Best Urban Freight Solutions II

Theme 3: Control and Enforcement in Urban Freight Transport
Theme 4: City Access Restriction Schemes

Public

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Sustainable Surface Transport
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1 Introduction

1.1 The BESTUFS Thematic Network and need for action

Background

More than 80% of today’s road freight trips in European conurbations are of distances below 80 km and can be defined as urban or urban-regional transport. The delivery and collection of goods within urban and metropolitan areas, especially in the core areas of cities with old and established centres has a major impact on the local community concerning the economic power, quality of life, accessibility and attractiveness of a city. Besides the benefits of goods transport in urban areas in terms of the supply of products to consumers and the economic importance of supporting other industries there are also negative impacts appear such as air pollution or congested roads. Taking the negative and positive impacts into consideration in developing an efficient and environmentally-friendly urban transport system is essential for the economic health and the quality of life of cities.

![Figure 1: City Logistics Problems](image)

Need for Action

For future economically and environmentally sustainable supply it is therefore important to assess the opportunities and chances of technical (vehicle technology, telematics applications, etc.), organisational (co-operation, etc.), operational (route planning, etc.) and political (time windows, weight limits, etc.) measures for improving the urban transport systems.

The thematic network BESTUFS contributes within the 6th Framework Programme to the Key Action „Sustainable Surface Transport“.
The sustainable surface transport work programme addresses the following objectives:

- New technologies and concepts for all surface transport modes (road, rail and waterborne).
- Advanced design and production techniques.
- Rebalancing and integrating different transport modes.
- Increasing road, rail and waterborne safety and avoiding traffic congestion.

BESTUFS II is a project that is relevant to all of these objectives, even though it is submitted to the City Logistics call under the fourth objective, “Increasing road, rail and waterborne safety and avoiding traffic congestion”.

BESTUFS II is a follow-up initiative of the thematic network BESTUFS and aims to maintain and expand an open European network between urban freight transport experts, user groups/associations, ongoing projects, the relevant European Commission Directorates and representatives of national, regional and local transport administrations and transport operators in order to identify, describe and disseminate best practices, success criteria and bottlenecks with respect to City Logistics. Overall, BESTUFS II will further identify the problems and the requirements of the cities as well as of all private actors involved in urban freight and will maintain the environment for establishing policy as well as research recommendations. The most relevant and helpful findings promoted in BESTUFS II in form of guides for actors in medium sized cities together with national seminars organised in 22 countries will undoubtedly be suitable for many actors and many cities within Europe.

Furthermore, BESTUFS II will describe the urban context and the role urban freight transport plays in a city. A group of experts will quantify freight transport related processes and measures compared to other transport modes as well as compared to different sustainability objectives. Finally, common data models and applied practical modelling tools are addressed in more detail by European experts that will consider this topic at roundtables and prepare suggestions for a European harmonisation and roadmap.

Building on the structure and experience gained from the BESTUFS project the follow-up initiative of BESTUFS II will be augmented in three major ways: (1) a broad geographic coverage including the provision and dissemination in various languages of guides about urban freight transport best practice; (2) a quantification of the contribution of urban freight solutions to EU policy objectives; and (3) an examination of urban freight transport models and data structures.

The general idea behind a “Coordination Action”, to encourage the cooperation between domain experts, research institutions and other interested groups at a European level is not new in the transport domain. The COST
activities as well as the ‘concertation’ mechanism installed by the Transport Telematics Application Programme (T-TAP) in the 4th Framework Programme are previous examples. The latter focused on clustering themes and topics: Within the Program, funded projects were clustered and asked to participate in so-called ‘concertation’ meetings to discuss common ground and to derive further needed actions. The COST activities did not have a clustering component as such, but the participants did devise a sharp focus on single themes, which in many respects can be regarded as the predecessors to the thematic network activities of the 5th FP.

The EC established a thematic network (TN) on BEST Urban Freight Solutions (BESTUFS) in January 2000 with a duration of 4 years. This thematic network (TN) corresponds directly to the task 2.3.2/4 of the Key Action: Sustainable Mobility and Intermodality. The open European network has been established between urban freight transport experts, user groups/associations, ongoing projects, interested cities, the relevant European Commission Directorates and representatives of national, regional and local transport administrations.

The partners of BESTUFS II aim to broaden the existing BESTUFS network to include medium sized urban areas in Europe including those in the New Member States.

