European Transport \ Trasporti Europei n. 28 (2004): 1-5

Special issue – City Logistics

Introduction

During the last decades freight transport movements have increased enormously. The EU White paper "European transport policy for 2010: time to decide" forecasts a 38% increase in the demand for goods transport by 2010, and predicts that heavy goods traffic alone will increase by nearly 50% over its 1998 levels (OECD, 2003). Currently, the number of vehicles used for freight deliveries in European urban areas represent the 10% of all the vehicles circulating in the cities.

The increasing trend of urban freight traffic has substantially affected the quality of life of the urban residents, who presently represent more than 75% of the European population (www.ue-portal.net), and who are projected to rise up to 83% by 2020 (OECD, 2001). Noise, pollution, congestion, accidents, use of non-renewable fossil fuel[1], loss of greenfield sites and open spaces as a result of transport infrastructure development, production of waste products, such as tyres, oil and other materials increase as traffic rises. Historical city centres are damaged by pollution, tourist industries are threatened, while the distribution of goods and services in the urban areas is getting more and more inefficient. The external costs caused by freight transport in Italian urban areas are estimated to be equal to 7 billions of Euros, that is 23% of the total amount of externalities generated by urban traffic (TRT - Federtrasporto, 2002).

National and city governments have been actively trying to analyse this growing problem by financing research programmes aimed at exploring possible solutions. Some of these programmes studied, for example, which are the most efficient delivery methods that should be implemented in different urban areas. Examples of this kind of research programs are: LEAN whose aim was the development and demonstration of new concepts for goods distribution within cities; BESTUFS which identifies and describes the criteria to be used in order to improve the movement of goods; IDIOMA which shows the potential of optimisation of goods distribution in five urban areas within Europe; COST 321 which studies innovative measures to improve environmental impacts of freight transport in urban areas; and SOFTICE which identifies the cost of freight transport within Europe with regard to harmonisation in Europe and internalisation of external cost.

Other research programmes tried to develop optimal exploitation of the road network. For instance, DIRECT analyses transport-data sharing structures for traffic management within cities.

A third group of research programmes studied the possibility of creating efficient transhipment areas: FV-2000 analyses and evaluates several freight villages in Europe; FREYA aims at facilitating the access of SME's to intermodal transport; IDIOMA studies city delivery centres in five urban areas in Europe; INFREDAT investigates the

[1] The French National Research estimated that goods transport contributes to around 40% of total urban transport energy consumption.

whole transport chain of intermodal transport, especially the requirements of data flows; and REFORM analyses and evaluates the effects of freight platforms regarding the urban traffic.

Most of these research programmes have demonstrated that the organization of the urban freight transport activities and the coordination of the numerous stakeholders involved are among the most critical aspects characterizing the inefficiencies of the urban freight mobility systems. The decision making process related to the transport process as a whole is highly fragmented. The supplier produces the good, the local transport firm moves the good from the supplier to the forwarding agent, the forwarding agent organizes the freight transport up to the receiver site, the long distance transport firm covers the long distance transport operations, the receiving local transport firm moves the good from the long distance transport firm site to the receiver, the receiver buys the good. Most inefficiencies characterizing the freight mobility system in the urban areas are caused by the fact that each segment of the transport chain is individually organized by each stakeholder independently of the goals and, even more importantly, of the logistic problems faced by the others.

Local authorities tried to enhance the coordination and the re-organization processes adopting various policies. These policies differ both in terms of their interference with the normal interaction process between the demand and the supply side of the market and in terms of their acceptability by the actors directly or indirectly affected by them.
The "softest" policies, in term of interference with the market forces, used are those aimed at creating a widespread knowledge of the regulations and of the characteristics of the freight mobility system of each urban area by: surveying traffic conditions in term of travel time on the road network and providing real-time travel data on estimated time for different routes; supplying booking systems for curb loading/unloading spaces; providing the inner city areas with variable message signs informing on time window limits and fees to be paid for the access of the restricted traffic area, or on the urban lane sharing system, etc..

