGS (Société Générale de Surveillance) audits the projects and reductions and offsetting according to an ISO standard (ISO 14064). The service is a good example of exceeding the legal minimum required from a company. The GoGreen services have only been available for seven years now. It is yet to be seen how successful it becomes and whether some other services will be offered too or not,

All businesses do harm, it would be hypocrite to claim otherwise. How seriously they take the impacts of their actions and how effectively they monitor their attempts to reach their CSR goals makes the difference. If all companies were as environmentally responsible as DHL, the future would look brighter. For the consumers, it is very difficult, if not impossible to estimate which company is actually most "green". DHL's GoGreen program has been getting good reviews and it can be seen as a trendsetter in logistics. Yet, the corporation has to keep going and evolving its strategy. Even though the attempts to carry out social/economical/environmental responsibility may all look beautiful on paper, the truth is that there's always need for critical thinking. This study only shows on a small scale what a logistics company can do in order to be more green. Because of the limitations of the study, a lot of factors could be researched within this field. A comparison between a few of the big logistics operators would be interesting and of customers' interest. Getting an objective idea about DHL turned out to be one of the main challenges of this study. Thus, a closer examination about what DHL does not tell in its CR report could create another story about the successes and failures of how a logistics company carries out its environmental responsibilities.

# REFERENCES

AECT (The Association for Educational Communications and Technology) 2001. Accessed 3.2.2012. http://www.aect.org/edtech/ed1/41/41-01.html

Carlson, Kim 2009. Green Your Work: Boos Your Bottom Line While Reducing your Carbon Footprint. Canada. Adams Business, Adams Media.

Climate Counts 2010. Scorecard Sectors: Consumer Shipping. Accessed 30.1.2012. http://www.climatecounts.org/scorecard\_sectors.php?id=24

Crane, Andrew, Matten, Dirk & Spence, Laura J. (editors) 2008. Corporate Social Responsibility. Readings and cases in a global context. Routledge. Padstow.

DHL 2010. Corporate Responsibility at DHL. Accessed 26.5.2010. http://www.dhl.com/en/about\_us/ sustainability.html

DHL 2010. Corporate Responsibility Report 2009/10. Accessed 26.5.2010. http://www.dp-dhl.com/en/responsibility-online\_report\_2010.html

DHL 2010. GOGREEN Service 2010. Accessed 26.5.2010. http://www.dhl.com/en/about\_us/ sustainability/gogreen.html

DHL 2010. CEO Statement. Accessed 26.5.2010. http://www.dpdhl.com/en/responsibility-online\_report\_2010/overview/ceo\_statement.html

DHL 2010. Responsibility. Accessed 26.5.2010. http://www.dp-dhl.com/en/responsibility

DHL 2010. Responsibility Online Report FAQ. Accessed 26.5.2010. http://www.dp-dhl.com/en/responsibility-online\_report\_2010/general/faqs.html

DHL 2010. Sustainability. Accessed 26.5.2010. http://www.dhl.com/en/about\_us/sustainability.html

DHL 2010. GoGreen Introduction. Accessed 26.5.2010. http://www.dpdhl.com/en/responsibilityonline\_report\_2010/environment/introduction\_gogreen.html

DHL 2010. Green Solutions. Accessed 26.5.2010. http://www.dp-dhl.com/en/responsibility-online\_report\_2010/environment/green\_solutions.html

DHL 2010. Eco-friendly Products and Services. Accessed 26.5.2010. http://www.dp-dhl.com/en/responsibilityonline\_report\_2010/environment/green\_solutions/ecofriendly\_productsandservices.html

DHL 2010. Climate Protection Projects. Accessed 26.5.2010. http://www.dpdhl.com/en/responsibilityonline\_report\_2010/environment/green\_solutions/gogreen\_climate\_protectionproj ects.html

DHL 2010. Performance. Accessed 26.5.2010. http://www.dpdhl.com/en/responsibility-online\_report\_2010/performance/ungc\_cop.html

DHL 2010. Company Portrait Organization. Accessed 26.5.2010. http://www.dhl.com/en/about\_us/company\_portrait.html#organization

DHL 2010. Company Portrait History. Accessed 26.5.2010. http://www.dhl.com/en/about\_us/company\_portrait.html#history

Friend, Gil, Kordesch, Nicholas & Privitt, Benjamin 2009. The Truth About Green Business. Upper Saddle River, New Jersey, USA. Natural Logic, Inc. Publishing as FT Press.

