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Facilitating the selection of city logistics measures through a concrete measures package: A generic approach

Konstantinos Papoutsis*, Eftihia Nathanail

University of Thessaly, Pedion Areos, Volos, 38334, Greece

Abstract

Urban areas represent great challenges for freight transport in terms of level of service, and economic and environmental impacts. Public authorities do not have good track record in selecting the proper measures to address city logistics issues. The paper aims at shaping a city logistics measures' package through the identification of the most common impact areas of widely implemented measures and the correlation of impact areas with sets of measures. This research activity will contribute in better understanding of city logistics, providing an insight of the policies that are mostly used in order to achieve the goals set.

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1. Introduction

Urban freight transport is key enabler in the urban economy. However, urban road freight transport significantly affects the livability in the urban context. Economic and social drivers, such as the growing urban population and employment combined with urbanization, have led to enhanced consumption. Statistical data of the urbanization trends are indicative: 73% of Europeans already live in cities and the level of urbanization is expected to reach 82% by 2050. The 85% of the European GDP is produced within urban areas (European Commission, 2013).

As the urban freight transport is intertwined primarily with the distribution of high volume of goods at the 'last-mile' of a supply chain, many deliveries are organized in small parts and distributed in frequent trips, resulting in many vehicle kilometres and high GHG (greenhouse gas) emissions (European Communities, 2006). Researchers have argued that City Logistics could be the solution to the significant impacts of the freight transport on urban environment (Ruske, 1994; Taniguchi and van der Heijden, 2000). The 'City Logistics' concept was first defined by Taniguchi as "the process for totally optimizing the logistics and transport activities by private companies with the

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support of advanced information systems in urban areas considering the traffic environment, its congestion, safety and energy savings within the framework of a market economy" (Taniguchi et al., 1999). 'City Logistics' as a process is also involved in all kind of goods distribution in urban areas and all the activities in which it is implied and that can optimize.

The problems that are caused by inefficient freight distribution as well as the contribution of the urban goods transport to urban economy and environment are depicted below: the vehicle-kilometers that are performed by road transport modes account for 10–18% of the total vehicle-kilometers that are covered within the urban areas and almost 40% of air emissions and noise are attributable to urban distribution fleets (Korver et al., 2012). Furthermore, transport operations that are related to urban distribution hold almost 20% of total energy consumption of transport operations in cities. As far as the economy is concerned, 'last-mile' operations represent 28% of total transport costs in a supply chain (door-to-door services).

In order to mitigate these impacts, a range of goals has been set towards shifting to a more sustainable urban environment. In the Transport White Paper of the European Commission, the 'achievement of CO2-free city logistics by 2030' is laid down as an intermediate goal towards a 60% reduction in GHG emissions (European Commission, 2011). The European Policy in the field of city logistics is to promote integration of city logistics policies into the strategic urban planning and regional economic policy, to foster the development of business synergies and clusters between the core stakeholders, to establish information sharing mechanisms and provision of data exchange between collaborative parties (ICT and ITS may provide innovative solutions in this field), and to efficiently manage the demand through the adoption of suitable measures.

The main objective of this paper is to improve the knowledge in the field of city logistics by shaping a city logistics measures' package through the identification of the most common impact areas of widely implemented city logistics measures and the correlation of core impact areas with sets of measures in order to facilitate policy-makers to select the most tailored solutions in accordance with the objectives set and the impacts that are expected.

The methodology towards achieving the objective unfolds in four basic steps. First, a review of city logistics measures takes place, identifying the most common policies and tools that are used. These measures are separated in different clusters in accordance with their core concept. However, the term "types of measures" that is referred hereinafter implies the way (channel) that a measure is implemented (e.g. 'technological' means that a technological equipment is needed in order to implement the measure, 'regulatory' means that special regulations or legal framework are required in order to introduce the necessary regulatory and operational environment so that stakeholders are legally permitted to run the operational model described in the measure, etc.).

Then, the key impacts of city logistics measures are shaped with respect to the principal sustainability impact categories (economy, environment, society, transport service). The third step includes a review of the impacts of measures implemented in specific areas, identifying good and bad practices applied in real-world. The outcome of this step is presented as qualitative information. The final step entails the cross-examination of core impact areas and measures that are analyzed in the previous methodological steps. This research activity is expected to enable testing of certain city logistics measures by policy-makers, according to the expected impacts they want to achieve and the initial goals set.

2. City logistics measures and clustering

National governments and city authorities are usually lagging behind regarding the effectiveness in selecting the proper policies and measures to address city logistics issues. This gap basically relies on the fact that policy-makers have tended to view freight transport as a problem rather than as an essential activity that they have to serve. Also, these measures have not undergone systematic assessment prior to their implementation, leading to being sometimes unsuccessful or producing unexpected effects that do not correspond to the initial objectives set. It is clear that much more knowledge is needed pertaining to the specific impact areas of each logistics policy that is implemented in the urban contexts.

First of all, a review should be made of the policies and measures that are applied in the urban area in order to deal with the city logistics issues that arise. In order to present the measures and policies that are applied to city logistics, the key players should be identified. These are (Lidasan, 2011):