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Sustainable Business Development – A Case Study of the International Logistics Industry

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1. Introduction

Corporate responsibility is business' way of adhering to the concept of sustainable development as expressed in the 1987 Brundtland Report "Our common future" (World Commission on Environment and Development [WCED], 1987). It refers to re-thinking the corporate role in society in terms of stakeholders (who businesses have a responsibility towards) and models for creating value. The traditional corporate short term objective of maximizing profit (value) is replaced by a long term perspective of creating value in a "triple bottom line" framework. The principle of the triple bottom line, as stipulated by Elkington (1998), emphasises that the economic bottom line has to be complemented with social and environmental values and challenges. Major environmental challenges that society requires businesses to address include biodiversity loss, climate change, land use, freshwater consumption, chemical pollution and ocean acidification (Rockström et al., 2009). The social challenges include issues related to air pollution, poverty, health and safety, equal opportunities and diversity, and skills and competence building (Visser & Tolhurst, 2010).

One might refer to the triple bottom line as a process of transition, from an old to a new paradigm, where each of the dimensions in this paradigm reflects implicit corporate ambitions. Stakeholders have a major role in this transition as they are increasingly asking for transparency and accountability. In this new environment companies cannot just talk about their intents, how they address social and environmental challenges, but they have to "walk their talk", i.e., to communicate their actions. It refers to providing stakeholders such as customers, employees, non-governmental organisations, regulatory agencies and investors, with information about corporate responsibility commitments and achievements. These commitments and achievements are revealing corporate strategies and systems for addressing environmental and social challenges in daily operations as well as in future aspirations (Walker *et al.*, 2007).

Communicating corporate responsibility strategies and actions serve as grounds for differentiation, where companies may create competitive advantage and serve as role models for other corporations (Heikkurinen, 2009). Some corporations will perceive

expectations of corporate responsibility as a threat to contemporary business practices, while others will look at it as new business opportunities. Depending on the perception of sustainable business development, corporations take on different strategic roles. These roles can be labelled as defensive, reactive or proactive strategies that are reflected in, for example, long term investments and daily operations such as management procedures and communicational efforts. A company's implementation of a corporate responsibility strategy may be explained by several factors, such as company size, management philosophy, corporate strategy and industry characteristics (Carroll, 1991). Industry characteristics represent an important factor, as different industries face various challenges to a varying degree (Heikkurinen, 2010; Laudal, 2010). Industries that are associated with a strong resource use and dependence, such as agriculture, forestry and transport, all depend on physical resources. Service production on the other hand, for example health care, is less exposed to challenges associated with sustainable resource use. The degree of corporate responsibility is determined by the structure of the supply chain, and by whether the customers are private consumers or other businesses (Roberts, 2003).

As an industry which faces a number of sustainable business development challenges (Rockström *et al.*, 2009) the transport and logistics industry is constantly under pressure to excel in terms of corporate responsibility. These challenges are associated with health related impacts (air and noise pollution), resource depletion (fossil fuels) and climate change as well as social challenges of trans-national management. Since the value in the production is context-bound it is also associated with social challenges, for example, human rights, labour rights and corrupt political systems. The aim of this chapter is to describe how three international corporations in the logistics industry deal with the traditional expectation of maximising the return on invested capital – and yet commit to sustainable business development addressing the challenges listed above. Questions of particular interest are:

- What are their challenges?
- Who are the key stakeholders for whom the shared value is created?
- How do they communicate their conduct?

The following pages present challenges in sustainable business development with cases from the logistics industry. These challenges are analysed in a framework that builds on the triple bottom line, assuming that shared value aimed at sustainable business conduct are desirable. The conclusions offer some key points of lessons learned from the comparative case study. It is clear that these corporations willingly share information about their efforts because they are aware of challenges and want to be active parts in finding solutions. Communication of strategic choices of each of these corporations is presented as various ways of being accountable.

1.1 Transport and logistics - the circulatory system of world economy

Globalisation and development of international trade depend on logistics that provides a set of measures for transportation, wholesaling, warehousing, inventory management and packaging (Lin & Ho, 2010; Organisation for Economic Co-operation and Development [OECD], 2002). According to OECD (2002) transport and logistics together with communication networks constitute a "circulatory system" of the world economy and is an important service provider for global trade. However, according to Lin and Ho (2010) little

attention has been given to environmental impacts within the service sector, as it is assumed to have little impact compared to the manufacturing sector. Yet, the authors point out that the logistics industry is an example of a service provider with large environmental impacts regarding emissions and use of natural resources.

The logistics industry relies to a large extent on carbon-based fuel that makes it vulnerable in the face of volatile prices for fossil fuels. Air and noise pollution draws attention to concerns about human health and negative impacts on ecosystems. Furthermore, despite technological innovations, the logistics businesses have to employ a high level of manual labour in such operations as vehicle driving, loading and discharging of goods. This aspect implies that an ongoing improvement of work safety is necessary. Major environmental impacts derived from freight transport therefore involve challenges of green house gases, acidification, negative effects on human health, land use and resource consumption (Bauer *et al.*, 2010). Given these problems faced by the logistics industry, corporate responsibility is going to be one of the main challenges for business management and logistics in the foreseeable future (Brewer, 2001; Murphy & Poist, 2003; Lin & Ho, 2010).

Environmentalism was introduced on the agenda of the logistics industry in the late 1980's and early 1990's as a response to the report "Our common future", and issues such as acid rain, CFCs and global warming. Green logistics is a concept that can be defined as: "Producing and distributing goods in a sustainable way, taking account of environmental and social factors" (Sibihi & Eglese, 2009, p.159). This broad definition of green logistics is in line with the WCED (1987) definition of sustainable development and definitions of corporate responsibility (Lyon & Maxwell, 2008). According to Sibihi and Eglese (2009) activities within green logistics relate to measurement of environmental impact due to different distribution modes, reduction of energy consumption, and waste management.

2. Approach

This book chapter is empirically based on case studies of three corporations in the logistics industry, Posten Norden, FedEx and Thomas Nationwide Transport (TNT). It illustrates how these companies are working with sustainability in their business practices and how these commitments are communicated. Several choices related to method in this project were made along the way and the first was associated with the choice of industry. The logistics industry is a service industry with an important role in facilitating global trade. However, it is also a service industry that is facing major environmental and social challenges which makes it interesting to study from a sustainable business management perspective.

