



# Environmental impacts as buying criteria for third party logistical services

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## Abstract

**Purpose** – The purpose of the paper is to analyse whether environmental issues form a supplier selection criteria of companies when sourcing third party logistics (3PL) services.

**Design/methodology/approach** – The paper is based on a total of nine cases, where six buyers and three 3PL are analysed in depth so that data are collected for both parties involved in related dyadic relationships.

**Findings** – While 3PL reports an increasing interest in environmental issues, buying decisions are still made on “traditional” performance objectives, such as price, quality and timely delivery. Environmental concerns have not been incorporated and at best form a kind of minimum requirement. Related cooperation, as asked for when taking a wider supply chain management perspective, could not be identified.

**Research limitations/implications** – The paper has the limitation that only a total of nine companies are analysed. Yet, these companies can be seen as being good representatives of the overall industry. Further, detailed information is collected on all companies, it permitted the understanding of related corporate action. One implication would be conducting, e.g. a survey for collecting data on a larger number of cases.

**Practical implications** – Buyers of 3PL services and companies are challenged towards rethinking their strategies.

**Originality/value** – So far, there is very little research on how buyers and 3PL jointly manage environmental issues. The paper addresses environmental issues as a buying criteria and places this into the wider literature on logistics and sustainable supply chain management.

**Keywords** Supply chain management, Supplier evaluation, Sustainable development, Third party vendors

**Paper type** Case study

## Introduction

“Transport is the life-blood of the twenty-first century economy” (May, 2005). However, the considerable growth of transportation and related logistics services too, has apart from many benefits also numerous disadvantages: air pollution, increasing damage of nature and ecological systems, destruction of cultural monuments, noise, congestion, accidents and climate change (Wu and Dunn, 1995; Murphy *et al.*, 1995).

Transportation and logistics services are increasingly outsourced to large international third party logistics (3PL) providers. This choice is justified by the influence these providers have in the market and by the knowledge and resources they



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command. Even though they work with numerous local, small and medium sub-providers, 3PL are increasingly used as global counterparts for globally active focal companies, offering all services from one hand and additionally a global network. Thus, their abilities for changing towards more environmentally adapted transport and logistics solutions is regarded as larger than those of local and smaller transport providers, which is why this study focuses on them.

National legislation in the countries in which 3PL operate may provide regulation on city traffic, air quality limits and certain taxes to enhance the use of alternative fuels, but there are no laws and regulations limiting the environmental impact of 3PL with regard to CO<sub>2</sub>-emissions. In their core business, 3PL and all other logistics and transport providers can legally emit as many CO<sub>2</sub>-emissions as they want, which is why the study will focus above all on this environmental aspect. In many cases, reduction goals are stated by 3PLs or by transport-buying companies, they most often refer to CO<sub>2</sub>-reductions (Deutsche Bahn AG, 2009). These goals refer to the total activities of a company, but they are also put forward by companies buying goods and services often include transportation and logistics processes.

Recently, 3PL receive an increasing amount of questionnaires from their international customers regarding their environmental performance (as personally experienced by the first author when working in the environmental department of a large globally operating 3PL). Contrastingly, it seems that many customers do not really know how to integrate transportation and logistics into their own environmental strategy. This ambiguity arises when the results of questionnaires either do not play any role at all or have only minimal influence on the contract decision. This is also reflected in related academic literature. Two recently published literature reviews on 3PL hardly mention natural environment related issues (Selviaridis and Spring, 2007; Marasco, 2008). In line with these reviews, a decisive part of the options for environmental actions seems to lie with the transport buying company, as it is this actor who makes the choices on where and how locations are set up and also chooses the service providers, whereas the 3PL is more bound to adapt his services to related customer demands. The literature on transportation and logistics provides mostly technical solutions and no real exploration of how the process of negotiating environmental aspects during procurement and implementation is carried out between a focal company and its 3PL. Therefore, the wider frame of sustainable supply chain management is referred to for providing a conceptual framework, as it includes relationship aspects like integration, cooperation, trust and information sharing, which are stated as important for the success of the environmental management of supply chains. It is our hypothesis that such relationship aspects also play an important role with regard to if and how environmental issues are taken up in the buyer-supplier dyad between a focal company and a 3PL.

The research question addressed is:

*RQ.* (How) Are environmental issues taken into account by companies buying logistical services?

The analysis is structured as follows: section two will explain relevant terminology, followed by a literature review on logistics and purchase of logistical services and related environmental aspects. Section three describes the research method, followed in section four by an account of the findings. Section five discusses the findings and

pulls together theory and empirical research. Section six finally aims at providing conclusions and suggestions for further research.