The work of BESTUFS II-network takes place within the policy and regulatory framework of the Community, including the common transport policy, the development of the Trans European Transport Networks and the green paper on urban transport. It is the role of this thematic network to act as a facilitator in order to ensure that excellent strategies and best practices are not lost to the remainder of the European Community, the freight community and cities themselves. This approach allows structuring all relevant material available concerning the prioritised themes of the BESTUFS II-network and supports the analysis of the projects.

The concept of a thematic network is thereby focusing on the co-operation between experts and projects with already existing or just emerging experiences and expertises and on the collection and raw analysis of results of national and European projects - rather than starting new research activities. Within the network the following organisations and interest groups are involved: more than 20 European cities and regional administrations, interest groups like POLIS, ACEA, FTA or EVO, national networks (Association of Italian cities for sustainable mobility and transport issues, Forum for City Logistics Denmark) as well as European and International bodies (e.g. IMPACTS, Institute for City Logistics).
The following overview shows the co-ordination and organisation of the network:

**Figure 2: Co-ordination and organisation of the network**

Main objectives of BESTUFS II are:

- to strengthen and extend the existing BESTUFS European network for urban freight transport experts, user groups/associations, ongoing projects, interested cities, European Commission Directorates, system/technology providers and truck manufacturers; the network is focused on the movement of goods and commercial transport in urban areas,

- to continue the long-term and dynamic ‘concertation’ activity during the period of the 6th FP,

- to support the integration of so called “last mile” distribution processes in cities into a door-to-door supply chain approach,

- to provide a platform for the exchange of ideas and information on urban freight transport modelling and to consider harmonisation and standardisation of corresponding associated data by experts,

- to strengthen intermodal transport as interface to CLS and to provide support for promising intermodal approaches,

- to support the increased introduction and use of alternative fuels and cleaner vehicles in the domain of CLS,

- to identify needs for standardisation in CLS and to support the realisation of European wide standards (e.g. on vehicle weight and size restrictions or for regulations concerning night deliveries),

- to identify and present project results and best practice of CLS through a similar thematic structure to that used in BESTUFS,
to widen and strengthen the relationships with both European and international networks regarding urban commercial transport,

- to strengthen both the European Community’s position in this area and the European industries providing CLS,

- to widely disseminate CLS best practice in a series of guides that will be available in whole range of national languages,

- to broaden the geographic coverage and increase the awareness of urban freight transport best practice across Europe, with special emphasis on medium sized urban areas,

- to support the DG TREN policy objectives (emission reduction, energy aspects, mode shift, congestion reduction, safety, etc.) with respect to CLS and to increase the contribution of CLS to achieving transport policy objectives,

- to quantify the contribution of the potential that CLS can make to DG TREN policy objectives and to quantify the role of urban commercial transport compared with other urban transport activities in terms of sustainability,

- to support the clustering of projects at a European level and to integrate projects and clusters into the network,

- to collect, compare and summarise available experiences and results of projects and initiatives in the CLS domain from Europe and to a lesser extent internationally,

- to identify and describe best practices and success criteria within the CLS domain,

- to disseminate experiences, projects, best practices and success criteria to a broad interested audience with the aim of initiating a transfer of urban freight transport solutions,

- to establish links and cooperation with other transport and urban interest oriented networks or groups in order to share and integrate results and to avoid duplication of work,

- to strengthen links and cooperation with national CLS CA or networks in order to share and integrate results,

- to support the co-operation between actors, which are active or which are interested in the urban freight transport domain, by providing information and contacts.
1.2 Relation to previous and running activities concerning urban freight

1.2.1 Global level

The OECD (Organisation for Economic Co-operation and Development) set up a working group dealing with urban freight logistics. This working group follows the aimed targets of OECD, based on the Article 1 of the Convention signed in Paris on 14th December 1960, which came in force 30th September 1961 and promotes policies designed to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries. The Working Group on Urban Freight Logistics was set up to learn from international experiences and solutions, which have been proposed and implemented in OECD member countries with both successes and failures. In their actually report “Delivery the Goods – 21st Century Challenges to Urban Goods Transport” the OECD Working Group focuses on the delivery of consumer goods and highlights best practices in Member countries [OECD 2003].