The next important choice was that of selecting units of analysis, in other words, case studies. A theoretical sampling (Eisenhardt, 1989) was made based on the common denominator that they all had a history of addressing corporate sustainability issues in their operations, which were externally communicated. Posten Norden, FedEx and TNT are all also working on an international market. Posten Norden is mainly operating on the Nordic market and is a smaller logistics company compared to FedEx and TNT. FedEx was founded in the United States but operates worldwide and TNT originates from Australia operating as a global actor (FedEx, 2009; Posten Norden, 2009; Thomas Nationwide Transport, 2009).

The purpose of this study was to gain an understanding of three companies within the logistics industry and describe how they have integrated social and environmental concerns

in their business practices to work towards corporate sustainable development. A qualitative, comparative case study provides a contextual understanding of the phenomenon but does not lend itself to draw general conclusions about the industry as such (Robson, 2002). Each case was based on secondary data in the form of sustainability and corporate citizenship reports issued in 2009, and were limited to the environmental and social aspects communicated. When possible, the empirical data has been validated in a process of triangulation, which refers to seeking information about the same aspect from different sources as a part of quality assurance in the research process (*Ibid.*).

Delimitations in the project are associated with methodological and theoretical choices. Even though our definition of corporate sustainable development is based on the triple bottom line, the analysis is focused on environmental and social aspects. When we discuss corporate shared values, both for the business and a broader range of stakeholders, the economic perspective has a major role. We are assuming that the economic bottom line is not neglected, only balanced with environmental and social aspects of corporate conduct. The recent data without a historical context serves as an empirical delimitation. Corporate sustainable development is a process, and as such we should ideally look at the corporations in longitudinal studies, to investigate the process of corporate responsibilities and challenges that each of these corporations handle. Some of the empirical facts reveal outcomes of processes (certifications, organisational collaboration arrangements, strategic investments etc.), which may serve as indicators aimed at corporate sustainable development. The analysis and synthesis of these findings, tools and initiatives, represent strategic choices made for each of these cases. Therefore, the results do not lend themselves to be generalised or de-contextualised

3. Sustainable business practices and shared value

The theoretical perspective in the case study takes its stances from sustainable business management as expressed in the triple bottom line (Elkington, 1998). he notion of sustainable business practices is a way of creating shared value, i.e., to establish practices that lead to long-term financial performances as well as positive societal outcomes (Epstein, 2008; Porter & Kramer, 2010). The theory departs from corporate responsibility as a general concept and then moves towards corporate responsibility as a corporate strategy, and the implementation of sustainable business practices. A model of tools and concepts within corporate responsibility and a model of companies' "Corporate Social Responsibility Landscape" (McElhaney, 2008) are presented as a framework. The tools and concepts are defined and explained and will, together with the "Corporate Social Responsibility Landscape" model, be used to facilitate the comparison of the communicated strategies and practices of Posten Norden, FedEx and TNT. Their communicated strategies for sustainable business practices serve as the focal point for the analysis with a particular interest in corporate tools and concepts to address environmental and social issues. Contextual factors, such as key geographical markets, location of head quarters and perceived internal motives are taken into account in the analysis of the communicated corporate responsibility efforts.

3.1 Corporate shared value

Businesses, regardless of industry and size, are active members of society, which is reflected by context-bound visions, social realities and operations in accordance with regulations. The

traditional view of the role of businesses, as argued by Friedman (1970), is to maximise the profit. This view assumes that increasing profit for shareholders is the sole responsibility of the corporation. Friedman argued that, by creating economic value (maximising return on investments) social wealth is provided. In this view, businesses generate more job opportunities, customer satisfaction, pay taxes and in the process contribute to societal values. Yet, business themselves have been changing and therefore their role has to be revised as well.

A more contemporary view of what corporate conduct is aimed at, and conditioned by, is outlined in the triple bottom line framework. In this framework, the strategic direction is aimed at value creation with corporate responsibility engagement (Charter & Polonsky, 1999). The creation of shared value is seen in various activities, ranging from money donations (philanthropic actions) to integration of new values and priorities (extended stakeholder dialogues, public-private partnerships, new product development with societal benefits in mind etc.). Integrating corporate responsibility as part of the core business, by for example developing new business models, is more likely to be sustained over time and lead to value for the business as well as for stakeholders compared to a philanthropic approach (Halme & Laurila, 2009; Porter & Kramer, 2011). A philanthropic approach might give more direct societal outcomes than the integration and innovation approaches, but might not lead to a sustained positive social outcome as it can easily be discontinued (Halme & Laurila, 2009).

Welford and Frost (2006) argue that corporate responsibility creates a competitive advantage for the corporation, and part of the value is associated to risk mitigation, cost savings and improved relationships with stakeholders. According to Porter and van der Linde (1995) eco-efficiency as a part of the triple bottom line improves the environmental performance by reducing costs for resource use and waste management. Additional advantages of corporate responsibility are associated with increased grounds for differentiation, enhanced employee motivation and customer loyalty (Charter & Polonsky, 1999; Heikkurinen, 2009).

3.2 Stakeholders and the corporate social responsibility landscape

In order to create shared value through sustainable business practices, corporations need to identify key stakeholders (Atkinson *et al.*, 1997). A stakeholder is defined by Freeman (1984, p.46) as "any group or individual who can affect or is affected by the achievements of the organisation's objective". Stakeholders are often divided in two groups, primary stakeholders that may influence the corporate activity and secondary stakeholders that are influenced by the corporate actions. In a triple bottom line this division is a bit blurred, since a larger number of stakeholders' interests are taken into account. Stakeholders that traditionally would be regarded as secondary are included in a multi stakeholder analysis. In an extended stakeholder analysis we may find the traditional primary stakeholders: customers, employees, investors and owners. We will also find representatives of local communities, regulatory agencies, non-governmental organisations and even nature as key stakeholders that have interest and demands of how a business should operate.