### **3PL providers – terminology**

Regarding 3PL providers, researchers mention the difficulty in finding uniform or standardised definitions (Knemeyer and Murphy, 2005; Selviaridis and Spring, 2007). Hertz and Alfredsson (2003) define 3PL as “an external provider who manages, controls and delivers logistics activities on behalf of a shipper”. This definition, although very broad, refers to a hierarchy in the relation of 3PL and transport buyers, the latter as customers being in a superior position (Skjøtt-Larsen, 1999; Berglund *et al.*, 1999; Selviaridis and Spring, 2007, Marasco, 2008; for a detailed discussion of related definitions, see Skjøtt-Larsen *et al.*, 2003). The buyer usually forms the focal company, who defines the supply chain, designs and develops the product and is in direct contact with the final customers of the respective product (Lambert *et al.*, 1998). Within the supply chain literature, 3PL are only taken into account if a broad “ultimate” perspective is taken (Mentzer *et al.*, 2001).

The idea of 3PL services came into life with new customer demands for lead time reductions and outsourcing, paired with an increasing globalisation, increasing market coverage and customer orientation, also triggered by a demand for more flexibility (Hertz and Alfredsson, 2003; Halldórsson and Skjøtt-Larsen, 2006; Selviaridis and Spring, 2007). 3PL-relationships are, in contrast to simple transactions between a transport provider and a buyer, more formalised and built on a long-term focus (Halldórsson and Skjøtt-Larsen, 2006). This implies that the relation with a 3PL can be of strategic value for the supply chain of a focal company, not just of tactical value. In line with this, the buying of logistical services forms a major track in related research (Selviaridis and Spring, 2007, Marasco, 2008). In this respect, several publications addressed the relevance of the related purchasing process and the issue which criteria are used for decision making (Andersson and Norrman, 2002; Efendigil *et al.*, 2008). Interestingly, two papers (Meade and Sarkis, 2002; Efendigil *et al.*, 2008) particularly look at reverse logistics, where wider environmental issue also influence environmental logistics.

### **Environmental concerns in logistics – literature review**

Sustainable development is defined as an approach where the economic, the environmental and the societal sphere of a business needs to be harmonised, the “triple bottom line approach” (Carter and Rogers, 2008; Seuring and Müller, 2008a), also expressed as corporate (social) responsibility in logistics (Carter and Jennings, 2002) and supply chain management (Kovács, 2008). Recently, a minimum performance in all areas is often regarded as order qualifier allowing companies to enter into business with each other. In sustainable supply chains, hence:

[...] environmental and social criteria need to be fulfilled by the members to remain within the supply chain, while it is expected that competitiveness would be maintained through meeting customer needs and related economic criteria (Seuring and Müller, 2008a).

Such minimum requirements include, e.g. having appointed an environmental officer or holding ISO 14001 certification (Beske *et al.*, 2008). In practice, however, environmental and social aspects are not equally treated – social aspects in the discussion are much less

developed than environmental ones (Seuring and Müller, 2008b). Also most previous research focuses on the environmental side of sustainability with little attention on social aspects of logistics and transportation (one exception is Carter and Jennings, 2002). The present study will focus on environmental issues as well, as social aspects and their integration into business seems to be much less advanced and therefore even more difficult to trace than environmental aspects.

Environmental aspects affect various logistics decisions throughout the supply chain (Murphy *et al.*, 1995; Murphy and Poist, 2000; see particularly also the review in Aronsson and Brodin, 2006). Logistics can be regarded as the missing link for the provision of green products and services to consumers, allowing companies to produce even “greener” products if the corresponding logistics also become “green” (Wu and Dunn, 1995). For the time being though, research on the environmental impact of logistics is regarded as “small but expanding”, with few statements on how focal companies work with suppliers with regard to environmental protection (Murphy and Poist, 2000).

Even though 3PL offer a wide range of services beside transportation, transportation has by far the largest environmental impact compared to all other logistics activities and thus is “the single largest source of environmental hazards in the logistics system” (Wu and Dunn, 1995; also Abukhader and Jönson, 2004; Aronsson and Brodin, 2006, who present some background data on published papers). The study and the cases, which will be presented later on, will thus focus on the transportation activities of 3PL, as they are the largest source of CO<sub>2</sub>-emissions in the logistics industry.

Some researchers limit their definition of environmentally friendly logistics to return logistics and adapted packaging (Murphy and Poist, 2000, 2003; see the discussion in Abukhader and Jönson, 2004). This is also present in related papers on 3PL selection focussing on reverse logistics (Meade and Sarkis, 2002; Efindigil *et al.*, 2008, Srivastava, 2007). Also, van Hoek (1999) seems to see reverse logistics as the main possibility of “greening” logistics, but adds that:

[...] it is proposed that reversed logistics alone may not be enough and that a focus on the entire supply chain is more relevant for understanding the impact of business practices on the environment.

van Hoek (1999) only mentions the involvement of third parties in the “value-seeking” approach of companies as the highest ambition level of green approaches. Again, no further explanation is given on how this involvement should look like. Regarding environmentally friendly transportation, he refers to a high degree of utilisation, the avoidance of empty trucks and packaging. This also stays in line with related supplier selection models such as the one offered by Noci (1997), which are based on normative assumptions, but do not provide insights from empirical research.

