Programme: **EESD-2001**

Key Action: **City of Tomorrow**

Task: **3.1**

PLUME

PLanning and Urban Mobility in Europe

Synthesis Report: Urban Freight Transport measures

Project Contract No: EVK4-CT-2002-20011

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1. OVERVIEW OF KEY FINDINGS FOR POLITICIANS

The aim of a sustainable distribution strategy must be to ensure that the future development of the distribution industry does not compromise the future needs of our society, economy and environment.

A sustainable distribution strategy should consider more than just the transport of goods from A to B. Therefore strategies have to encompass supply chain management or "logistics" as well as all modes of transport.(DfT 1998)

Road freight transport has increased dramatically in the past decades within the urban conglomeration, and prognoses for the future indicates that the growth has not come to an end. For example in the White Paper (Commission of the European Communities 2001) they estimate a growth of 50% for long distance road freight over the period 1998 to 2010 if nothing is done. By pushing intermodal transport and non road modes this growth can be reduced to 38%.

The negative aspects of urban freight growth are most visible in all European urban areas: congestion to which lorries and small delivery vehicles contribute; noise emissions, emission of pollutants and accidents are problems that decrease the quality of the urban environment substantially.

Driving factors for freight growth are the liberalisation of the transport market and the progressive harmonisation of the regulatory environment created by the European Union; the internationalisation and globalisation of manufacturing and of trade and logistics; the consumers' increasing demand for customised and frequently changing product assortments. The resulting economy of scale on the production side and on the retail side (eg shopping centres) significantly increase the number of commuting trips and shopping trips made by private car and reinforce so the urban and suburban transport problems (e.g. a single supermarket delivery in an articulated lorry is carried away in 500 costumers' cars. Every Household consumes the equivalent of four lorry loads of goods per year. (UK data, ITS Leeds, Script of Freight Transport Planning and Management course)).

To mitigate the negative impacts of urban freight transport a series of instruments are suggested: Time windows and weight restrictions for deliveries; urban freight distribution centers; congestion charging; environmentally friendly vehicles; improvement of information and communication technologies (ICT), etc. Although most of the developments mentioned above have started only recently (roughly in the last decade), first results can yet be identified. Moreover, some first results seem very counterintuitive: instead of reducing congestion, some Urban Distribution Centers generate more freight vehicle movements than before. Therefore a successful implementation of instruments to deliver the desired effects has to be accompanied by appropriate adaptations of regulatory frameworks, too. For e.g., when local authorities impose time frames and weight restrictions they must prevent through adapted land use regulations the relocation of retail shops to the city or town outskirts in the long term.

Another major problem to develop strategies to reduce the burdens caused by freight transport successfully is the lack of data. EU-wide there exist no common scheme to collect data on urban freight transport (BESTUFS 2001a). And without an adequate monitoring methodology it is not possible to assess the impacts of a freight related policy objectively. There exist some local attempts to collect data (ECMT 1997) but these data collection exercises are not sufficient and are therefore only for limited use for EU and nation wide decision making processes. This lack of information is also reflected in the lack of common policy and strategy documents on regional, national and EU level (LT Consultant Ltd (FI) and Buck Consultants International BV (NL) 2002).

Several EU funded projects and initiatives are presently ongoing or recently finished. In these projects different solutions were/are under scrutiny and will be condensed to "Best Practices" to address the present and future urban freight problems.

Best Practise given in the "Good Practice in Freight Transport" guide (European Commission 2000) are for example: A German chemical company, has reorganised its distribution system to take advantage of rail. Distribution of washing powders and detergents now goes via nine regional centres throughout Germany and these are located near the customers. These centres are supplied by rail cars loaded at the end of the production line. Some 12 % of all products are still delivered directly by lorry from the production lines. This new structure offers an annual saving of 22 000 lorry movements and each vehicle covers an average of 300 km (excluding empty runs). These lorries have been replaced by 13500 rail cars.