The extended stakeholder concept vastly complicates the strategic choices for sustainable business practices since it needs to adhere to the demands of the broad spectra of stakeholders. Questions they may face include: How do employees perceive their workplace and what aspects are important for them in their relationship with the employer? Is the local

community in need of voluntary services or does the local school need funding for an environmental event? What expectations do investors have on the company's social and environmental management? What requirements do the local nature conservation group have on the business operations? These questions and values need to be balanced with the traditional (prevailing) economic bottom line view of what businesses are expected to do.

According to McElhaney (2008) corporate responsibility can take place at different geographical levels in what is called the "Corporate Social Responsibility Landscape" (Figure 1). These levels are company, community, industry and world.

- The *company level* refers to running a good business, for example adhering to the laws, having high employee retention, creating value for the customers and providing returns on invested capital for the stockholders.
- At a *community level*, the corporation is seen in its proximate geographical context. It refers to supporting the local community through philanthropy, efficient resource use and reducing waste.
- *Industrial level* implies how corporations take action towards other businesses in the same industry. It may imply serving as a good example, leading the way for innovative solutions and co-creation of value in alliances and partnerships.
- At the *world level*, corporations serve as pieces in a jig saw puzzle. Large corporations with strong positions in negotiations may lead the way for responsible conduct. International supply chains with operations worldwide serve as important carriers of information and practical understanding of shared value in different cultural contexts.

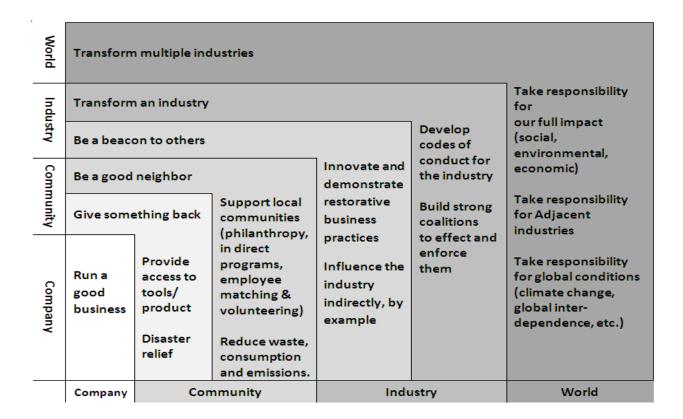


Fig. 1. The Corporate Social Responsibility Landscape (McElhaney, 2008, p.22).

Most corporate initiatives would be labelled as being a good neighbour, maintaining their license to operate or giving back something to society. A majority of companies can be said to engage on a community level, dealing with social and environmental challenges that are present at a nearby geographical location. In addition, businesses can influence the industry or as McElhaney (2008, p. 22) expresses it "to be a beacon to others". Corporate responsibility at this level involves taking a responsibility for not only impacting the industry, but also to acknowledge and address global environmental and social challenges, such as poverty and climate change. Hence, for corporations to develop business practices that lead to long-term financial performance as well as positive societal outcomes, sustainability has to be integrated in the core business and not be seen as an "ad-hoc" to regular business activities. A contemporary view of what corporate identity entails includes a vast number of objectives above and beyond that of making profit (Leipzinger, 2010):

- Supplying goods and services that customers need/want
- Creating jobs for customers, suppliers, distributors and employees
- Continually developing new goods, services and processes
- *Investing* in new technologies and in the skills of employees
- Building up and spreading international standards, e.g. for environmental practices
- Spreading "good practice" in different areas, such as environment and workplace safety

Corporate challenges are associated with taking on responsibilities beyond the financial bottom line with consideration taken to an extended stakeholder definition. In order to meet the increasing demands and yet be able to run the business in a competitive manner, businesses, international organisations and corporations have developed a number of tools and concepts to be able to create shared value. A selection of tools and initiatives available for sustainable business practices will be presented next.

3.3 Tools and concepts for sustainable business practices

A smorgasbord of tools and concepts has developed since the introduction of corporate responsibility in its contemporary form. In this study we have chosen to focus on a number of tools and concepts with different origins. The tools and concepts for sustainable business practices are summarised in Table 1.

The United Nations Global Compact, the Global Reporting Initiative and fundamental labour rights can be referred to as global agreements and guidelines for how organisations can adhere to and communicate corporate responsibility. Labour relations in this context refer to aspects regulated in international law, such as the "International Labour Organization Declaration on Fundamental Principles and Rights at Work" (ILO, 2010). The relationship between employer and employee can also involve voluntary initiatives, such as competence training and health care benefits.

A standard or a code of conduct has the function as a guiding document in the area of social and environmental responsibility. International and national standards are available in the area of work environment (OHSA 18000 and SA8000), environmental management (ISO 14001) and recently also in the area of social responsibility (ISO 26 000). A code of conduct is different from a standard in the sense that it normally is a document that is developed internally and functions as a guideline or standard in the relationship between two actors, e.g. between the employer and the employees or a buyer and its suppliers.

Green & social	A form of collaboration aimed at achieving mutual benefits. Either in form of private-public partnership, private-non-governmental or business-
alliance	to-business (Stafford & Hartman, 1996 & Charter & Polonsky, 1999).
Standard	A document of general advice offered to a large number of potential adopters, spread in written form and adopted on voluntary basis (Brunsson & Jacobsson, 2002).
Code of conduct	Documents regarding ethics used as guidelines for employees' or suppliers' conduct (Mamic, 2005; Wingborg, 2009).
Green services & products	Line-extensions, reformulation of existing products, a new product, ecoefficient products or services, and green premiums (Charter & Polonsky, 1999).
Labour relations	Fundamental and voluntary initiatives between employer and employee. Fundamental rights are based on the International Labour Organization Declaration on Fundamental Principles and Rights at Work (International Labour Organization [ILO], 2010). Voluntary initiatives refer for example to health care benefits and competence training (Visser & Tolhurst, 2010).
United Nations Global Compact	Policy platform and framework with universally accepted principles for human rights, labour, environment and anti-corruption (United Nations Global Compact, 2008)

Table 1. Tools and concepts of sustainable business practices.

Philanthropy, green services and products, and green and social alliances are concepts to describe initiatives taken to adhere to different stakeholder demands. An initiative of a company that involves supporting charitable organisations or local community projects financially or with knowledge and time, is referred to as philanthropy. Green services and products have developed as customers have become more aware of the negative environmental impacts from their consumption and their willingness to buy products or services with a green consciousness. The concept of green products and services is broad and can involve a product that is energy efficient, a service that involves climate compensation or a product that is labelled with a recognised environmental label.