Wu and Dunn (1995) provide an extensive list of environmental impacts that have to be included in logistics (see the overview of other approaches in Aronsson and Brodin, 2006). The later ones also state that the role which logistics systems, not only transport, but also play in the reduction of environmental impacts of industries has hardly been researched yet. They present three cases of companies assessing and improving their logistical operations. This is in line with Lin and Ho (2008) who in a recent survey find 3PL quite willing to adopt green practices, depending on the presence of six factors analysed (explicitness and accumulation of green practices, organisational

encouragement, quality of human resources, environmental uncertainty and governmental supports).

In summary, there are few studies on the opportunities and preconditions of 3PL with regard to an environmental business development. Insecurity (and little knowledge) prevails on which measures can reduce which costs or are the most efficient, which can be used directly, which mid-term and which long-term.

A last, but important point to be made can be based on the two reviews of 3PL published recently (Selviaridis and Spring, 2007; Marasco, 2008). While both of them discuss the purchasing of 3PL services, none of them mentions environmental issues in their own rights. Regarding traditional buying and supplier management, or in this case 3PL selection criteria and contract design, price, service performance and quality requirements are usually put forward as the most important criteria (Selviaridis and Spring, 2007), while environmental issues might be integrated into non-financial measures.

As the related literature on logistics does not address how environmental concerns are integrated in the business relationship between a focal company and a 3PL, we turn to the wider literature body of sustainable supply chain management, where such issues have already been discussed.

### **Sustainable supply chain management as conceptual framework**

Quite recently, three reviews of sustainable supply chain management have been published (Srivastava, 2007; Carter and Rogers, 2008; Seuring and Müller, 2008a). All suggested more or less similar definitions of the term. Here, that of Seuring and Müller (2008b) is taken up:

Sustainable supply chain management is the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e. economic, environmental and social, into account which are derived from customer and stakeholder requirements.

The literature reviews as well as a Delphi-study on “Core issues in sustainable supply chain management” (Seuring and Müller, 2008a) attempt to summarise related research and suggest future research directions. They put forward four major topics as decisive criteria for successful sustainable supply chain management. The four categories provide a suitable framework for the present analysis. They allow analysing current procurement practices between 3PL and customers, and are defined as follows:

- (1) pressures and incentives for sustainable supply chain management;
- (2) identifying and measuring impacts on sustainable supply chain management;
- (3) supplier management (particularly addressing issues at the supplier-buyer interface); and
- (4) supply chain management (dealing with issues across all companies involved in the supply chain).

As this analysis will focus on the specific relationship between focal company and 3PL, the last topic will be disregarded. It is recalled that this is in line with previous research on 3PL, where much emphasis is placed on buying logistical services (Selviaridis and Spring, 2007; Marasco, 2008).

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### *Pressures and incentives for sustainable supply chain management*

Within this category, the “demand (and insufficient demand, respectively) of final customers for sustainable products and services”, “laws” and “active development of sustainable products and markets by companies” were evaluated as most important issues. “Pressure of non-governmental organisations” and “political agenda-setting” was evaluated as less important.

### *Identifying and measuring impacts on sustainable supply chain management*

The effects of the three dimensions of sustainability (economic, environmental and social) on sustainable supply chains as well as their integration were analysed. The economic dimension was regarded as most important, stemming from the argument that without economic success, there would be no supply chains. The weighting of the environmental and social dimension as well as the weighting of the integration of all three dimensions remained unclear. It can be observed in practice, though, that many companies strive for win-win situations with regard to the economic and the environmental dimension (Wagner, 2005). However, should trade-offs between economic and environmental decision criteria remain unclear or worse still, tend towards a negative economic outcome, decision making is usually dominated by the economic dimension (regarding such trade-offs see, e.g. Schaltegger and Synnestvedt, 2002; Wagner, 2005).

### *Supplier management*

Procurement and supplier management were evaluated as very important for the subject “supplier selection including environmental and social criteria”, followed closely by “auditing and monitoring of suppliers”. It can, therefore, be assumed that the integration of environmental and social criteria into procurement directives will be a priority for the whole procurement in the future. “Certification of suppliers according to environmental and social standards” was also regarded as helpful. As mentioned, such topics are hardly taken up in 3PL-related publications so far.

In summary, Seuring and Müller (2008a) conclude that a considerably more cooperative approach is necessary than the one which can be found in traditional supply chains today. Improved communication with and integration of suppliers are of particular importance for achieving environmental goals (Aronsson and Brodin, 2006) and might even require shared resources (Gold *et al.*, 2010). The research on conditions, which lead to a benefit for both sides via supplier development as well as environmental and social performances, is still at an early stage.

The presented framework featuring the three categories exposed above serve as framework for the present case study where different 3PL and their relations with certain customers were analysed to find out if and how they take into account environmental issues in their business relation.