Another example showing the effects of city logistics is Freiburg (Germany): here the scheme has reduced total journey times from 566 hours to 168 hours (per month), the monthly number of truck operations from 440 to 295 (a 33 % reduction) and the time spent by lorries in the city from 612 hours to 317 hours (per month). The number of customers supplied or shipments made has remained the same. This has reduced the costs of all the companies involved and increased the amount of work that can be done by each vehicle/driver combination.

Inside PLUME the CITY FREIGHT project is a source for information concerning urban freight and urban freight solutions. Other initiatives where information can be found are BESTUFS (Best Urban Freight Solutions); EUROSCOPE (Efficient urban transport operation services co-operation of port cities in Europe: Traveler information, logistical information and communication, traffic management); IMAURO (Integrated Model for the Analysis of Urban Route Optimisation); PDS (Forum for Physical distribution in Urban Areas); French national research program on urban freight (Enquêtes quantitatives TMV); SURFF (Sustainable Urban and Regional Freight Flows); UFMB (Urban Freight Management in Barcelona); Euro-CASE (The European Council of Applied Sciences and Logistics) study on freight logistics and transport systems in Europe.

It must be noted that the overall purpose of logistics and freight transport seems to be the satisfaction of the global transport demand. The question how much goods transport is necessary for a specific (sustainable) quality of life and how to influence/steer/reduce the global freight transport demand is not asked at all.

2. WHAT THE THEORY TELLS US

The aim of a sustainable distribution strategy must be to ensure that the future development of the distribution industry does not compromise the future needs of our society, economy and environment.

A sustainable distribution strategy should consider more than just the transport of goods from A to B. Therefore strategies have to encompass supply chain management or "logistics" as well as all modes of transport(DfT 1998).

To achieve these objectives a series of instruments are suggested by transport planners, transport economists, shippers and other stakeholders. These measures are:

- Legislative and organizational measures — weight limits, time windows, etc
- Infrastructural measures (see also Synthesis Report (SR) Infrastructure provision) — Urban freight centres, Underground solutions, designed parking areas
- Pricing measures (see also SR on Pricing measures) — Road tax, distance based toll systems, congestion charging, etc.
- Vehicle technology see also SR on Vehicle technology) — Improvement of vehicle efficiency, hybrid vehicles, E-vehicles, etc.
- Information technology (see also SR on Information measures) — GPS, tacking systems, route planning software, EDI etc.

On the other side there exist trends in the present freight market, which prevent or even counteract the objective of a sustainable freight transport in an urban and interurban context. These future trends are:

2.1 Future Trends in Logistics (from CITY FREIGHT project)

The world of freight transport and (city) logistics has a very dynamic nature. Over the last decades, the industry has been changing rapidly; in close conjunction to many changes in the economic activities generating and influencing goods transport flows. Freight transport has evolved into logistics as it nowadays involves much more than the mere movement of goods from one place to another.

Trends play a role for all the actors involved. These actors are numerous and heterogeneous: transport (haulage) companies and logistic service providers (LSPs), shippers, suppliers and trade partners, but also governments and the society as a whole.

2.2 High-profile Consumer Demands Lead to Flexibility in Production and Distribution

To ensure economic growth based on consumption marketing experts generate demand for more varied and tailored products. Following from that customers are nowadays demanding a greater product variety / assortment, more and tailored value-added services, custom / tailored products, shorter response times and greater accuracy and support throughout the product's life cycle. Companies try to balance the opposing strategies of achieving economies of scale by mass production techniques in spite of bowing to the demand of individualised products. Accordingly, more agile and flexible production and distribution structures are developed.

2.3 Internationalisation

The disappearance of the EU internal borders and the creation of the single European market (with one single currency) have turned out to be one of the most important trends for the logistic sector in the last 10 years. In future Europe's economic core zone (the so-called Blue Banana; running from London via the Netherlands, Germany, Northern France and Switzerland towards Northern Italy) is expanding. These areas of new economic activity are Eastern European countries, Ireland and Spain. Additionally the Free Trade Organisations like the NAFTA and APEC also led to an unprecedented growth in other parts of the world and a major shift of both investments as well as labour.