Green and social alliances are rather recent initiatives to express corporate responsibility. An alliance or collaboration involves gaining mutual benefits between a corporation and a public organisation or a non-governmental organisation. The phenomenon of green and social alliances has developed as a way for businesses to gain knowledge within important fields and to gain legitimacy. The other partner in turn gets financial resources and exposure for the particular issue of interest, e.g. nature conservation or children's rights (Rotter *et al.*, 2011).

4. A case study of sustainable business practices

Posten Norden, FedEx and TNT are three corporations in the logistics industry that have adopted a corporate responsibility strategy and that are actively communicating their commitments to address corporate responsibility challenges. The following section aims at introducing the case companies and their views of corporate responsibility and sustainable business practices.

4.1 Posten Norden

Posten Norden provides communication and transportation solutions on the Nordic market and had an annual turnover of \$6.4 billion in 2009. Key principles and results of its corporate responsibility strategy are reflected in its annual "Sustainability Report", which is prepared separately from the financial reporting. The version of the report published in 2009 was designed in close accordance with the Global Reporting Initiative framework based upon a set of universal indicators that allows assessing business performance from economic, environmental and social perspectives. Out of the 79 indicators offered, Posten Norden prepared full reporting on 19 indicators, while nine indicators were partly covered. Commitment to establishing long standing relationships with various stakeholders is expressed in the company's vision. It is declared that partnerships and collaborations play important roles in development of profitable international logistics operations. In this sense, primary focus is placed on strengthening ties with owners, society, customers, employees, and suppliers and their partners (Posten Norden, 2009).

4.2 FedEx

FedEx is an American based company with operations in transportation and logistics worldwide. The company operates in more than 200 countries and the reported turnover was approximately \$35 billion in 2009. To describe its efforts in the domain of corporate responsibility, FedEx introduces the concept of corporate citizenship which combines measures that facilitate access of people to goods and information through the lowering of distance related barriers. Strategies that fit in the framework of this concept are annually conveyed in the "Corporate Citizenship Report" set to be published as a supplement to the annual report. The corporate citizenship of FedEx is based on four focus areas: people and workplace, economics and access, environment and efficiency, and community and disaster relief. Practical implementation of actions within the corporate citizenship strategy is carried out through the special program "EarthSmart". The programme is realised in three main directions: solutions (services and physical assets, including transport), work (participation of employees in sustainability efforts) and outreach (philanthropic and volunteer initiatives). Stakeholders frequently mentioned by the company in its report include employees, customers, shareholders and communities where it operates (FedEx, 2009).

4.3 Thomas Nationwide Transport

TNT provides express delivery services; logistics supply chain solutions and mail services globally. By the end of 2009 TNT had operations in more than 200 countries and reported \$12.5 billion in revenues. Compared to Posten Norden and FedEx, TNT does not have a separated report intended to communicate its strategy of corporate responsibility, but instead TNT reflects this information as a special section of the annual report where other key data including financial statements is presented.

Overall, in 2009 TNT managed to single out ten focus areas within its strategy. Engagement of multiple stakeholders is crucial in shaping the corporate responsibility strategy. TNT initiated a stakeholder dialogue that enabled determining key parties involved in or affected by TNT's operations. This initiative helped to clarify the main directions for activities with a high stakeholder concern. The list of stakeholder groups that took part in the dialogue comprises employees, customers, subcontractors, suppliers, investors and civil society (TNT, 2009).

Table 2 summarises a number of the tools and concepts within corporate responsibility used by Posten Norden, FedEx and TNT.

Tools and concepts	Posten Norden	FedEx	TNT
Global Compact	Member (world)	• Not a member, but belongs to the Global Environmental Management Initiative (world)	Member (world)
Global Reporting Initiative	Member (world, industry)	Member (world, industry)	Member (world, industry)
Labour relations	Works with the equality and diversity project "Similar Unique" OH-SAS 18001 certification (company) Training and workshops (company)	 Corporate diversity council to ensure representative culture (company) Affinity groups to promote diversity (company) 	 Member of North Star Alliance to address health issues among truck drivers (community) Encourages open dialogue with employees (company) Adaptation for the layoff (community) Developed "Choose Orange" to train drivers to increase fuel efficiency & reduce accidents (company) OH-SA 18001 certification (company)
Philan-	Supports Denmark	• Provides disaster relief	
thropy	Cycle Union & Swedish Football Association (community) • Sponsors the children's project "Post-Pal" (Community) • Supports the exhibition for children (community)	 Offers school scholarships (company) Collaborates with Key Stone Science School to educate young people about environmental conservation (community) 	Wooden Spoon charity (community) • Participates in the Joop Swart Masterclass (community)
Green &	• International Post	Founded Carex to	Initiated "Code Orange"
social alliances	Corporation (world) • Participates in the project Climate Neutral Freight Transportation to reduce climate impact of road-based freight (Industry)	improve fuel efficiency (community) • Public-private partnership with EMBARQ, a network for sustainable transport solutions (community)	to increase emission efficiency (industry) • Involved in the Jathropa project to combat poverty and provide biofuel (industry) • North Start Alliance,

Tools and concepts	Posten Norden	FedEx	TNT
		 Recycling projects (company) Alternative means of transport (industry) Participated with stakeholders to produce "Hush Kit" for reducing aircraft noise (community) 	public-private partnership to provide sustainable road side clinics
Green services & products	 Special stamps to highlight environmental issues (community) Climate compensation/calculations (community) 	Does not communicate any green services or products	• Reveals CO2 emissions generated by customers' shipments (community)
Standards	 Goal to have all departments ISO 14001 certified OH-SAS 18001 certified (company, community, world) 	• Has embraced fuel efficiency standards through the "Smart Way Transport Initiative" (industry, community, world)	• ISO 14001, SA 8000 & OH-SA 18001 certifications (company, community, world)
Code of conduct	Has a code of conduct (company, industry)	• Has a code of conduct (company)	No code of conduct is communicated
Labour relations	 Equality & diversity projects (company) OH-SAS 18001 (company) Training & workshops (company) 	Corporate Diversity Council (company) Affinity groups (company)	 North Star Alliance (community) Open dialogue with employees (company) Adaptation of laid-off (community) Choose Orange, employee project for sustainable lifestyles (community) OH-SAS 18001 (company)

Table 2. Summary of tools and concepts for Posten Norden, FedEx and TNT to express corporate responsibility

The tools and concepts illustrated in Table 2 highlight the importance the three companies attach to corporate responsibility as part of corporate strategy. It is also evident that these initiatives are diverse with each of the three companies involved in several of them. Posten Norden's, Fedex's and TNT's corporate responsibility initiatives are further analysed in the next section.

