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# **Decision-making tools and procedures for City Logistics**

## **An introduction to the Special Issue on Decision Support for Urban Logistics**

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City logistics – oriented research set off in Europe some fifteen years ago, supported by the funding efforts of the European Commission, who perceived that, among all the different links in a transport chain that included private cars, mass transit systems, intermodal transportation and long-haul freight transport, there was one devoted to the last-mile delivery of goods in the inner core of cities which also presented opportunities for optimization, both from a social and economic perspective. The special morphology of European cities, with narrow streets and historical centres which had to be preserved in many cases as world heritage sites, contributed to this interest, but the problems of urban deliveries also had to be faced in other lively and congested cities around the globe, from Japan to America or Australia, and thus the first City Logistics Conference took place in Cairns (Australia) in 1999, setting the basis for 21st Century research and developments.

The collection of papers included in this special issue can be viewed then as a result of that research and development. They address the key aspects of city logistics actions and decision-making processes, namely the ex-ante evaluation and estimation of results, the pilot tests of promising initiatives and the problems related to full-scale implementations. Of course, they comprise only a small fraction of the work currently in progress in European (and worldwide) research centres, consultancy firms, transport operators and municipalities, but they provide a clear view of the present state of city logistics, where it comes from and where it is aiming to go in the near future. Apart from the specific issues addressed here, the interested reader can gain a much deeper insight on these issues by referring to the reference list of all the papers included here.

The first classification heading of this special issue should thus be assigned to ex-ante evaluation tools and procedures, including modelling and simulation developments. In fact, the papers included here cover the main different computational approaches to city logistics modelling as a decision-making tool, all of them applied to specific case

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studies in different European cities. For instance, the microscopic approach, oriented to individual delivery routes and based on VRP schemes, is represented in the paper “Multi-Echelon Distribution Systems in City Logistics”, by Simona Mancini (2013), which covers the synchronization of different transportation links in transshipment nodes like freight villages or urban distribution centres. J.H.R. van Duin, L.A. Tavasszy and H.J. Quak (2013) also apply a VRP-based modelling approach to move a step forward in the use of electric vehicles for city distribution in Amsterdam with “Towards E(lectric)-urban freight: first promising steps in the electric vehicle revolution”. Two more papers, the one by Guido Gentile and Daniele Vigo (2013) on “Movement generation and trip distribution for freight demand modelling applied to city logistics” and the one by Christian Ambrosini, Jesus Gonzalez-Feliu and Florence Toilier (2013) entitled “A design methodology for scenario-analysis in urban freight modelling”, address macroscopic simulation aimed at representing aggregate delivery vehicle movements on an urban or metropolitan scale, formulating specifically designed demand models and vehicle flow correlations for Emilia-Romagna and Lyon. Finally, Jesús Muñuzuri, Pablo Cortés, Luis Onieva and José Guadix (2013) present their work on “Simulating the effects of pedestrianisation on urban freight deliveries”, which applies an intermediate approach, using a general-purpose simulation tool to represent delivery practices and to evaluate the effect of different policies in an urban section containing several commercially dense streets in the city of Seville.

The second heading corresponds to papers describing the results of actually pilot-testing or implementing promising initiatives in specific urban areas. The paper by Maria Lindholm (2013), “Urban freight transport from a local authority perspective – a literature review”, introduces this concept by describing the steps that need to be taken by local authorities in order to ensure the successful implementation of city logistics projects. Many such initiatives have been tested in Europe over the last decade supported by EU funds, and the ones included here represent a sample of the types of conclusions that can be drawn from those tests. For instance, Milena Janjevic, Philip Kaminsky and Alassane Ballé Ndiaye (2013) focus on “Downscaling the consolidation of goods – state of the art and transferability of micro-consolidation initiatives”, discussing the implications of establishing cooperation schemes among carriers in order to improve load factors in inner city cores, through the analysis of several European case studies, and Niklas Arvidsson and Michael Browne (2013) present “A review of the success and failure of tram systems to carry urban freight: the implications for a low emission intermodal solution using electric vehicles on trams”, probing on the intricate field of rail-based urban deliveries in Gothenburg. Finally, with respect to the scenario arising when the pilot test is over, the EU funds cease to arrive and the municipality wants to continue implementing the initiative, the paper by Jesus Gonzalez-Feliu, Bruno Faivre d’Arcier and Pierre Basck (2013) addresses “Urban logistics solutions and financing mechanisms: a scenario assessment analysis”.

The European approach to city logistics can also be sensed in most of the articles incorporated into this special issue. The Transportation Research Board and the European Commission recently organized the first EU-US Transportation Research Symposium, focused on establishing a Trans-Atlantic perspective on city logistics research, and two main conclusions could be drawn from it. In the first place, city logistics comprises a totally different environment in Europe, where it deals with micro

deliveries into dense, historical cores of urban areas, and in America, where it is rather concerned with metropolitan areas and local and passing-through highways. Moreover, research in the U.S. has been oriented towards facilitating adequate business operations against congestion and policy restrictions, while Europe has in fact been more focused on designing the appropriate restrictions and policies to restrict the free movement of vehicles and attain a more sustainable and socially efficient delivery system. The result of these different conceptions is that both sides have a lot to learn from each other's initiatives and insights. An example from the technological and region-based projects favored in the US is provided by the paper presented for this special issue by Katherine E. Bell, Sirisha M. Kothuri and Miguel A. Figliozzi (2013) on "Emission model sensitivity analysis: the value of smart phone weight-mile tax truck data", which describes automated data collection on truck movement as a tool for regional policy decision-making.

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