Production facilities as well as distribution centres are being concentrated in just a few regions or countries and used to produce or distribute for the greater part of the European market. This leads a ***concentration of production*** and thus results in greater transport distances.

2.4 Supply Chain Integration

Collaboration of companies along the supply chain becomes a key to fulfilment acceleration and of course also is a major response to the trend to outsource non-core activities. As a matter of fact, companies have to adapt their supply chain processes to a greater extent, creating actual supply chain networks. On the demand side, this development is often driven by retailers.

2.5 Outsourcing of Non-Core Activities

Another dominant business trend is outsourcing. Companies are concentrating their resources on core activities and outsourcing ancillary functions, like logistics.

2.6 Information Technology Advancement

Closely linked to all of the above drivers is the advancement in ICT in daily life and business.

EDI (Electronic Data Interchange) is used to communicate and manage orders, deliveries, invoices and payments, both within a company and between the company and its trading partners. EDI allows business partners to exchange information with great speed and accuracy. This easy and fast communication amended existing supply chains and enabled new business models and logistics concepts.

2.7 Logistics Trends and City Distribution

The increasing use of information and communications technology (ICT) based solutions in logistics will ease the consolidation of cargoes and in that sense decrease the number of deliveries in urban areas. On the other hand, the ICT will make possible customer tailored (delivery time tailored and product tailored) solutions that can lead to an increase of deliveries and smaller delivery lots.

The e-trade still mainly is trade between companies (B2B). The biggest impacts on city distribution will be generated by business to consumer trade (B2C). The increase of B2C e-trade requires new logistics arrangements also in the city centres, such as space for reception boxes, terminals concentrated on providing logistics operations tailored to the needs of e-trade as well as new traffic arrangements and information services. New arrangements will be a relevant problem especially in the old city centres with narrow streets.

Presently there is a trend that in future shopping centres and supermarkets will more and more be established in the outskirts of towns and cities. This will decrease cargo traffic in the centre but, on the other hand, increase passenger car traffic and deliveries alongside city centres. Shopping centres with many different shops will also increase the number of deliveries due to lack of logistics co-operation between retailers.

The overall effect of the trends listed above on a city transport system seems to be an increased transport demand. Concentration, liberalisation, customisation, outsourcing, e-commerce (B2B and B2C) will increase the amount of deliveries, and decrease the size of a single delivery. More veh-km related to goods transport will be demanded either by lorries, Light goods vehicles and private cars.

2.8 Problems

Depending on the source used different sets of key actors in the freight transport system are involved. In (Taniguchi et al. 2001) four groups of key actors are identified:

- Shippers (manufacturers, wholesalers, retailers)
- Freight carriers (transporters, warehouse companies)
- Residents (consumers)
- Administrators (national, state and city level)

It is obvious that all of these key actors follow different goals and have therefore different problem views, too. By and large local authorities and residents share some of their problem views regarding externalities like accidents, congestion, noise, air pollution, vibrations, etc caused by lorries and small delivery vehicles. These impacts

of road (freight) transport are felt to reduce the quality of life and the urban environment substantially. In the DETR report on Lorry Track & Environmental Costs (NERA et al. 2000) it was tried to valuate these negative impacts in money terms to calculate the freight related road track costs (road maintenance, bridges) and environmental costs (Atmospheric Emissions, Health-impacts, Non-health effects, Climate change, Noise).

Shippers and Freight carriers have a completely different point of view. By definition members of these two groups have the goal to deliver/receive goods as cheap as possible to maximize their own profits within a given regulatory framework and a given transport infrastructure. Their priorities are therefore to remove costly obstacles, which hinder them to deliver faster and cheaper without taking into consideration externalities. Therefore their list of problems beside others (selected items taken from Annex 1 City Freight D1 (LT Consultant Ltd (FI) and Buck Consultants International BV (NL) 2002) looks like:

- Congestion on Ring Roads
- Parking during loading / unloading operations
- Access restrictions
- Long term parking for lorries
- Timing of traffic lights
- Consignees' poor unloading facilities
- Historical town centre with narrow streets and obstacles
- Lack of parking for lorries
- Fuel tax protests
- Areas not wide enough for larger freight vehicles
- Changes required due to the working time directive

Similar issues are listed in the article from V. Sustrate (ECMT 1997): Time, Accessibility, Disposal of packaging, loading and unloading in he city, parking problems, delivery in pedestrian zones, the interface at the ramp, and the possibilities of co-operation.