4.4 Sustainable business practices of Posten Norden, FedEx and TNT

Businesses realise many benefits when they integrate a strategy for corporate responsibility (Sharma & Greenburg, 1998; Charter & Polonsky, 1999). According to McElhaney (2008), it is crucial that the message communicated is also reflected in the corporation's actions, i.e., that companies "walk their talk". This section discusses the differences and similarities between the case companies' use of corporate responsibility strategy and sustainable business practices to achieve sustainable business development. In addition, by using the various tools that were identified in Table 2, this section analyses the extent to which sustainable business practices live up to stakeholder demands on different geographical locations based on the "Corporate Social Responsibility Landscape" model (McElhaney, 2008).

Posten Norden and TNT are members of the United Nations Global Compact, which contains globally recognised principles for business to acknowledge. FedEx is not listed as a member of the Global Compact but belongs to the Global Environmental Management Initiative, which promotes responsible corporate citizenship. By working with players on a global level, and acknowledging stakeholders worldwide, the three companies have taken steps to meet the requirements of a world level of engagement (McElhaney, 2008). Additionally, all the three companies work within the framework of the Global Reporting Initiative by subscribing to the triple bottom line reporting approach. Since this is a global initiative which has been embraced by many companies within and outside the logistics industry, it is clear that through this, the companies are aiming at providing a variety of stakeholders with transparent and comparable information about corporate commitments and achievements, on both an industry and world level (McElhaney, 2008).

Market and internal factors can motivate companies to adopt certain standards (Jones et al., 1997; Brunsson & Jacobsson, 2000). Posten Norden and TNT work according to standards within the areas of environmental management (ISO 14001), labour rights and work environment (OH-SAS18001). In addition, TNT works with SA8000 and has initiatives that extend its labour practices outside the physical work place, such as supporting drivers outside the company and supporting employees that have been laid off. FedEx does not communicate that they are working in accordance with any internationally recognised standard. However, FedEx has publicly called for fuel efficiency standards for commercial and heavy-duty trucks in the United States. By undertaking these measures, the companies are further displaying their desire to fulfil company and community levels of engagement (McElhaney, 2008). Since industry engagement can lead to the standards being embraced by other companies and suppliers (Porter & van der Linde, 1995) this exemplifies attempts by the companies to leverage their level of engagement to industry level to improve environmental performance and work environment within the industry and ultimately at a world level.

The standards focusing on work environment is also a way of expressing an extended responsibility and willingness in the area of labour relations, in addition to what is regulated by national laws and the International Labour Organization. Initiatives for equality and diversity are required in international law, while training programmes and workshops are voluntary initiatives to improve job satisfaction and the competence level among employees. All these initiatives focus on the company level, i.e., they are initiatives mainly addressing internal challenges of labour relations. However, TNT has a number of

programmes with a further reach. The North Star Alliance project for example, addresses social issues at a world level, by building up and sponsoring road hospitals in developing countries together with other actors. The Choose Orange project also has a further reach than employees at work as it aims at making employees bringing home the lessons learned about energy efficiency at work.

While a standard is developed by a third-party, Posten Norden and FedEx have developed internal guidelines in the form of code of conducts to guide employee conduct and communicate that they act according to their respective code of conduct. FedEx describes in detail what areas the code of conduct covers, while Posten Norden does not emphasise the particular areas the code of conduct relates to. Posten Norden communicates that they incorporate the code of conduct in their supplier contracts, which is a way of spreading good management practices in the value and supply chain. Undoubtedly, Posten Norden and FedEx, by putting in place codes of conducts to regulate internal behaviour of employees, and for Posten Norden requiring their suppliers to adhere to their code of conduct, are attempting to meet the company and industry level of engagement respectively (McElhaney, 2008).

Partnerships and alliances between businesses and environmental or other groups can be used to effectively integrate goals and market objectives for sustainable business development (Hartman & Stafford, 1997). This ability by companies to pool resources "across profit/non profit boundaries" is one of the prerequisites that companies should meet in order to realise shared value (Porter & Kramer, 2011, p.64). The three companies are involved in different green alliances in the areas of emission reduction, energy conservation, and application of alternative means of transport and fuels. TNT produces bio-fuel within the Jatropha project, which can be seen as a mixed approach of sustainable business practices. The project is a form of philanthropy, an environmental project and a green alliance. FedEx is the only company that communicates that they have recycling projects on a business to business level. Analysed in accordance to the "Corporate Social Responsibility Landscape" model (McElhaney, 2008), TNT's Jatropha project and FedEx's recycling program could have the potential to transform multiple industries as they can be applied to other sectors. Besides this, these programs also serve to illustrate that these are responsible companies that engage with their communities on issues of global concern. Posten Norden on the other hand, reports that they are mostly involved through memberships in different councils and organisations related to global issues, such as the project Climate Neutral Freight Transportation and the International Post Corporation.

Posten Norden, FedEx and TNT are all involved in some form of philanthropic activity, as referred to by Carroll (1991). Their charitable engagements include engagement with young people and cultural and sport activities in different geographical areas. FedEx reports undertaking disaster relief on a world level, while the philanthropic activities of Posten Norden and TNT can be characterised as being at community level. Overall, by undertaking philanthropic activities, the three companies show that they are committed to being engaged on community levels all around the world (McElhaney, 2008).