The Institute for City Logistics (ICL) was established at Kyoto, Japan in 1999. The most important objective of this Institute is to be the centre of excellence for the research and development on City Logistics and urban freight transport. ICL carries out the fundamental investigations and makes it applicable to the real society. ICL also provides the platform for the exchange of knowledge, experience and information about City Logistics and urban freight transport. ICL performs activities related to City Logistics and urban freight transport, including [Taniguchi et al 2003]:

- Organise international conferences
- Perform investigations
- Develop software
- Provide short courses
- Issue newsletters
- Publish books and journals

1.2.2 European level

**THERMIE**

Within the European Community programs THERMIE (1990-1994) and JOULE-THERMIE (1995-1998) the rational use of energy in transport has been looked at. Concerning urban goods transport various measures and technologies have been investigated and assessed. For more information see [www.cordis.lu](http://www.cordis.lu) under THERMIE and transport.

**COST Actions**

On European level the following COST Actions concerning freight transport and logistics are relevant:

- COST 355: Changing behaviour towards a more sustainable transport system (2004 on)

COST 321 especially ([http://www.cordis.lu/cost-transport/src/cost-321.htm](http://www.cordis.lu/cost-transport/src/cost-321.htm)) provided important base material, information and results as an input for the further activities in the BESTUFS TN [COST 321; 1998]. On one hand COST 321 reviewed current and potential measures promoted by public authorities and private parties, in the logistical, technical, behavioural, infrastructural and administrative field. An extensive survey was conducted, leading to a policy-relevant classification of observed and planned measures which were qualitatively assessed relating to their potential contribution to the improvement of the quality of urban goods transport. On the other hand COST 321 provided quantitative results on the impact of measures using simulation and modelling tools and also estimated effects in projects and case studies. Also some key figures relating to urban goods transport have been identified and provided for several cities.

The BESTUFS TN can be seen as a follow up and continuation of the COST 321 project.

**Projects of the 4th framework programme**

Within the 4th framework programme several projects are related to urban goods movements dealing with organisational, operational, technical and economical aspects.

Important projects are: DIRECT, ELCIDIS, EUROTOLL, EUROSCOPE,
IDIOMA, IMAURO, LEAN, MOMENTUM, MOSAIC, MOST, PROPOLIS, PROSPECTS, REFORM and SURFF. These projects have been identified within the BESTUFS project during a clustering process considering urban goods transport themes as freight centres, traffic access restrictions etc. For more information see www.cordis.lu.

Besides BESTUFS there are also other projects linked to urban goods transport within the 5th framework programme (1998-2002) such as EUTPII, PROGRESS, SULOGTRA, REVEAL, OSSA, MOST or CUPID (all within the sub-programme “competitive and sustainable growth”). For more information see www.cordis.lu.

CITY FREIGHT is a European research project (finished) on inter- and intra-urban freight distribution networks. It has carried out an analysis of selected freight transport systems already functioning in Europe and has evaluated their socio-economic and environmental impacts in an urban context, with a common assessment methodology. CITY FREIGHT has focussed on innovative and promising logistic schemes in the seven countries represented in the project consortium.

The objective was to provide guidance to interested stakeholders (government, regional, or local authorities, network operators, shippers and consignees) on the advantages and drawbacks of some recent innovations in the field of inter- and intra-urban freight distribution systems.

Other demonstration projects concerning Clean Urban Transport started 2001 as a result of the CIVITAS Initiative (City-VITALity-Sustainability; http://www.civitas-initiative.org/civitas/home.cfm ), which had been launched in autumn 2000 by the European Commission as a joint Initiative between Key action Economic and Efficient Energy of the “Energy” Programme and the Key Action Sustainable Mobility and Intermodality of the “Growth” Programme). 14 EU-cities (Aalborg, Barcelona, Berlin, Bremen, Bristol, Cork, Gothenburg, Graz, Lille, Nantes, Rome, Rotterdam, Stockholm and Winchester) and five associated cities from the accession countries (Bucharest, Gdynia, Kaunas, Pécs and Prague) are participating in pilot projects combating congestion and pollution through technologies and measures that range from the introduction of new information and transport management systems to the promotion of "clean" vehicle fleets for passengers and goods.

BESTLOG:
The 6th framework programme does also address sustainable freight transport in their topics: A CA BESTLOG (Logistics Best Practices) has started with a focus on logistics in general, but which will also encompasses city freight solutions.