Following from these different positions and problem views and the number of stakeholders involved it is obvious that decision making is a difficult task. And together with the very dynamic nature of the freight system as described in section 2.1 decision making and policy implementation becomes nearly impossible.

One important first step forward ease these barriers would be a sound database, which describes the existing freight transport system in fuller detail. Unfortunately there is a lack of empirical data availability concerning urban freight flows. Beside others one reason for this is the still ongoing scientific debate what belongs to city freight transport (Allen et al. 2000). In their paper they used the following very broad definition:

1. all types and sizes of goods vehicles (light vans as well as heavy goods vehicles) and other motorised road vehicles (including cars, mopeds etc.) used for goods collections and deliveries at premises in the urban area;

2. all types of goods vehicle movements to and from urban premises including goods transfers between premises, ancillary goods deliveries to urban premises (such as stationery, plastic bags, display material, light bulbs, etc.), money collections and deliveries, waste collections and home deliveries made from urban premises to customers;
3. service vehicle trips and other vehicle trips for commercial purposes which are essential to the functioning of urban premises.

Using this broad definition of urban freight transport it is obvious that data availability is poor. To overcome this lack goods transport volumes and shares of the total traffic have to be estimated by traffic counts, (computer based) models, interviews and estimates based on data available in local statistical figures: population, economic activity, number and size of outlets, location of activities, number and size of vehicles etc.

Research carried out in BESTUFS confirms this lack of data availability for urban freight transport (BESTUFS 2001a). There they recommend a minimum set of data which should be collected over time. This would enable to monitor freight transport in cities and the assessment of the successfulness of freight related policies. Additionally it could be used for a more accurate freight transport demand forecast and supports so decision-making processes.

3. WHAT MODEL RESULTS TELL US

Within the LUTR projects a series of transport models and land use transport models were used (PROSPECTS, PROPOLIS, SUTRA,…). In none of them freight transport played a major role. In the CITY FREIGHT project, which looks particularly on freight transport, a comprehensive review of existing inter or intra urban freight models (STRATEC S.A. (BE) 2003) were carried out. Two additional reports where freight models were reviewed are the reports "Review of Freight Modelling B1 – review of GB Freight models" (ME&P et al. 2002a) and the "Report B2 – review of Models in Continental Europe and Elswhere" (ME&P et al. 2002b). All these reports together provide a comprehensive overview of existing freight transport models within Europe and the United States.

Generally, freight transport models are classified by geographic levels (international, national, regional and urban). Most of the models are based on economic input/output models to forecast freight transport demand. The mode choices are based on generalised transport costs per mode and use multinomial choice models (STREAMS, SCENES, NEAC, etc…). Modes taken into consideration are road, rail, air, inland waterways, shipping, pipelines and intermodal networks (STREAMS).

Unlike the situation in passenger transport, most freight transport models are specified at the national or international level. Only a few freight transport models have been developed to cover a city or a city together with the surrounding functionally integrated region. This is partly due to the greater importance of longer trip distances in freight transport, but also to the non-availability of freight model input data at the finer spatial levels. In particular sectoral input-output and trade data is, almost as a rule, not available for zones within a conurbation, but only for much bigger zones. In many urban models, freight is modelled in a simplistic fashion compared to the passenger models. The urban freight forecasts are used as an add-on to existing passenger models.

Again it must be mentioned that due to the lack of statistical freight data the set up and calibration of freight models in general is very difficult. Therefore freight models on inter respective intra urban level are normally set up to answer a particular question, like impacts of a new ring road, etc. Regularly updates of the model are therefore not carried out and so their usefulness vanishes rapidly over time.