With regard to green services and products, Posten Norden and TNT provide their customers with climate compensation and emission calculation services. Posten Norden also uses specially designed stamps for charity and as a channel of information in the area of sustainable development. The stamp collections of Posten Norden can, just like the Jatropha project of TNT, be seen as a mixed approach. It can be seen both as charity and a green alliance with the World Wide Fund for Nature. According to McElhaney (2008) a company that supplies its customers with green products or services, shows engagement on a community level. Moreover, as Porter and Kramer (2011) state, by supplying green products and services these companies are moving away from the traditional product mindset, a development that is aligned to the notion of creating shared value.

Green products and services can also be seen as a way for Posten Norden and TNT to differentiate themselves within the logistics market (Hartman & Stafford, 1997; Heikkurinen, 2009). However, from a critical perspective the green services and products offered by these logistics companies are rather reactive solutions than proactive ways of decreasing the negative environmental impacts from transportation. Services and products with a shared value should include a re-thinking of the contemporary business models and involve alternative means of transport or alternative fuels, rather than climate compensation. These are the solutions that have a real chance of providing shared value in a long-term perspective.

5. Industry characteristics and green logistics

Posten Norden, FedEx and TNT are communicating a number of sustainable business practices ranging from initiatives promoting diversity and equality, standards for work environment, disaster relief, industry projects, climate compensation, charity stamps, fuel efficiency standards and environmental management systems. These initiatives can all be labelled as practices for green logistics (Sibihi & Eglese, 2009) and are designed to address the major environmental and social challenges facing the industry. The wide variety of initiatives, both in the area of social and environmental challenges, shows that several stakeholder demands are adhered to, from the acknowledgement of international initiatives and standards, to supporting local communities and offering climate compensated services and charity stamps both to private customers and business partners.

According to Li and Ho (2010) company size and an uncertain business environment can have impacts on the implementation of green practices. Other business characteristics such as whether the products or services are sold to private consumers or business-to-business can influence a company's implementation of a strategy for corporate responsibility (Carroll, 1991; Heikkurinen, 2009; Laudal, 2010). Posten Norden, FedEx and TNT are all relatively large and established on their respective markets, which could serve as an explanation to why they have what can be considered a proactive approach to sustainable business practices.

As previously discussed, the logistics industry is facing large corporate responsibility challenges, not least within the area of natural resources usage. Industries with large challenges have larger pressure from stakeholders than less polluting industries. However, an analysis of the structure of the logistics industry reveals that logistics providers mainly work with other businesses than with private consumers. Hence, logistics businesses have less pressure from consumers than say, an airline business which meets its customers more directly. This study reveals that even though the logistics industry is mainly based on business to business contracts, sustainable business practices seem to be an important aspect

also in the relationship with other businesses. This situation can be attributed to the fact that major corporations such as Posten Norden, FedEx and TNT, meet high demands from major customers, which in turn are required by their customers to improve the social and environmental conditions of the value chain.

5.1 The environmental and social pillars of the triple bottom line

Regarding the environmental issues in this study, the initiatives communicated by Posten Norden, FedEx and TNT are similar, both regarding the actions (philanthropy, green alliances, standards and industry projects) and the levels of engagement (company, community, industry and world level). A close scrutiny of the sustainability and global citizenship reports showed that initiatives related to reducing carbon dioxide emissions is a top priority for the companies. This implies that this is acknowledged as a major environmental challenge closely related to the companies' core business. This understanding from the companies is crucial to be able to create long-term shared value for the business and the various stakeholders (Porter & Kramer, 2011). However, the usage of fossil fuels is not only an environmental issue but also has economic implications due to the costs involved in cleaning up air pollution in major cities. Moreover, the unstable political environment in oil producing countries has led to the escalation of costs of fuel. Therefore, initiating projects for fuel efficiency does not only create legitimacy among stakeholders, but also leads to positive impacts on the economic bottom line (Porter & van der Linde, 1995).

To understand the social aspects of a business there is need to appreciate both the industry context and the national and cultural contexts. In Scandinavia and Europe, where Posten Norden and TNT have their origins, there is a long tradition of adhering to workers' rights and to initiate voluntary actions to improve the working conditions for employees (Visser & Tolhurst, 2010). In the national and cultural context of FedEx, an American based company, businesses have a large role in supporting employees with health care benefits and pensions. In comparison to environmental challenges, which are highly dependent on what business operations that take place, most companies meet similar basic challenges regarding workers' rights and other social aspects of corporate conduct. Posten Norden, FedEx and TNT have a wide variety of initiatives addressing social aspects. The companies originate from countries with strong traditions of pro-actively working with labour relations both from regulatory agencies and from society in general. This gives these companies, when operating on markets where labour conditions are not as prioritised, the possibility of transferring norms, values and management practices of appropriate labour standards to other cultural and national contexts. By transferring values from one business culture to a national context, social challenges of transnational management are addressed.

Philanthropic projects initiated by the companies mainly have a social focus, such as supporting sport events for children, international projects for cultural interactions, disaster relief, scholarships and education programmes. Working with established and internationally recognised standards for work environment and labour relations, and as well support projects in the local communities where the companies operate, can create both employee motivation and customer loyalty (Banjeree, 1999; Heikkurinen, 2009).

The logistics providers are also important actors in the value chain of most other industries as logistics providers serve as facilitators of global trade. Logistics providers are used to

transport raw materials, finished products, deliver advertisement material and is in many ways a link between the different actors in global supply chains. As more environmental and social demands are put on several actors in the value and supply chains (suppliers, subcontractors, logistics providers, retailers and so on), it enables sustainable business practices to spread in the value chains. The sustainable business practices are hence not limited to a few actors, but can be present throughout the whole value chain. When Posten Norden, FedEx and TNT are proactively working with addressing sustainability issues they also have the possibility of "transforming multiple industries" (McElhaney, 2008), i.e., the industries they are providing services for. Other actors in the value and supply chains also have the possibility to put demands on less proactive actors leading to a knock-on effect, which will have positive effects on working towards sustainable business development.