## **Research method**

The value and the challenges of case study research (Yin, 2003; Stuart *et al.*, 2002; Voss *et al.*, 2002) have been much discussed recently, even within logistics and supply chain management (Aastrup and Halldórsson, 2008; Seuring, 2008). Selviaridis and Spring (2007) highlight the need for more qualitative research in logistics and 3PLs, as the field is mainly dominated by positivistic-survey based studies. Hence, we will not discuss the advantages and disadvantages of case-based research, but outline what



was done in the respective study. Based on the five steps proposed by Stuart *et al.* (2002), a summary of the empirical work is provided in Table I.

The research question was defined as stated above. The instrument used for the analysis is a multiple case study design. As the framework from sustainable supply chain management was taken as a blue print, it can be seen as a theory testing approach (Voss *et al.*, 2002), where a previously developed framework is applied in a different setting and/or analysed with a different research method. Combining cases from buyers and 3PLs also fills a gap in related research, as collecting data from different stages of a logistics arrangement or supply chain is still scarce (Dubois and Araujo, 2007; Seuring, 2008).

The case study comprises nine individual cases, each representing one company. Six of these companies buy transport services (three American companies, one Swiss, one Belgian and one Dutch company). They were chosen because they present different industries (athletic footwear and apparel, electronics, information technology (IT), health and well-being, office and electronics; for details see Table II), because they all have well-known brand names and they all do business on a global scale. In that way, they represent typical focal companies commanding global supply chains, who work with large logistics providers, namely 3PL.

Three of the nine case companies offer transport services. Two of them were chosen because they market themselves as international 3PL-providers, while both have their head offices in Germany. The third logistics company, based in Norway, was chosen because it is a medium-sized, specialised transport provider (frozen food) and not a globally active 3PL. It thus contrasts the other two providers, which should help to find out if a certain difference in positioning or attitude towards cooperation in environmental issues compared to the two 3PL is due to company size, market share or geographic origin.

Some of the companies entertain regular business relationships with each other, for example the Swiss focal company buys regular transport services from both large 3PL, as is the case for the American, the Dutch and the Belgium focal companies. This allows assessing both sides of the dyadic relationships in buying and providing logistical services. Still, as mentioned above, the unit of analysis for the case studies are the single companies.

Among the transport buyers, two companies are included, where the first author was involved in projects running over a time period of at least one year, while being employed at one of the 3PL companies. The companies are placed in Belgium and The Netherlands, respectively.

Data gathering was realised by taking notes on direct observations of the first author during her customer involvement which allowed her gaining very specific and detailed

Stage 1. Research question	Stage 2. Instrument development	Stage 3. Data gathering	Stage 4. Data analysis	Stage 5. Dissemination
(How) Are environmental issues taken into account by companies buying logistical services	Nine cases as a multi case design, including industry representative buyers and 3PLs	Direct observations, structured interviews and web sites	Story lines and cross-case analysis	Construct validity, external validity and reliability

**Table I.**  
Case study method

	Business segment	Geographic coverage	Interviewee located in	Data collection
<i>Logistics services buying company</i>				
American transport buyer	Athletic footwear, apparel and equipment	Global	Belgium	Direct observation
Dutch transport buyer	Diversified health and well-being	Global	The Netherlands	Direct observation
Swiss transport buyer	Power and automation technology	Global	Sweden	Structured interview
American transport buyer	Diversified technology (products and services for safety and security, office, electronics, healthcare, manufacturing, transportation, display and graphics and home and leisure)	Global	England	Structured interview
American transport buyer	IT (hardware, software, services)	Global	Germany	Structured interview
American transport buyer	Athletic footwear, apparel and equipment	Global	USA	Structured interview
<i>Logistics service provider</i>				
German 3PL A	Integrated logistics services	Global	Germany	Structured interview
German 3PL B	Integrated logistics services	Global	Sweden	Structured interview
Norwegian logistics provider	Frozen food	Europe	Sweden	Structured interview