The report "Review of Freight Modelling" lists urban/regional freight models for Amsterdam, Stockholm, Copenhagen and Hamburg.

To give you an idea the Amsterdam model for example was developed to identify freight flows within the city area to support the accuracy of the existing passenger model. The Stockholm model is based on telephone survey data and forecasts freight transport within the city conurbation. The Copenhagen model was used to forecast the impacts of a new infrastructure in combination with a pricing regime. The Hamburg model was/is used again as an add-on to the existing passenger model.

4. WHAT EMPIRICAL EVIDENCE AND CASE STUDIES TELL US

4.1 Case Study Results

In this chapter we have to wait for results of the CITY FREIGHT Project. In advance, in CITY FREIGHT project it is planned to evaluate a series of city freight initiatives regarding their effectiveness to reach the objectives of sustainable urban freight transport as set out before. These initiatives are geographically spread over 7 EU countries and vary from:

- Restriction of heavy traffic in city centres,
- Prohibition of goods vehicles over 3.5 tonnes in inner city except from 6 to 7.30 am,
- Regional tuning of access (time) restriction of various municipalities
- Congestion charging
- Delivery bays for city centre distribution - configuration design and location in the border of the city centre
- Usage of environmentally friendly vehicles
- Usage of environmentally friendly vehicles for the last part of logistics chain (from delivery bay to the city centre establishments)
- etc, etc ….

This information should be available before the end of PLUME.

Other sources for best practices are the "Good Practice in freight transport report – A sourcebook" (European Commission 2000) where the good practices are categorised in 5 groups:

- Reducing impact of each mode
- Driver training and behaviour
- Switching to more environmentally modes
- Reducing the actual number of vehicle km
- City Logistics.

For all these categories real world examples are given and lists of action points for a successful implementation are provided, e.g. a British packaging company has reduced its fuel consumption by 18 % as a result of a combination of measures including a fuel performance related bonus and encouraging drivers to use gears properly, to switch off the engine when the vehicle is stationary and avoid heavy acceleration. These performance gains are also likely to have knock-on effects in reducing accident rates, reducing vehicle wear and tear and reducing repair and insurance bills.

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of all products are still delivered directly by lorry from the production lines. This new structure offers an annual saving of 22.000 lorry movements and each vehicle covers an average of 300 km (excluding empty runs). These lorries have been replaced by 13.500 rail cars.

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In the BESTUFS network a series of “Best Practise Handbooks” regarding freight transport are produced. In this Handbooks the following comprehensive list of themes are discussed:

- Statistical data, data acquisition and data analysis regarding urban freight transport
- City access, parking regulations and access time restrictions
- Enforcement support (e.g. by video control)
- Models and methods to deal with the complexity of urban freight transport chains and the
- shared responsibilities
- Improved management of urban road space and kerbside access
- Relationship and harmonization between urban, regional, national and European
- legislation
- Innovative urban freight transport ideas (e.g. via underground systems, pipelines, etc.)
- Intelligent transport systems (ITS), transport telematics applications and systems
- Public-private-partnerships (PPP) and stimulation e.g. via freight fora
- Enhanced signage and information systems (e.g. via variable message signs - VMS)
- E-commerce and distribution (home shopping)
- Vehicle technology and functionalities (e.g. low-emission vehicles) Land use,
- infrastructure and regulations planning
- Enhanced usage and maintenance of infrastructure (e.g. via a road map for transport vehicles)
- Inter-modal transfer facilities
- Integration of distribution centres and traffic management
- Goods transport efficiency, assessment and pricing (e.g. how to identify costs?)
- Infrastructural solutions (e.g. to improve loading and unloading)
- Further themes are:
- Freight centres
- Traffic planning and policy
- Weights and dimensions

- Transport units
- Unusual transport modes (bicycles, etc.)
- Tolls and heavy vehicle fees
- Door to door freight transport aspects
- Telematics for urban goods transport
- Environmentally friendly vehicles
- Cooperation of transport operators
- Interfaces between public and goods transport
- Environmental improvements
- Improvements for citizens/inhabitants
- Win-win situations

The themes above are addressed in specific chapters within the handbooks, followed by a list of existing implementations and good examples within Europe. Finally overall conclusions are drawn.