5.2 Transparency – A prerequisite for trust and value creation

There are many factors that can affect the communication of corporate responsibility in the sustainability and global corporate citizenship reports. A critical perspective on corporate responsibility communication is that it is rather part of marketing than being a responsible business. Communication of corporate conduct can be seen as a tool for risk mitigation (Welford & Frost, 2006; Arvidsson, 2010). However, communicating commitments and achievements can also be seen as stakeholder dialogue and as crucial for trust and value creation (Kotonen, 2009). Some even argue that corporate responsibility has become a hygiene factor for many medium and large sized companies (Ihrén, 2011). Posten Norden, FedEx and TNT are all using sustainability reporting and corporate information on websites as stakeholder dialogue and are transparent about the projects they are engaged in. To some extent, for example in line with the Global Reporting Initiative, they also report on their performances in a number of areas.

The environmental aspect is a main area of reporting. A possible factor to explain this can be that the companies consciously chose to communicate the values that they judge as being most important for the stakeholders and the company's "green image". Green issues have been highlighted the last ten years on the global business agenda. Pushing green issues can also be a more direct way of gaining competitive advantage than dealing with social issues. The logistics companies are service providers and might not meet the same harsh labour conditions as the manufacturing sector; instead focus has been on transportation providers' responsibility to decrease emissions of carbon dioxide to address climate change. The social aspect of sustainable business practices are in some contexts also taken for granted. In Europe and Scandinavia employers are expected to treat their employees with respect and undertake voluntary initiatives that motivate employees. This might be another explanation to why environmental issues have a major focus in the communication of Posten Norden, FedEx and TNT.

Just like sustainable business practices can be spread through the value chain when demand is transferred from one actor to another, communicating responsible business conduct can also inspire other actors in the industry and leading the way for innovative solutions. Posten Norden, FedEx and TNT can by being transparent and openly communicate what they do to contribute to sustainable development become role models for other actors in the industry who also realise the value of engaging in sustainable business development (Walker *et al.*, 2007).

6. Conclusion

This chapter seeks to elucidate how three international corporations in the transport and logistics industry deal with the traditional expectation of maximizing the return on invested capital, and yet commit to sustainable business development. In this regard we highlighted Posten Norden's, FedEx's and TNT's strategies for sustainable business practices and the initiatives developed to address challenges of natural resource use, human health and work safety.

The study revealed that the companies communicate transparency and accountability in similar ways and to a large extent have adopted similar sustainable business practices. Sustainable business practices were identified in a number of areas, including social and environmental aspects as pointed out in the triple bottom line (Elkington, 1998) and the WCED (1987) definition of sustainable development. Initiatives promoting diversity and equality, standards for work environment, disaster relief, industry projects, climate compensation, charity stamps, fuel efficiency standards and environmental management systems are different approaches to create shared value among the case companies and their stakeholders. However, some of the initiatives will have a greater chance of creating shared value than others. Initiatives for sustainable business practices range from philanthropic approaches to initiatives that to a high degree are related to the core business. Porter and Kramer (2010) argue that the time of corporate responsibility expressed as philanthropy is obsolete. To be able to create shared value corporate responsibility has to be integrated in the core business. The logistics industry with large challenges regarding natural resource use, human health and work environment need to focus its sustainability efforts on an industry level with initiatives aimed to "be a beacon to others" and "transform the industry" (McElhaney, 2008, p.22).

A number of the initiatives in this case study focus on change of the industry, such as Climate Neutral Freight Transportation, Code Orange and the Jatropha project. As an important facilitator of global trade the logistics providers also have important roles in the value chain of other industries and are in different ways a link between the actors in global supply chains. As a business that is part of most other businesses value and supply chains, a proactive logistics industry has a position of influencing social and environmental practices on the corporate level. As more demands are put on several actors in the value and supply chains it enables sustainable business practices to spread. Hence, it is not limited to a few actors, but are present throughout the whole value chain.

Communicating a strategy for corporate responsibility objectives and implementation of sustainable business practices are important aspects of influencing other actors in the logistics industry as well as other industries. The communicative aspects are also crucial for a broad stakeholder dialogue. Stakeholders are increasingly demanding transparency regarding business practices. Posten Norden, FedEx and TNT communicate and address issues as expressed by different stakeholders. By doing this they can both comply to stakeholder demands and needs, and also be able to influence other businesses that have not yet proactively implemented sustainable business practices in their business operations.

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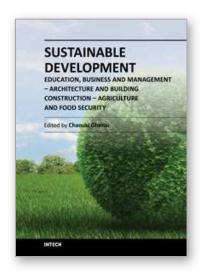
8. References

- Arvidsson, S. (2010). Communication of Corporate Social Responsibility: A Study of the Views of Management Teams in Large Companies. Journal of Business Ethics, 96(3), pp.339-354.
- Atkinson, A., Waterhouse, J. & Wells, R. (1997) A Stakeholder Approach to Strategic Performance Measurement. *Sloan Management Review*, Spring 1997; 38(3), pp.25-37.
- Bauer J, Bektas, T & Crainic, T.G. (2010). Minimizing greenhouse gas emissions in intermodal freight transport: an application to rail service design. *Journal of the Operational Research Society*, 61(3), pp. 530-542.
- Brewer, A.M., Button, K.J., & Hensher, D.A. (Eds.). 2001. *The Handbook of Logistics and Supply Chain Management. Handbooks in Transport* #2. Pergamon/Elsevier. London.
- Brunsson, N & Jacobsson, B. 2002. A world of standards. Oxford University Press, Oxford.
- Carroll, A.B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, 34(4), pp.39-48.
- Charter, M & Polonsky, M.J (eds.). 1999. Greener marketing. Greenleaf Publising, UK.
- Eisenhardt, K. (1989). Building Theories from Case Study Research. *The Academy of Management Review*, 14(4), pp.532-550.
- Elkington, J. (1998) *Cannibals with forks. The triple bottom line of the 21st century,* Oxford: Capstone Publishing Limited.
- Epstein, M.J., 2008. Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental and Economic Impacts, Berrett-Koehler Publishers.
- FedEx. 2009. Corporate Citizenship Report 2009.
- Freeman, R. E. (1984) Strategic Management: A stakeholder approach. Boston: Pitman.
- Friedman, M. (1970). The social responsibility of business is to increase its profits. New York, Times Magazine, September 13, pp. 32-33, 122, 126.
- Global Reporting Initiative. (2010). Global Reporting Initiative, September 18, 2010, Available from: http://www.globalreporting.org/AboutGRI/WhatIsGRI/
- Halme, M. & Laurila, J. (2009). Philanthropy, Integration or Innovation? Exploring the Financial and Societal Outcomes of Different Types of Corporate Responsibility. *Journal of Business Ethics*, 84, pp.325–339.
- Heikkurinen, P. (2010). Image differentiation with corporate environmental responsibility. *Corporate Social Responsibility and Environmental Management*, 17(3), pp.142-152.
- Ihrén, N. (2011). Analys: Tre trender i transparensens tidsålder. Available at: http://miljoaktuellt.idg.se/2.1845/1.382437/analys-tre-trender-i-transparensens-tidsalder [Accessed May 1, 2011].
- International Labour Organization [ILO]. 2010. The Declaration. June 29 2011, Available from: http://www.ilo.org/declaration/thedeclaration/lang--en/index.htm
- Jones, R., Arndt, G., & Kustin, R. (1997). ISO 9000 among Australian companies: impact of time and reasons for seeking certification on perceptions of benefits received, *International Journal of Quality & Reliability Management*, 14(7), pp.650 660.