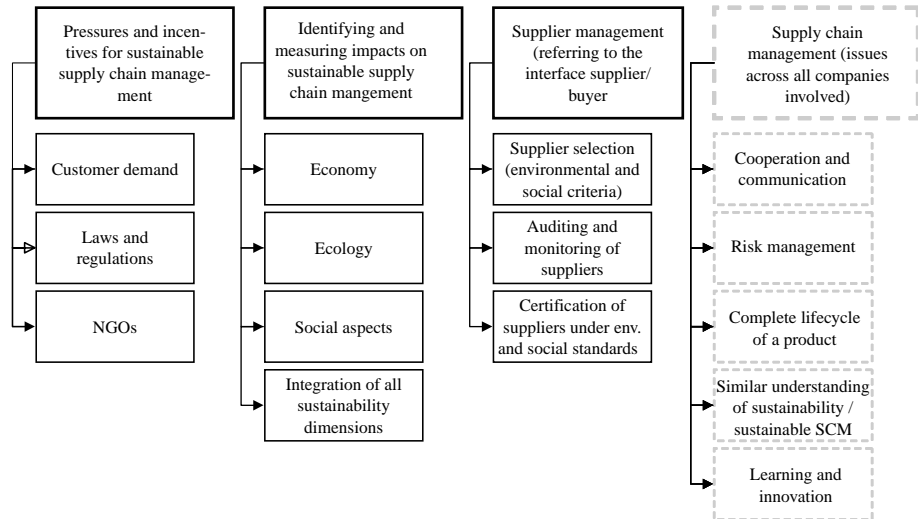
**Table II.**  
Case study companies

insight into the relationship between an international transport buyer and a 3PL. Regarding the other seven companies, structured interviews in English and German were conducted. The interview questions were organised according to the above-described three main categories. Each category was further divided into sub-questions, and additional questions were formulated based on the literature review. The interviews were carried out with one employee per company over the length of on average one-and-a-half hours. The interviewees at the focal companies were all responsible for international or even global transport procurement, whereas the interviewees at the logistics providers were key account managers (for example responsible for the account of the American focal companies of this study), environmental managers or branch managers, all with a working experience of more than ten years, some more than 15 years.

Following the interviews, answers and comments were analysed using an Excel-table based on the three main categories outlined above (Figure 1). Each analysis was returned to each interviewee for final adjustment and approval. Additionally, all respective company web sites were checked for information on cooperation with transport suppliers with regard to environmental protection.

Data analysis was carried out using “story lines” for each company and a comparison across all cases (cross-case analysis). During the dissemination process, results were analysed on construct validity, external validity and reliability. The use of different data sources (interviews, direct observations, information obtained via the internet and during employment at one of the 3PL) and the verification of the results by the informants strengthen construct and content validity. It is secured that results have





**Figure 1.**  
Main categories of the  
Delphi-study

**Note:** SCM = Supply chain management  
**Source:** Seuring and Müller (2008a)

a certain significance, which could certainly be improved further by a larger number of interviews, the expansion of the direct observations and the use of additional company material. A coherent chain of proof in the analysis, which could increase construct validity even more, was impossible due to the limited amount of data gathered. The same holds true for external validity: analytical data are based on interviews with and observations of representative companies and their employees. These measures allow analytic generalisability, as will be discussed in section 5. Reliability is ensured by a thorough description of the process of data collection and data analysis.

### Within-case analysis of findings

The short within-case analysis rather aims at illustrating selected findings than providing a complete overview. Significant differences among the single companies in their management of environmental issues are emphasised. Subsequently, statements on the categories of the interview questionnaire are presented in more detail.

#### *Two cases based on work experience*

The first case is based on a Dutch company buying transport services. While the 3PL was approaching this customer regarding environmental transport solutions, a lack of information and of incentives on both sides, for procurement and sales people, showed in many different ways: sales and procurement people did not know the issue, and related objectives were not embedded into the general company communication, as it was regarded as too far away from the core business and thus irrelevant. The pilot project in this field faded out after some time, even though results were regarded as interesting. Lack of top management commitment was identified as the critical issue, together with a critical account on environmental management.

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The experience with the American company, which sells athletic footwear, apparel and equipment (Belgium branch) revealed a different problem. The customer was interested in substantial emission calculations of its freight transports aiming at establishing CO<sub>2</sub>-footprints. The 3PL was able and willing to provide such calculations, which was done for free in an initial step. As the amount and complexity of the calculations increased, discussions on cost sharing were taken up with the customer, who finally agreed to take over the costs, which were neglectable compared to other expenditures in the business (all in all, the total costs over a year amounted to approximately €10,000). However, in the following contract negotiations, the customer withdrew their acceptance and demanded that those costs had to be borne by the 3PL, exclusively. Relating this back to the framework, related criteria were first put up as being part of supplier management, but later on neglected by the buyers of the transport services. This leads over to discussing related cases.

Summing up these two cases and putting them into the context of the framework, the (end-) customer demand for more environmental logistics solutions was present as well as the proactivity of the 3PL. Still, looking at the environmental impacts proved difficult. When trade-off between environmental issues and economic performance or pricing was identified, the economic dimension clearly dominated subsequent decision making. A proactive supplier management could not be observed. 3PLs being, e.g. ISO 14001 certified was welcome, but not rewarded.

#### *Buyers of transport services*

As listed in Table I, a total of four transport buying companies were interviewed. The interviewee of the Swiss transport buyer stated that with regard to environmental protection, this company tries to cooperate with the 3PL. If services are comparable, the business is given to the 3PL, which is most environmentally advanced. Especially, in their Sweden-based operations, the company has integrated procurement into their environmental strategy, which is measured against its contribution to the environmental friendliness of the company. Furthermore, the Swiss transport buyer has issued minimum requirements for transport providers and 3PL. Non-compliance can lead to exclusion from business. This company is the only one interviewed which offers trainings in environmental aspects to their 3PL.