For example: Urban freight platforms (Handbook 3). In the Handbook they discussed examples from City Logistik Kassel (Germany); Tenjin Joint Distribution System in Fukuoka (Japan); Stadsdistributiecentrum Leiden BV (NL); Hammarby Sjöstad Stockholm (Sweden); Cyclone Couriers, York (UK); Cargo Center Graz CCG (Austria); LGZ Hochrhein, Rekingen (Zurich, Switzerland) and Heathrow Airport Consolidation Centre (London, UK).

They concluded that the locations of Urban Logistic Centres (UDCs) are crucial regarding the reduction of environmental impacts of freight delivery and economic viability of the UDC itself. The commitment and involvement of private companies is essential for a successful UDC. Not all UDCs were successful, therefore an adaptation of legal and organisational frameworks for UDCs have to be carried out. Fortunately existing trends regarding higher awareness of environmental concerns (which will lead to higher transport costs in the long run) could lead to a better cost benefit ratio of UDCs in future. For more detailed information please see the BESTUFS handbook.

Another example given in Handbook 2 (BESTUFS 2001b) is related to the issue of e-commerce. In the handbook case studies from a series of countries are introduced in detail (eg RelayStar (Benelux and UK); PickPoint AG (Germany, Austria, UK); Internet House (Berlin); Tower24 (Dortmund); Magasin de Quartier (Ile-de-France, Paris); Caddy-Home (Brussels and surroundings); LeShop (Switzerland); MIGROS-Shop (Switzerland); PAD Nanterre (Nanterre); and ServiceLog (Switzerland)).
They conclude that the e-commerce market still accounts for a very small market share compared to conventional retail business, but the online shopping market is growing very fast. It is heavily pushed by its actors, and so far economically sustainable example are scarce. In this high potential market efficient and reliable logistics are one of the main factors of success.

It is very likely that e-commerce will lead to an increase of urban freight transport and have to be tackled by known economic and regulatory instruments such as vehicle and time restrictions, unloading spaces, environmental taxes, etc.

They also recommend that further research should investigate the following topics:

- Analysis of the potential effects of e-commerce (particularly onlineshopping) and its different logistic solutions on urban transport (freight, business, shopping, leisure). As the whole issue turned out very complex and heterogeneous it is recommended to focus on particular solutions (as "generic types") and assess their effects (preferably quantitatively).
- Identification of chances and risks for urban areas due to e-commerce activities
- Elaboration of appropriate measures and framework conditions in order to increase the positive effects and to minimise the negative ones (e.g. road pricing, land use planning, infrastructure planning, etc.)

4.2 Policies (from CITY FREIGHT project)

A international policy review carried out in CITY FREIGHT concluded that on national level policies concerning goods transportation in cities are to a great extent been absent from national transport policy documents. Regulations are focused on general traffic issues and transport of dangerous and oversized goods. In many cases, general traffic regulations are supplemented with regional and local regulations in order to restrict goods vehicle traffic, unloading and loading activities and parking especially in the city centres. However, it is recognised that regional and local levels are more appropriate to regulated urban freight issues and may differ from city to city.

Taking urban freight transport into consideration in city planning only is a recent phenomenon**,** and it seems that the authorities all over Europe are still ignoring the requirements of city freight traffic while private passenger traffic is a more important concern. The following summary provides a concise overview of the findings:

- ***Only 2 City Freight countries have explicit urban freight policy documents: the French national program Goods in the City from 1993 and the British Sustainable Distribution: A Strategy from 1999.***
- ***The other countries only have general traffic/transport/freight policies and strategies, parts of which may concern urban freight issues.***
- ***At the local level, freight transport issues are more commonly included in traffic policies or research and development activities.***
- ***Traffic and freight policies and strategies discuss and set objectives for the following themes: environmental effects of traffic (emissions, noise and accidents), congestion, efficiency of transport, dialogue between private and public actors, land and infrastructure use, accessibility, information and communications technology, research and development, databases and dissemination of innovations, and restrictions of urban freight traffic.***