- Kotonen, U. (2009). Formal corporate social responsibility reporting in Finnish listed companies. *Journal of Applied Accounting Research*, 10(3), pp.176-207.
- Laudal, T. (2010). An Attempt to Determine the CSR Potential of the International Clothing Business. *Journal of Business Ethics*, 96(1), pp.63-77.
- Leipzinger, D. (2010). *The Corporate Responsibility Code Book* (Revised ed.) Sheffield: Greenleaf Ltd.
- Lin C.Y. & Ho, Y.H. (2010). Determinants of Green Practice Adoption for Logistics Companies in China. *Journal of Business Ethics*, 98(1), pp. 67-83.
- Lyon, T.P. & Maxwell, J.W. (2008). Corporate Social Responsibility and the Environment: A Theoretical Perspective. *Review of Environmental Economics and Policy*, 2(2), pp.240 260
- Mamic, I., 2005. Managing Global Supply Chain: The Sports Footwear, Apparel and Retail Sectors. *Journal of Business Ethics*, 59(1/2), pp.81-100.
- McElhaney, K. (2008). *Just Good Business: The Strategic Guide to Aligning Corporate Responsibility and Brand*. Berett-Koehler Publisher Inc., San Fransisco.
- Murphy P.R. & Poist R.F. (2003). Green perspectives and practices: a comparative logistics study. *Supply Chain Management: An International Journal*, 8(2), pp. 122-131.
- Organization for economic co-operation and development [OECD] 2002. *Transport logistics:* shared solutions to common challenges. Special report.
- Porter, M.E. & van der Linde, C. (1995). Green and Competitive: Ending the Stalemate. *Harvard Business Review*, 73(5), pp.120-134.
- Porter, M.E. & Kramer, M.R. (2002). The Competitive Advantage of Corporate Philanthropy. *Harvard Business Review*, 80(12), pp.56-69.
- Posten Norden AB. Hållbarhetsredovisning 2009.
- Roberts, S. (2003). Supply Chain Specific? Understanding the Patchy Success of Ethical Sourcing Initiatives. *Journal of Business Ethics*, 44, pp.159-170.
- Robson, C. (2002). Real world research 2nd ed., Blackwell Publishing.
- Rockström, J., Steffen, W., Noone, K., Persson, Å., Lambin, E.F., Lenton, T.M., Scheffer, M., Folke, C., Schellntuber, H.J., Nykvist, B., de Wit, C., Hughes, T., Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P.K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Correll, R., Fabry, V.J., Hansen, J., Walker, B., Liverman, D., Rochardson, K., Crutzen, P., & Foley, S.A. (2009). A Safe Operating Space for Humanity. *Nature*, 461(7263), pp.472-475.
- Rotter, J.P., Özbek, N. and Mark-Herbert, C. 'Private-public partnerships: corporate responsibility strategy in food retail', Int. J. Business Excellence, In press.
- Sbihi A. & Eglese, R.W. (2009). Combinatorial optimization and Green Logistics. *Annals of Operations Research* 175(1), pp. 159-175.
- Sharma, S., & Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. Strategic Management Journal, 19,pp. 729-753.
- Stafford E.R, & Hartman, C.L. (1996). Green alliances: strategic relations between businesses and environmental groups, *Business Horizons* 39(2), pp. 50-59.
- Thomas Nationwide Transportation [TNT]. 2009. Sustainability Report. Weathering the storm 2009.

- United Nations Global Compact. (2008). Corporate Citizenship in the World Economy. United Nations Global Compact Office. New York City, USA.
- Visser, W. & Tolhurst, N. (2010). The World Guide to CSR. A Country-by Country Analysis of Corporate Sustainability and Responsibility, Sheffield: Greenleaf Publishing.
- Walker, D., Pitt, M. & Thakur, U.J., 2007. Environmental management systems: Information management and corporate responsibility. *Journal of Facilities Management*, 5(1), pp.49-61.
- WCED. (1987). Report of the World Commission on Environment and Development: Our Common Future, UN Documents. Available at: http://www.un-documents.net/wced-ocf.htm [Accessed June 5, 2011].
- Welford, R. & Frost, S. (2006). Corporate social responsibility in Asian supply chains. *Corporate Social Responsibility and Environmental Management*, 13(3), pp.166-176.
- Wingborg, M. (2009). Vägar till ett bättre arbetsliv. Tre svenska företags försök att skapa bättre villkor på fabriker i Indien och Srilanka, SwedWatch.





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Securing the future of the human race will require an improved understanding of the environment as well as of technological solutions, mindsets and behaviors in line with modes of development that the ecosphere of our planet can support. Some experts see the only solution in a global deflation of the currently unsustainable exploitation of resources. However, sustainable development offers an approach that would be practical to fuse with the managerial strategies and assessment tools for policy and decision makers at the regional planning level. Environmentalists, architects, engineers, policy makers and economists will have to work together in order to ensure that planning and development can meet our society's present needs without compromising the security of future generations. Better planning methods for urban and rural expansion could prevent environmental destruction and imminent crises. Energy, transport, water, environment and food production systems should aim for self-sufficiency and not the rapid depletion of natural resources. Planning for sustainable development must overcome many complex technical and social issues.

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