The American IT company has developed a corporate goal of reducing CO<sub>2</sub>-emissions with 10 per cent between 2005 and 2012 together with their 3PL. This goal is part of the logistics contract and thus forms a component, which, in case of non-compliance, can lead to fines or even contract termination. The remaining demands with regard to environmental issues on 3PL are rather general, not quantified and thus not verifiable, according to the interviewee. With regard to global logistics and environmental protection, the company mainly aims at the reduction and improvement of packaging.

The American transport buyer producing diversified technologies is very interested in establishing a partnership, not a hierarchical relation, with their 3PL, as the interviewee stated. Targets in the transportation sector are developed together with service providers. Dialogues are used to help 3PL discover weaknesses and help them to improve. Apart from costs and service quality, this company uses the degree of accordance with their own goals and values as supplier selection criteria. The

interviewee pointed out that the procurement department at this company has a broader focus than just costs and is not only quote-driven.

The American athletic footwear, apparel and equipment company has global business activities. The interviewee thus accentuated certain differences in the level of environmental protection in their business in the USA and in Europe. In Europe, non-compliance with minimum requirements can lead to contract termination, but the interviewee did not know of any such case in the USA. The integration of environmental protection into the core business is called “ROI squared”, where not only the monetary value of an activity is measured but also its contribution to sustainability and its societal value, respectively.

#### *3PL service providers*

The interviewee representing the German 3PL A stated that an increasing amount of customers demanded information on their environmental performance. However, the company neither has a written environmental strategy nor does it train its sales people and key account managers in environmental issues. Despite the increasing interest in environmental aspects, customers increase pricing pressure parallel. Even though the interviewee emphasised that the company has regular communication with its customers and shares an IT-platform with many of them for the exchange of information, co-operations with customers were regarded as insufficient.

The German 3PL B systematically monitors customer demands for environmental protection and sustainability, and the company has a strategy which covers all relevant environmental aspects. Reporting on these aspects also includes transportation. In contrast, their sales people are not integrated into the corporate sustainability strategy and only act quote-driven.

The Norwegian logistics provider is a company with a strong focus on partnership with customers. The company follows a strategy of “trial and error” with regard to transportation and environment, deliberately allowing mistakes and wrong decisions to enable organisational learning. Large investments in environmental protection are measured against their contribution to value creation before they are realised. Therefore, the company has noticed that these measures often lead to cost reductions and thus are beneficial for the company.

#### **Cross-case analysis**

In the next section, the analysis across all cases is presented, which expands on the results of the interviews. This will be presented based on the above-outlined framework (Seuring and Müller, 2008a).

#### *Pressures and incentives*

For the time being, there are no laws and regulations restricting transport buyers and 3PL in how they design transport and logistics services. The major consequence of road and congestion charging systems in the European Union (EU) has been an increase in price, which was not large enough to truly change processes or decisions towards more environmentally adapted services. Customer demands for environmentally adapted transport and logistics is rising, but as soon as the question of costs comes up, transport buyers put environmental criteria in second or third line, if at all. Signals from the market are thus contradictory. None of the large and well-known non-governmental

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organisations (NGOs) like Greenpeace and WWF seem to exert any pressure on transport buyers and their 3PL with regard to transportation, and no dialogue on this specific issue exists between them and the market actors. Yet, support for the allegation that 3PL are willing to improve their services and react to customer demands has been found (in line with Lin and Ho, 2008).

#### *Identifying and measuring environmental impacts*

With regard to transportation and logistics, certain environmental impacts – mostly CO<sub>2</sub> – are taken into consideration by the analysed transport buyers and 3PL. However, even though an increasing amount of transport buyers and 3PL have started measuring the emissions stemming from their transport activities, there is only very limited knowledge on how results of these measurements impact the company's economy today or in the future. The translation of emissions into financial terms or the integration of environmental key figures into financial planning and steering mechanisms of a company is not realised today. Economic aspects and ecologic aspects are still managed separately.

#### *Supplier management*

Transport buyers increasingly ask their 3PL for information on their environmental performance. However, compliance with some very basic requirements seems to be mostly a “hygienic” factor or minimum requirement, thus an order qualifier, (Seuring and Müller, 2008b based on the original notion by Hill, 2000) allowing 3PL to enter into tender processes, but do not have any noteworthy impact as order winner for the contracts. Classical order winners of today are for example cost (price), quality, lead time, features, aesthetics, reliability, trust-level, brand equity, service level, product variety offered, customization, additional services provided, etc. Environmental aspects have entered the class of order qualifiers, but price, lead times and service quality of a 3PL are still the decisive order winners, and the fight to push transport prices even lower continues.

### **Discussion**

Limited empirical work on environmental issues as buying criteria for 3PL services has been presented so far. Still, there are suggestions that environmentally adapted supply chains can only be realised by cooperation between environmentally aware suppliers and a focal company (Seuring and Müller, 2008b). Integration, cooperation and information sharing have been identified as the most important components of a successful supplier management in supply chains, which also hold for 3PL-relationships and the buying of related services (Meade and Sarkis, 2002). The results of the empirical research presented, however, point toward an unclear picture of how the relation between 3PL and a focal company should be designed to maximise environmental efforts or at least include environmental issues. All interviewees theoretically knew the advantages of supplier (but also customer) management; in practice though many ambiguities and contradictions prevail.