NICHES:
The mission of NICHES (New and Innovative Concepts for Helping
European transport Sustainability) is to stimulate a wide debate on innovative urban transport and mobility between relevant stakeholders from different sectors and disciplines across Europe. NICHES will promote the most promising new concepts, initiatives and projects, moving them from their current ‘niche’ position to a ‘mainstream’ urban transport policy application. NICHES is a project supported by the European Commission, DG Research, under the 6th Framework Programme.

The NICHES projects deals also with questions of city logistics.

In WG 2 the following innovative concepts will be explored:

- space management for urban delivery
- inner-city night delivery
- home delivery using locker boxes

1.2.3 National level

At a national level, the activities concerning urban goods transport vary largely between the European countries.

Since the beginning of 1990, especially France (COST 321, Programme national marchandise en ville) but also Spain (COST 321, initiatives of single cities), Switzerland (COST 321, DIANE 6, City of Zurich), Belgium (COST 321, urban freight transport plans), Italy (COST 321, urban freight transport plans), Denmark (COST 321, cities of Copenhagen, Aarborg, Arhus), Germany (COST 321) and the Netherlands (COST 321) have been active in urban goods transport issues. However, the concerns and also the activities differ very much between the cities within a country.

1.3 Themes to be treated within BESTUFS and BESTUFS II

As a result of the first BESTUFS workshop on 16th/17th May 2000 in Brussels and from experiences and suggestions at further workshops the following catalogue of themes has been determined to be considered with priority within the BESTUFS project (the themes in italics have - at least partly - been treated so far):

- Models and methods to deal with the complexity of urban freight transport chains and the shared responsibilities
- Goods transport efficiency, assessment and costs
- Statistical data, data acquisition and data analysis
- Land use planning and business models for urban freight platforms
- Traffic, land use, infrastructure and regulations planning and policy
- Integration of distribution centres and traffic management
- Door to door freight transport aspects
Introduction

- Improved management of the urban road space and the kerbside access
- Interfaces between public and goods transport
- City access, parking regulations and access time regulations
- Road pricing, tolls and heavy vehicle fees
- E-commerce and distribution (home shopping)
- Night delivery
- Waste Transport and logistics in urban areas

Co-operation and organisation

- Co-operation of transport operators
- Public-private-partnerships (PPP) and stimulation e.g. via freight forums
- Win-win situations

Transportation technology

- Transport units and intermodal transfer facilities
- Innovative urban freight transport ideas (e.g. via underground systems, pipelines, etc.) and unusual transport modes (bicycles, etc.)
- Urban rail freight
- Vehicle technology and functionalities (e.g. low-emission vehicles), weights and dimensions

Supporting technology and infrastructure

- Intelligent transport systems (ITS), transport telematics applications and systems for urban goods transport
- Enhanced signage and information systems (e.g. VMS)
- Infrastructural solutions (e.g. to improve loading and unloading)
- Enhanced usage and maintenance of infrastructure (e.g. via a road map for transport vehicles)
- Enforcement support (e.g. by video control)

Legal issues

- Relationship and harmonisation between the urban, regional, national and European legislation

Identified themes within the BESTUFS II workshops

First three themes to be treated in the Best Practice Handbooks of BESTUFS II:

- Waste transport logistics in urban areas (Theme 1, BPH 2005)
- Experiments and incentives in favour of environmental friendly vehicles and equipment (Theme 2, BPH 2005)
- Enforcement and control in urban freight transport (Theme 3, BPH 2006)
- City Access – New schemes and approaches (Theme 4, BPH 2006)
Workshops in 2005/2006

In the year 2005/2006 the following themes have been addressed, each in a particular workshop:

- Approaches to Urban Consolidation: concepts and experiences [1st BESTUFS II workshop 13th and 14th January 2005 in London (UK)]
- Last Mile Solutions [2nd BESTUFS II workshop 21st and 22nd April 2005 in Nuremberg (Germany)]
- Urban freight transport in small and medium sized cities [forthcoming 3rd workshop 29th and 30th September in Kaposzvar (Hungary)]
- Waste transport and logistics in urban areas [4th workshop 9th and 10th March 2006 in Zurich (Switzerland)]
- Managing urban freight transport by companies and local authorities [5th workshop, 21st and 22nd September 2006 in Vienna (Austria)]

Conferences 2005/2006

- Solutions for Air Quality and Noise Problems in Urban Freight Transport [1st conference 23rd and 24th June 2005 in Amsterdam (Netherlands)]
- Open topic 2nd BESTUFS II conference [18th and 19th May 2006 in St. Julians (Malta)]

BESTUFS II events in 2007

- Workshop on “Port traffic in cities”, Gothenburg, March 2007
- 3rd BESTUFS II Conference in Warsaw, May or June 2007

Another two workshops and one conference will be held until the end of the BESTUFS II project in 2008.