5. TECHNICAL SUMMARY AND IMPLICATIONS

The aim of a sustainable distribution strategy must be to ensure that the future development of the distribution industry does not compromise the future needs of our society, economy and environment.
A sustainable distribution strategy should consider more than just the transport of goods from A to B. Therefore strategies have to encompass supply chain management or "logistics" as well as all modes of transport.(DfT 1998)

Road freight transport has increased dramatically in the past decades within the urban conglomeration, and prognoses for the future indicates that the growth has not come to an end. For example in the White Paper (Commission of the European Communities 2001) they estimate a growth of 50% for long distance road freight over the period 1998 to 2010 if nothing is done. By pushing intermodal transport and non road modes this growth can be reduced to 38%.

The main **underlying factors** affecting the environment of logistics and distribution are:

- The liberalisation of the transport market and the progressive harmonisation of the regulatory environment created by the European Union
- The internationalisation and globalisation of manufacturing and of trade and logistics
- consumers' increasing demand for customised and frequently changing product assortments
- outsourcing of logistics functions and
- advancement of information and communications technologies (ICT).

As a consequence demands for flexibility and accuracy cause fragmented transport flows and thus increase total transport movements in urban areas. This increases congestion problems, noise emissions, accidents and air pollution (locally and globally).

At the moment, there are no specific European Union **policies or regulations** directly concerning urban freight transports. In general, transport policies are being drafted at different regional levels in order to improve accessibility and traffic circulation, to reduce environmental impacts and safety risks and to enhance the competitive position of cities or areas in terms of transport and logistics. So far, the main debate on the topic at the European level has taken place in the European Conference of Ministers of Transport (ECMT) and the European Economic and Social Committee. The concept of Clean Urban Transport was introduced by the Commission and may lead to the preparation of a Green Paper on the topic. A number of EU policies and other developments do affect urban goods transport environment, although indirectly. The most relevant of these are the Trans-European Network for Transportation (TEN-T), the European Spatial Development perspective (ESDP), the EU's commitment to the Kyoto Protocol, the Common Transport Policy, and the White Paper for European Transport Policy 2010. In addition, several transportation research and development projects have touched upon the topic (especially the COST 321 action under the Fourth Framework Programme). On a wider scale, the OECD has established a

working group on urban goods transport, the final report of which will deal with innovative developments in the transports of urban freight.

The **state-of-the-art** of the current urban distribution systems, problems and development: **Knowledge levels of urban freight distribution** vary from city to city. While some cities have merely estimated the share of heavy vehicle traffic out of the total traffic volumes, some cities have conducted extensive studies where detailed information on distribution and its origins and destinations, concentration to certain hours and sizes of vehicles have been collected and modelled. Town centres are a major destination for deliveries, although important centres on the outskirts have emerged even in medium sized towns. National and international transit traffic plays a significant role in some cities. The distribution of perishable goods accounts for a big share of volumes and frequencies. These deliveries often are concentrated to early hours of the morning, overlapping with the main rush hours. This makes already severe congestion problems worse. Out-of-time deliveries are getting more common and are often preferred by transportation companies willing to improve the usage rate of the fleet capacity. Special goods stores are most commonly located in the centres, which are more difficult to access. The ideal size of delivery vehicles for city centres has been discussed and studied in several cities. Smaller vehicles cause minor environmental impacts and are more suitable for driving on narrow streets. However, replacing heavy trucks with such smaller vehicles increases total traffic volumes. The final customers generate significant flows when transporting their purchases home in private cars. Therefore, the location and size of perishable and special goods stores to a great extent influences the formation of urban traffic flows. Home deliveries and the development of public transport services are pursued in order to reduce traffic.