#### *Unclear demands*

These ambiguities arise when there is no explicit strategy on environmental aspects and transportation, which is also broadly communicated. They are further rooted in the

uncertainty of how a global company in a complex supply chain shall deal with its business partners to develop more environmentally adapted transports. While a number of conceptual models have been proposed (Noci, 1997; Meade and Sarkis, 2002; Efendigil *et al.*, 2008), sometimes the respective knowledge is lacking, and even the time to acquire it, as no space for such development is given. It is also unclear which demands on environmental protection are already put on a 3PL or should be, and there is no harmonised regulation on how to deal with non-compliance. The interviewees on the transport buyers' side all stated that procurement was integrated into their environmental strategy, contributes to the environmental friendliness of their companies and is partly even measured against this contribution. It is still puzzling on how this fits with the statements of the 3PLs, who likewise unanimously said that there are no real minimum requirements on the side of the customers in this area and that customers were satisfied if they just fulfilled the legal requirements. Given the limited number of cases, we present this contradiction might be based on the fact that the wrong companies were selected or the wrong people were interviewed. Yet, as justified in the method section, it seems that the interviewed staff members (particularly of the 3PLs) have not yet experienced any environmental demands in their customer relations. The latter would be a hint towards the large spectrum of companies' ways to deal with environmental protection; the first two questions need further analysis. Maybe an explanation can also be found in the fact that most global focal companies focus their environmental work with suppliers on their raw material suppliers and not (yet) on their transport providers, and that there are few exceptions from the rule as of today. This even allows the conclusion that more empirical research would be required, where the role of procurement should be analysed more in detail to clarify uncertainties and to find explanations for the stated contradictions. Still, it is overall in line with writings in the wider field of sustainable supply chain management, where the challenge of cooperation with suppliers has received considerable attention (Seuring and Müller, 2008b). Overall, pressure on better environmental performance seems to exist, but has not triggered a related change in buying behaviour of focal companies.

#### *Required information sharing*

Information sharing is realised only regarding operational business processes. Especially, the interviewed 3PL felt that the information flow from their customers was insufficient. The problem to build stable partnerships with suppliers might also be grounded in that many globally active companies keep a multitude of supplier relations and, if at all, only the management level still oversees which of those are of strategic importance and which are based on a commodity-against-money relation. Defining and communicating these types of relations is much easier if only a limited number of suppliers is used and not a couple of hundred. The English interviewee of one of the American transport buyers confirmed this and stressed the respective long-term character and the trust between them and their 3PL, which links back to the supplier management discussed in the analytic framework chosen. Overall, related environmental impacts are hardly measured and CO<sub>2</sub>-emissions, as mentioned in the findings, seem the single indicator receiving increasing attention.

Through the interviews, it became clear that the analysed transport buying companies and 3PL still entertain a rather hierarchical relationship, which is abandoned only slowly and hesitantly. One reason might be, as already mentioned before, the lack of

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knowledge on how a partnership in environmental protection could look like – if such partnerships are not realised in other areas of the business relationship, either. This result fits the one of Canning and Hanmer-Lloyd (2001) that there are examples of improved environmental performances of companies with the support of their suppliers, but no explanations on how these were realised. In hierarchical relationships, all transactions are carried out with a mindset that might not necessarily be favourable for the development of partnerships, information sharing, integration and cooperation. Hence, supplier management is still not fully implemented, which is well in line with the challenges Aronsson and Norrman (2002) related to for buying logistical services.

Summing up, although companies on both sides are interested in the environmental impacts of transportation, they still form a minority. Many representatives (focal companies and 3PL) have no strategy for these issues. The reputation as an environmentally friendly company is rather secondary for the top management of the analysed 3PL, and even at focal companies who postulate an environmental orientation during the procurement process; this orientation somehow turns into blurry and contradictory demands during its communication to the 3PL, if it is addressed at all. The potential for synergies between economy and ecology are hardly understood on both sides. Often, environmental measures are purely regarded as cost drivers and insecure investments into the future. With regard to the political arena, much is happening currently that affects the transport sector (emission trading schemes for air and seafreight, Euro-classes for trucks, access limitations for trucks in inner cities and congestion fees, road charges, etc.), but most of these measures are not sufficient to truly set incentives for 3PL or transport buying companies to change their processes. As of today, there are no limitations for the emission of CO<sub>2</sub> in traffic. Representatives of society, in this case mostly NGO's, are hardly noticed by 3PL or transport buyers.

#### *Challenges in cooperation*

The findings of the study in the category “supplier management” rather depict a vision with regard to 3PL, however, developments have been stated in this analysis and by the interviewees which indicate that 3PL also will be “selected including environmental and social criteria” and will then also most certainly be “audited and monitored” according to established standards in the future. However, the described categories may not be sufficient in that they are too general and broad to be able to address the specific conditions in the relationship between a focal company and a 3PL. Moreover, they provide little information on which actions could be taken up by both actors to move together towards increased environmental protection.