A second category of policies aim at enhancing the information diffusion among the transport chain actors. This goal have been obtained both via telematic solutions or the organization of meeting (or consultation programmes). Examples of the former are: Geographical Information Systems; Global Positioning System; Logistical Matching Systems which use the internet to perform e-commerce and match the shipper demand and the supply of carriers who offer vacant space in their trucks to transport additional goods; Intelligent Fleet Management System controlling the vehicle operations and allowing track and trace of packages, cases and containers. Meeting take place among representatives of freight industry, local authorities and local business community, in order to devise individually tailored solutions appropriate to the peculiar characteristics of each urban area such as driver information measures, delivery/loading facilities, enforcement measures, etc.

A third category of policies are concerned with the creation of an (public) agency aimed at centrally coordinating the activities carried out by each actor of the freight transport chain in the urban area.

A forth category of policies comprise both regulation and fiscal policies with the aim of indirectly influencing the reorganization of the freight transport chain. Examples of regulation are the traffic and access restrictions within some areas of the downtown, generally called Restricted Traffic Areas, or RTA, time windows limiting the access to the RTA, varying accordingly to weight, length, width, environmental impact of the

vehicle and to the cargo type, freight dedicated lines, curb spaces for the loading/unloading operations, etc. Fiscal measures consist in licensing fees for the access to the RTA, road pricing, parking and loading/unloading facilities fees, etc.

A fifth category of policies aims at creating urban distribution centres where the freight consolidation process can take place before the goods are delivered in the downtown. It should be noted that this kind of solution is among the most invasive and controversial one, raising unanswered questions like: which of the involved actors should manage the centre? Should it be a private or a public facility? Should the access be allowed to any kind of vehicle and transport firm, or should it be restricted to some special categories (for example those transport firms using to low impact vehicles or demonstrating some competitive advantage if compared to their competitors)? Should the centre be financed by the local authorities, or by the fees paid by the users?

The aim of this special issue is to show how each country, and each city have chosen to implement a mix of policies that better suited their mobility problems, deeply influenced by their geo-morphological characteristics, by their architectural, urban and territorial organization, their cultural peculiarities such as a different inclination to cooperative behaviour, and their priorities in terms of goals to be achieved. Those differences justify the diversity of the solutions adopted by the local authorities at the European level.

Zunder and Ibanez - in their paper entitled "Urban freight logistics in the European Union" - summarize and critically discuss some of the research programs financed by the UE in order to improve the freight mobility in the European urban areas. they underline the international characteristic of the problems associated with urban freight transport and the importance of involving both private (shippers, receivers, transport service provides), and public (city administration and policy enforcing agencies, community interest groups, urban, transport and services planners) actors in order to assure a higher acceptability of the policy mix to be implemented in each of the involved cities. They focus on the successful (Berlin and Stockholm) and unsuccessful (only fifteen out of eighty projects implemented in Germany in 1985 have been able to survive till 2002) examples of distribution centres implemented over Europe. They underline the main drawbacks of this kind of measure - the fact that if the centre is managed by a public agency allowing equal access to all transport supplier, that it removes the competitive advantage distinguishing the actors involved in the distribution chain, and that it causes an increase of the delivery costs, both in monetary and time terms, due to the added transhipment operations.

Some papers included in this special issue on city logistics describe the results of other research experiences carried out in some European or American urban areas. The paper by Frosini, Huntingford and Ambrosino entitled "Urban mobility and freight distribution service: best practices and lessons learnt in the Merope interreg IIIB project" is focused on the Merope project involving 14 cities of the Western Mediterranean area. The paper describes how the telematic instruments can help freight mobility and logistics management in urban and metropolitan areas through the description of best practices and the problems encountered, and lessons learnt from the pilot projects and the feasibility studies carried out. It underlines that, in order to successfully implement any kind of innovation concerning the freight mobility system, the project: should be based on strong political support to be gained with frequent meeting and seminars involving administrative authorities, local community and the private sector); should encounter real territorial needs; and should be economically

sustainable with financial support by the public sector possibly limited to the initial phases of its implementation, and with the creation of public/private partnership in the medium-long run.