It must be noted that as a result of the economy of scale on the production side and on the retail side (shopping centres) the number of commuting trips and shopping trips made by private car increase significantly and reinforce so the urban and suburban transport problems (e.g. a single supermarket delivery in an articulated lorry is carried away in 500 costumers' cars. Every Household consumes the equivalent of four lorry loads of goods per year. (UK data, ITS Leeds, Script of Freight Transport Planning and Management course)).

The **problems** encountered in distribution transportation are rather similar in different cities, the biggest cities naturally suffering more from the same problems. The most common city freight distribution problems concern congestion in city centres and some major street junctions, lack of adequate unloading and parking places in conjunction with violations of parking regulations, increased traffic caused by fragmented distribution flows, historical city centres with narrow streets and other obstacles, neglect of freight issues in planning and development work and an increase in negative environmental impacts. Lack of awareness and information about urban goods transportation is very common and may hinder the adoption of development measures that already are available.

Several logistics trends (such as frequent, fast and flexible deliveries of small lots) are contradicting with certain political aspirations (improved state of the environment and viability of the cities) and making worse congestion problems caused by population growth. This forces the different actors to consider actions that could prevent the situation from turning into a "catastrophe" in the worst cases. The densely populated

medieval cities in Central and Southern Europe in particular have imposed considerable restrictions on traffic in urban areas. Companies also need to be prepared to adopt new business models and technologies. ICT applications for logistics management and operations as well as for traffic management of the cities provide solutions for overcoming the dilemma of fragmented transport flows, increasing traffic volumes and their negative impacts. Implemented or planned initiatives include the establishment of distribution or logistics centres, concentrating "home" deliveries to designated delivery points or zones, usage of electric cars and other "clean" vehicles and alternative transport modes, taking freight traffic into account in planning, providing information and co-operation forums on the topic, developing infrastructure for urban freight (underground tunnels, designated lanes, parking areas and unloading spaces) and relocating industrial or logistics activities.

The aim of the City Freight project is to support the selected cities in choosing appropriate measures by providing information on the initiatives, developing an assessment method for the initiatives, creating and assessing scenarios for the cities, and finally giving practical recommendations for the cities. Other sources where best practices for a more sustainable freight transport can be found are the "Good Practice in freight transport" (European Commission 2000); the PBESTUFS Handbooks (Best Urban Freight Solutions); EUROSCOPE (Efficient urban transport operation services co-operation of port cities in Europe: Traveler information, logistical information and communication, traffic management); IMAURO (Integrated Model for the Analysis of Urban Route Optimisation); PDS (Forum for Physical distribution in Urban Areas); French national research program on urban freight (Enquêtes quantitatives TMV); SURFF (Sustainable Urban and Regional Freight Flows); UFMB (Urban Freight Management in Barcelona); SULOGTRA (Effects on Transport of Trends in Logistics and Supply Chain Management); Euro-CASE (The European Council of Applied Sciences and Logistics) study on freight logistics and transport systems in Europe.

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6.2 Websites

BESTUFS : Best Urban Freight Solution - www.bestufs.net

CITY FREIGHT : Inter- and Intra Freight Distribution Networks - www.cityfreight.org

DfT **www.dft.gov.uk**

ELTIS: guide to current transport measures, policies and practices implemented in cities and regions across Europe – www.eltis.org

KonSULT – http://www.env.leeds.ac.uk/its/public/level0/l0_hom.htm

LUTR: Land Use and Transport Research – www.lutr.net

PROPOLIS : Planning research for Land Use and transport for Increasing Urban Sustainability – www.ltcon.fi/propolis

PROSPECTS - http://www-ivv.tuwien.ac.at/projects/**prospects**.html

TRANSPLUS: Transport Planing Land Use and Sustainability – www.transplus.net

SCATTER: Sprawling Cities and Transport: from Evaluation to Recommendations – www.stratec.be

TRANSPLUS: Transport Planning Land Use and Sustainability – www.transplus.net

UMS: Database of Good Practice in Urban Management and Sustainability – www.europa.eu.int/comm/urban