1.4 Aims, contents and use of the handbook

In the field of urban goods transport, the Best Practice Handbooks aims at

- giving information and hints about innovative ongoing strategies, concepts and activities in European countries,
- providing knowledge and experiences of completed and running projects and actions
- providing contacts for further information.

First Best Practice Handbook 2005

Within BESTUFS II best practice is derived for 4 major themes in total. In 2005 the first out of tow Best Practice Handbook (Deliverable 2.1) was published comprising the following themes:

- Waste transport and logistics in urban areas (Theme 1)
Contents of this handbook

The present Best Practice Handbook 2006 (Deliverable 2.2) is related to the themes:
- Control and Enforcement (Theme 3)
- City access restriction schemes (Theme 4)

Each topic consisting of:
- An overview on national situations and relevant projects
- Case studies (Best Practices) and experiences
- Conclusions and recommendations

The material for this handbook has been collected and completed by the BESTUFS II contractors and subcontractors including important inputs from the involved experts and the workshops.

Use of the handbook

The main focus of this handbook is to get a European (and selected other countries) overview of solutions and existing activities related to the considered themes. The results are described as experiences rather than as a thorough scientific analysis.
Remarks and input regarding this Best Practice Handbook are welcome. Please send your ideas for updates and additions to the following address:

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2 Best Practices

In order to develop a common framework for best urban freight solutions as many as possible relevant aspects which might have an impact on urban freight transport are considered. In general, different “types” of actions, research and activities can be identified to characterise best practice solutions for urban freight transport.

A best practice solution does not necessarily focus on particular measures such as the implementation of freight centres in urban distribution traffic. Also activities without direct impact on the actors of urban transport operations such as the improvement of the data and information basis or of planning tools in urban freight transport are considered. The following “types” of action can be part of best practice solutions:

- Projects, actions and activities where goods transport changes are realised – “vertical” projects. Normally, these projects are directly related to a particular problem in urban freight transport.
- Projects, actions and activities which will not directly lead to changed urban freight transport operations but which provide tools and/or knowledge to influence and prepare decisions in urban freight traffic – “horizontal” projects. These projects are focusing on the improvement of overall planning and basic knowledge, i.e. data collection, education, planning tools etc. Usually, they are not directly related to a particular problem.

To analyse existing and ongoing projects in the field of urban freight transport a thematic structure is applied. This approach allows to structure all relevant material available concerning the prioritised themes of the BESTUFS network and supports the analysis of the projects.

To identify best practice in urban freight transport three “sources” will be used within the BESTUFS project:

- First, a formal approach is followed by providing tools as a thematic structure, suitable attributes and parameters as well as assessment directions.
- Second, a pragmatic approach is realised in order to assess ongoing projects as well as available project results on their contents.
- Third, workshops, national seminars and conferences are organised in order to extract experiences and knowledge from experts.

The following graphic describes the action lines:
Figure 3: Sources of Best Practices and thematic structuring

Best Practices are planned or implemented private only, public only or Public Private Partnership (PPP) strategies, measures or activities which have an essential contribution to urban goods transport and ideally lead to benefits for all actors involved. This can be projects, concepts or strategies. Best Practices will be identified on the fulfilment degree regarding the following requirements:

- Best Practices have to fit to a defined theme or address a relevant problem with respect to the movement of goods in urban areas (see structure of themes).
- Best Practices should be based on real experiences (real world implementations, pilot projects, concepts, strategies) or analysis in studies.
- Best Practices should have considerable and measurable positive effects (qualitative, quantitative) on relevant indicators of urban goods transport.
- In some cases it can also be important to take project activities into account which have not been successful. We can also learn from bad experiences and improve solutions by describing and analysing failure factors.

