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## IT based Attempt to Evaluate and Promote Intermodal Transport Solutions in Central and Southeast Europe

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### Abstract

The transport sector is one of the main emitters of greenhouse gas emissions. The awareness about this is increasing because of heightened environmental sensitivity among customers, politicians and the media. Studies dealing with sustainability in logistics have been inducted to show that companies around the world are keen to promote "green solutions" through the management of logistics. From now, it is difficult to gauge how far these efforts reflect true desire to help the environment as opposed to enhance public relations. The paper addresses an IT based attempt to evaluate and promote intermodal transport procedures in the corridor of Central and Southeast Europe. Through the assessment of the relative importance of intermodal transport nodes the described tool is a useful instrument to demonstrate the most important advantages for environmental friendly transport solutions. In combination with accessibility as well as network scenario attempts stakeholders have full information available when preparing several transport plans due to transparent strengths of rail and inland waterway transports.

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### 1. Introduction

The logistic process can reach from the raw material source through production and distribution to the point of consumption including the final reverse activities (Dey et al., 2011). Therefore, companies create supply chain relationships for a proper, effective development of the operational capability (Sandberg and Abrahamsson, 2011). Common, growing concerns over issues such as the limitation of resources, global warming, greenhouse gases and consumer health have increased the needs of rethinking the term sustainability within business strategies of all partners in the supply chain. Transport is responsible for different kinds of externalities like air pollution, noise, accidents, vibration, soil sealing and visual intrusion. By looking 40 years ahead and facing these negative

influences, the current development cannot continue the same path. If all stakeholders in the transport industry stick to the 'business as usual' approach the CO<sub>2</sub> emissions from transport would remain one third higher than their 1990 level by 2050. Desev and Dobias mentioned the development of sustainability in transport logistics during the 1980s and the early 1990s, when the focus in limiting emissions from road transport was basically on technical solutions. Behavioural aspects were described partly (Desev and Dobias, 1992). In previous years, the trend towards more environmental and social responsibility operation management practice suggests multiple options for corporations to improve sustainable performance (Aronsson and Brodin, 2006). Halldórsson and Kovács stated that a considerable rethinking on the operational level as well as even on the conceptual level is essential (Halldórsson and Kovács 2010). Bretzke and Barkawi conducted that the business model of a company has an important impact on how green it can operate. For example, if a company's strategy is about offering products at a low price level the model could indicate that the company will focus on high rates of utilization in transportation as the transport costs per unit of the product need be as low as possible. If a company has a competitive advantage through quick response to customers the business model accepts low utilization of the vehicles. Additionally, the two authors mention that in the future not only innovative technologies are needed but innovative processes and network architectures would help to operate more efficient and "green" (Bretzke and Barkawi, 2010).

## 2. Methodology

Based on the theoretical reviewed issues of sustainable logistics, this part of the paper looks at additional findings of a pre-feasibility study (tools, numbers and data were developed and investigated in books, articles, journals/newspapers and websites covering various topics of logistics which were collected in a pre-feasibility study during the project *FLAVIA* - Logistikum Steyr, University Pardubice, 2012) combined with expert interviews during a workshop setting where logistics service providers, shippers and authorities came together and discussed the findings from this literature review (pre-feasibility study). By comparing both designs (literature review, expert interviews) existing and future gaps from theory and industry hindering sustainable operation management within transport industry are identified. The identification of tools to make transport operations "green", as main task of the pre-feasibility study described, include opportunities in the section of technical, organizational, normative/legislative and transversal areas in order get a full picture about its key enablers. This paper focuses on the transversal points which refer mainly to training and information of staff. Critical success factors to realize the idea of enhancing sustainable transport procedures in the industry are directly linked to the willingness of companies and the society to change something. Additionally, knowledge of sustainable operations is often not concrete and information is not transparent given. This could lead to a fast, inconsiderate decision against a "greener" transportation solution or a more environmental friendly mode. To sum up, the availability of combined transport and the operative transport planning process were evaluated as one of the most important fields when talking about Green Logistics solutions (operational tools). Comments indicate that especially intermodal transport solutions are used by shippers when adequate transport offers (including pre and post run), created by logistic service providers which match the shippers needs, are available. With the help of a web based IT solution, public authorities, logistics associations, operators, infrastructure providers and scientific institutions shall be able to analyze intermodal transport procedures across Europe. To make intermodal transport more competitive to road haulage it is important to provide a one-stop-shop to simplify the access to intermodal transport. One problem is seen in the isolation of information in the different groups of market actors. Applications for planning, management and control/monitoring of whole intermodal transport chains are needed by the transport sector. Based on these needs a great focus has to be set on the analysis of existing applications which provide information for intermodal transport planning. In the following existing tools will be shortly described (most of them have been developed within research projects) (Michalk et al., 2011).

## 3. IT tools and information

The descriptions provided below are based on a survey conducted by Meimbresse (2013) which summarizes existing solutions on the market. Product reports and brochures as well as internet documents give an impression what kind of intermodal information & routing tools exist.

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