Looking at the literature reviewed, Carter and Rogers (2008) mentioned the “systemic coordination of key inter-organisational business processes” as one decisive element of sustainable supply chains. However, such a systemic coordination seems to be challenging in large companies as those the interviewees work for. Both 3PL, for example, divide their transportation and logistics activities into the different transport means, and keep them as separate product managements, which even compete internally, meaning that it is not economically beneficial for the airfreight department to coordinate its transport activities with the land transport division and to contribute to the financial success of any other but the own department. Furthermore, as observed personally by the first author, large 3PL are today organised locally, rendering a large amount of responsibility and decision freedom to country and branch organizations.



Even if the top management in the head office decides on certain environmental policies, these are not automatically accepted and implemented in all country and branch organizations of such a company. A general observation is that most companies do not even manage systemic approaches internally, let alone initiate them between different companies. Optimisation efforts are usually targeted at one company and not at a chain or network of companies, even though this would be most beneficial for all actors in the long run (Cooper *et al.*, 1997; Fawcett and Magnan, 2002; Kampstra and Ashayeri, 2006). This is in line with integration efforts mentioned in the literature reviews on 3PL (Selviaridis and Spring, 2007; Marasco, 2008).

Srivastava (2007), in contrast, suggested in his definition of sustainable supply chains to “integrate environmental thinking into supply chain management”. In order to successfully integrate environmental thinking into these departments, the company needs to find staff members who are competent in logistical and environmental issues at the same time. Otherwise, the environmental responsibility lies with the environmental department of a company, which usually is not very well informed about operations and vice versa – in other words, they often “do not speak the same language” and have difficulties in communicating. Srivastava (2007) also mentions the product design as one stage where such integration should take place. Even though it is true that the product design has an impact on the future transportation and logistical handling, it is hardly ever the case that 3PL are integrated into this phase at the focal company. An interesting exception is IKEA who adapted the packaging of their tea candles taking into consideration logistics aspects and reaching a considerable improvement of the utilisation of their transport vehicles (Enarsson, 1998). This is also in line with life-cycle assessment tools providing insights into the environmental demands for all members of the supply chain as discussed by Seuring and Müller (2008b).

#### *Challenges for practice*

While our discussion points out major shortcoming of current business practice, this raises the question of how the transport business might become more environmentally adapted. In line with frequent demands, regulation and legislation might still be the strongest levers for changing respective business practices. Starting debates on so-called carbon accounting, legally required and implemented in the transport industry in response to climate change, would allow pushing for actions and changes, both at 3PL services providers and their customers. Yet, the main challenge might not be changing business practices within single companies, where certain transport services are optimised with the help of technology. It might rather be one of the main challenges to change business practices across complete supply chains. A holistic approach would have to be taken on what services might be needed and how they could be fulfilled in a manner reducing CO<sub>2</sub>-emissions while also increasing and improving cooperation, trust and information exchange. As many large 3PL and their customers refer to technological developments when asked for their environmental improvements, it would be interesting to find out why such technology is not yet used much more extensively – what are the barriers for a widespread application of global positioning system systems, radio-frequency identification technology, modern fleets, etc.? Is it just costs? If this would be the case, it might be equally important to analyse the cost situation of 3PL in the mid- and long-term future – looking at “peak oil” or “end of oil” – scenarios, increasing costs due to climate change, e.g. the attempts of the

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EU to integrate so-called external effects (see introduction) into transport prices. It might become obvious that not acting today will cost companies their existence in the future, in accordance to the results of the Stern-Report (Stern *et al.*, 2006, particularly Annex 7.c Emissions from the transport sector).

### Conclusion

The literature review and the case study clearly showed that only sporadically, transport buyers and their 3PL take first steps towards cooperative partnerships with regular communication, long-term trust and commitment and with the willingness to share knowledge and information on environmental issues. The realisation of such approaches is still difficult and challenging in the relationship between transport buyers and 3PL.

Almost inevitably and despite all efforts and shiny visions, 3PL rather remain in a “henchman’s” position towards their customers, with few exceptions from the rule. This can and has to change though, looking at the increasing environmental impact of transportation especially. Looking at the dramatic effects of climate change, the respective impulses need to be cultivated, broadened and realised as quickly as possible. 3PL and customers should think of that, as soon as environmental measures become a liability and thus turn into cost. Those actors in the supply chain who already integrated them into their business will gain a head start in terms of knowledge and possibly even lower costs.

The limited evidence of environmental issues constituting a buying criteria for 3PL services is just another indication that business needs to take a much more fundamental perspective on the challenges of climate change than could be observed in the analysed cases. Future research should be extended to a wider analysis, for example being based on a survey of buyers and logistics service providers working together in one defined supply chain. This would allow a more in-depth analysis of pressures and incentives for implementing environmental logistics as well as the needed cooperation and communication among them.

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