Global Footprint Network 2010. Accessed 20.12.2010. http://www.footprintnetwork.org/en/index.php/GFN/page/footprint\_for\_business

Hsu, Jennifer 2010. Accessed 19.12.2010. http://www.research.utoronto.ca/behind\_the\_headlines/corporate-social-responsibility

Jamison, Raynolds, Holroyd, Veldman & Tremblett 2005. Defining Corporate Environmental Responsibility. Canadian ENGO Perspectives. Accessed 26.5.2010. http://www.pollutionprobe.org/Reports/cerreport.pdf

Kothari C.R. 2008: Research Methodology: Methods and Techniques. Second edition. USA. New Age International.

Kumar, Ranjit 2005: Research Methodology: A Step-by-Step Guide for Beginners. Second edition. USA. SAGE Publications Ltd.

Leonard, Herman B. 2008. Corporate Social Responsibility. Accessed 5.9.2010. http://www.charlesrivercentre.com/brochures/CSR-20080421-NC.pdf

Makower Joel, Pike Cara 2009. Strategies for the Green Economy: Opportunities and Challenges in the New World of Business. USA.

Mbare, Otieno 2004. Corporate Social Responsibility. Theory and Framework in Contemporary Finnish and Kenyan Business Practices. Turku. Åbo Akademis tryckeri.

McKinnon, Alan 2010. Environmental Sustainability: a New Priority for Logistics Managers. Pages 3-30. In: McKinnon Alan, Sharon Cullinane, Michael Browne, Whiteing Anthony. Green Logistics: Improving the Environmental Sustainability of Logistics. India. Replika Press Pvt Ltd.

Rodrigue, Jean-Paul, Comtois, Claude & Slack, Brian 2009. The Geography ofTransportSystems.Accessed26.5.2010.http://people.hofstra.edu/geotrans/index.html

Singapore Compact 2008. What is CSR? Accessed 6.9.2010. http://www.csrsingapore.org/whatiscsr.php

Welford, Richard 1994. Environmental Management and Business Strategy. Glasgow. Bell and Bain Ltd.

Wikipedia 2010. Our Common Future. Accessed 20.12.2010. http://en.wikipedia.org/wiki/Our\_Common\_Future

Wikipedia 2010. Life Cycle Assessment. Accessed 20.12.2010. http://en.wikipedia.org/wiki/Life\_cycle\_assessment

#### Interview Questions

- 1. What does the concept Corporate Social Responsibility mean to you as an employee of DHL?
- 2. Why is it important for DHL to be socially and environmentally responsible?
- 3. How do the concepts of sustainable development and ecological footprint go together with DHL as it is a logistics company?
- 4. Which CER (Corporate Environmental Responsibility) practices of DHL are you familiar with?
- 5. Is environmental performance being audited, measured and reported at your unit? What are the ways and means used there to be more "green" (office, warehouse, transportation)?
- 6. How are you promoting "green" thinking and practices at your workplace (incl. own initiatives or solutions)?
- 7. What are the paradoxes DHL encounters trying to be more environmentally friendly?
- 8. How do you think DHL is succeeding in its' GoGreen strategy?
- 9. How is the interest of clients in environmental aspects (e.g. GoGreen services) from your point of view?
- 10. Why is it important for your unit to be "green" being just a small part of a big corporation?