Urban freight transport is an extremely important activity in the context of urban life: it is fundamental to sustaining our lifestyle and serves industrial and trade activities, which are essential to wealth generation. Efficient freight transport can play a significant role in the competitiveness of an urban area and is, in itself, an important element of the urban economy, both in terms of
the income it generates and the employment levels it supports. However, freight transport is responsible for traffic and environmental impacts in urban areas (such as contributing to congestion, pollution, noise, fossil fuel use etc.). Freight transport is, therefore, an important factor in the consideration of urban sustainability: it sustains the economic life of the city, but is also responsible for a number of social and environmental impacts. Over the past 20 years there have been significant changes and developments in the ways in which freight operations are carried out and the concerns about the negative environmental and social impacts of freight vehicle activity. First, distribution and logistics systems have changed considerably, with a significant degree of centralisation in manufacturing sites, stockholding points and retailing. Supply chain structures have also changed substantially, especially for larger companies where many have taken increasing control over the supply chain and the distribution of goods to their premises. Second, the stockholding patterns, and hence the goods delivery patterns required by manufacturers, retailers and other urban premises, have changed substantially, with a tendency towards more frequent, smaller deliveries. This move towards more frequent deliveries has resulted in a growing use of smaller freight vehicles. Third, the level of current concerns about the environmental impacts of our urban activities, and especially our urban transport systems, were not present 30 years ago. It is now widely acknowledged that new urban sustainability policies are necessary if urban areas are continuing to be desirable places to live, work and spend our leisure time. City logistics is a keyword to manage urban goods flows.

In the context of this project the term City Logistic is considered in its broadest sense, such that it includes not only the movement of goods in urban areas, but also activities related to other commercial transport (e.g. service technician trips). CLS are attracting ever more attention due to three primary reasons: First, current urban goods transport activities are perceived as having a negative affect on the quality of life in urban areas; Second, structural changes are taking place in urban areas in terms of planning city infrastructure and transport policy (e.g. pedestrian and parking zones), and commercial developments (e.g. shopping malls and emerging e-commerce – home delivery); Third, technological innovations (e.g. low emission vehicles, small containers, less expensive transhipment, or EDI) are swiftly entering the market and becoming competitively priced compared to the established technologies.

Projects must not only focus on urban city logistic, also regional projects that directly influences urban freight transport, e.g. the planning of an urban freight platform in the periphery, that leads to bundled transport flows and reduces vehicle-kilometres can be taken into account.
3 Control and Enforcement in urban freight transport

3.1 Introduction

Most European cities are confronted with problems in urban freight transport regarding air- and noise-pollution and congestion caused by motorised road traffic. Developments in the past decades have worsened the situation, due to increasing delivery and pick-up activities in city centres. This has resulted in growing environmental problems. Shops and businesses suffer from poor city accessibility, residents and shoppers experience the negative effects of the pollution caused by vehicles.

City authorities and municipalities try to solve the problems by managing urban freight delivery operations by different measures. The purpose of regulations and measures for the management, reduction and guidance of road freight transport is to reduce the negative effects in the city area. Therefore different measures have been and are taken into account:

- Time restrictions / Time delivery windows
- Weight restrictions
- Bans for non-environment-friendly vehicles / vehicle limitations (e.g. only high environment-friendly standards)
- Speed limitation
- Loading capacity restrictions
- Traffic management solutions (lane usage)
- Parking regulations and regulations for loading and unloading (licences, reservation, time windows) / Parking fees
- Limits for noise emissions
- etc.

Despite the fact that a lot of municipalities and cities try to reduce urban freight transport by different strategies, concepts and measures, some truck drivers and freight transport companies try to avoid the restrictions set by local authorities.

The purpose of traffic related legislation is to achieve the safe and efficient movement of road users, whether private or commercial. The need for such legislation is that many road users act inappropriately to the road conditions in which they find themselves. Such behaviour can cause death, serious injury and property damage. In the case of non payment of tolls this aberrant behaviour leads to unfair market advantage.
But how to prevent non-allowed freight transport operations that is forbidden by law? Municipalities and cities try to control urban freight transport activities and restrictions by enforcement activities. Those enforcement activities have the objective to detect offences and to apply penalties to those who are not accepting the given rules and carry out operations without permission.

The core objective of this material collection is to provide information and to make a comparative analysis on rules in urban freight transport and corresponding enforcement activities in the Member States of the European Union (plus other countries).

Enforcement describes measures that are carried out on behalf of administrative bodies to enforce regulations that are given by law. Traffic enforcement are those measures with regard to traffic regulations set by law. Enforcement activities can only take place on the basis of legal regulations that offer the possibility to take account of offenders through penalties and the legal system. Enforcement aims to ensure that the laws and regulations are upheld.