The paper by Frosini, Huntingford and Ambrosino entitled "Multi-service agency for the integrated management of mobility and of accessibility to transport service" describes the Agata project aimed at developing a multi-service agency coordinating the transport and mobility services in urban and rural areas via information and communication technologies. The paper presents: the evaluation techniques used comprising the development of realization indicators, results indicators and impact indicators; the expected results and the potentialities of the initiatives carried out within the project, that started in July 2004 and will end by June 2006. Among the most critical issues emerged by the experiences already carried out it appears that an in-depth analysis of the local needs and of the geographical, economic, social, political and infrastructural characteristics of the involved areas are the conditions *sine qua non* to ensure the success of any project based on the creation of a coordinating agency.

The paper by Bonacchi, Benini and Mattesini entitled "The Florence transit point: a feasibility study" presents the potentialities and the economic and environmental sustainability of the implementation of an urban distribution centre for the city of Florence. One of the most interesting issues emerging from the paper is the analysis of the problems related to the management and to regulation of this structure. The solution proposed by the authors is to separate the planning and controlling activities from the management activities of the centre. A public agency owning the infrastructure should be created in order to carry on the first group of activities, while a public call should be published in order to choose a private firm in charge for the second group of activities. The second important suggestion resulting from the paper is the need to accurately analyse the economic sustainability of the infrastructures under different scenarios both in terms of urban freight mobility regulation and in terms of fee levels to be paid by the users of the centre.

Finally, the paper by Morris entitled "The impact of inadequate off-loading facilities in commercial office buildings upon freight efficiency and security in urban areas" analyses some specific issues characterizing the New York City's central business district: that is the security and safety problems caused by the insufficient off-loading areas of the commercial office buildings localized in that area. The paper suggests some recommendations in order to solve these problems underlining, in particular, the importance of appropriately planning the loading/unloading facilities in highly congested city centres, and of developing retrofitting strategies at existing loading docks.

The last two papers included in this special issue describe the analytical instruments that can be used to study the weaknesses and the peculiarities of each urban context before planning any kind of measure aimed at regulating their freight mobility system.

A review of measures, models, and tools developed at urban level to simulate the freight demand is presented in the paper by Russo and Comi entitled "A modelling system to link end-consumers and distribution logistics". The freight measures reviewed by the authors are classified into four categories: unit of transport, infrastructure, telematics, and management. The urban freight models described in the paper include truck trip estimation models, multi-step models, attraction/generation models, combined equilibrium models of both passengers and freight movements, and they can be classified as commodity-based versus truck-based models, behavioural models (divided

into aggregate, disaggregate, international, intercity and urban models), macro-economic versus modal split versus route choice models. The simulation tools of the freight system reviewed by Russo and Comi are those actually used in France, the Netherlands, and Germany. The authors underline the necessity to develop a general model based on the measures and on the tools reviewed and able to jointly deal with the passengers and freight mobility, as they use the same congestible road network. The authors propose a two-level model responding to these needs.

The last paper of the issue is by Vleugel entitled "Modelling goods city distribution in the Netherlands". In the paper a method for data collection, analysis and modelling of the urban freight system is described, underling the importance of specifically considering the relationships between transport demand, traffic, economic, social and environmental variables. The author describes the factors that have prevented the data collection and the implementation of a quantitative model in his home country, and illustrates the explicative power (in terms of indicative assessment, factor analysis and sensitivity analysis) of the qualitative model that can be used in turn. Vleugel strongly recommends to perform at least a qualitative analysis (via the qualitative model developed in the Netherland, or any other qualitative model better suiting the interested area) of all the possible effect generated by any intervention in the urban freight mobility system during the planning phase of the mobility policies. Finally he emphasises the importance of ameliorating the data collection and the database quality by fulfilling the databases gaps, making the datasets more dynamic, using information about logistic trends, improving the data about the small receivers in order to perform plausible quantitative analysis.

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References

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