Relevant enforcement support (enforcement of rules and regulations) has to be regarded because it is a critical factor in the success of the policy on different measures and strategies to reduce urban freight transport. Those enforcement measures can be:

- Organisational and operational measures like signalisation, traffic guidance, parking regulations
- Physical restriction measures like gates or bollards
- Control and monitoring like video enforcement
- Manual controls by police offers and administrative enforcement

Enforcement is traditionally a labour intensive task and can therefore be costly, especially those enforcement activities carried out by human resources (police officers). Great efficiency gains can be attained by technology and especially where automated techniques are available. Significant advances in the development of automated enforcement have been made in particular the use of camera detections for the following offences; speeding, red-light violation, bus lanes, weight and motion and electronic fee collection. The recent development of the enforcement of congestion charging in London by automatic camera detection is a case in point. However new applications of information and communication technology (ICT) may improve the “enforcement efficiency” and enlarge the scope of enforcement.

Legislation is useless without enforcement. The main three parts of enforcement are: the rule, the control and enforcement framework and the
Control and enforcement in urban freight transport

enforcement are: the rule, the control and enforcement framework, and the control and enforcement practice.

![Diagram of main parts of enforcement]

**Figure 4: Main parts of enforcement**

The **rule** (or law) can be defined as the formal standard that applies for the topic analyses as it has been adopted following the national procedures. Information on the rules both includes:

- General information on the rule, such as: the source of the rule, entities responsible for drafting and issuing the rule, special rules for particular types of vehicles and recent rules changes;
- Specific information on the rule, i.e. the standard as included in the legal document (text of the law and respective sanction).

The **control and enforcement framework** consists of the complete set of standards that are put into place to make the compliance with the rules effective. These are the competencies of the institutions that implement the topic in practice and the penalties that apply following the law. This does not only concern sanction and penalties. Also prevention of non-compliance is covered. Usually police or specialised agencies may – apart from the authorisation to ‘enforce’ - have a Ministry delegated role to inform and prevent non-compliance. In general, information on planned changes to sanctions and on the entities involved in control and enforcement is presented for each topic.

The **control and enforcement practice**: This element focus on the day to day aspects of control and enforcement. Here facts and figures (as far as available) are listed regarding for example, the percentage of vehicles that enter a restricted area without permission, sanctions applied, etc. Whenever possible, the means that are used in the check process carried out by the police forces it will be also described.

In most countries enforcement of road traffic rules is based on national legislation. Concerning police forces, in most decentralised models, substantial responsibilities for enforcing traffic rules are transferred to regional governments. This is the case of the German model, where the Ministry of Interior of each “Länder” is in charge of the overall traffic law enforcement.

Institutional organisational models and competencies of the bodies responsible for road traffic and safety issues are not homogeneous across
Europe due to legal, political and socio-economic contexts and traditions. The objective of the analysis of legislative bodies is to provide insight on the way legislation is drafted and issued, public institutions involved and respective competencies and relationships, in each Member State. It includes information on the geographical scope and hierarchy of legislative bodies.

A further important aspect is “data protection”. In case of control mechanism by cameras (Video Enforcement) different laws in Europe protect citizens against the public observation. But in the case of traffic monitoring, laws exist that allow the monitoring and control of traffic. Therefore it will be important to describe the legal situation in the countries. Are there legal obstacles or is there a general allowance for using cameras for traffic observation and control? This aspect has often been discussed in various countries and can be considered as important.

### 3.1.1 Definitions, classification and scope

Enforcement tackles different areas of urban freight issues. For the material collection the term “Enforcement” has been widened: normally enforcement means the strict control and detection of offences against bans and restrictions but also physical barriers like bollards for example and operational measures like signalisation measures are part of the enforcement. All physical measures that hinder a group of persons (vehicles) to take part in freight operations in the cities are also counted as “enforcement”. But those measures should physically protect city areas against non-allowed usage.

Not part of enforcement and control in this BPH are operational measures:

- Signalisation measures (e.g. bans to enter an area, speed limits)
- Traffic management systems that guide a way around the restricted (time or spatial) area

Those measures are part of an urban freight logistics concept and not of the enforcement itself that aims to detect offences. Those enforcement measures can be for example camera observation (Video Enforcement).

The following aspects may be of importance for the classification of enforcement strategies and technologies:

- **Physical restrictions**: gates, bollards
- **Electronic Observation and Detection**: video enforcement (conventional and digital cameras), radar detection, usage of laser pistols
- **Manual Observation and Detection**: by police
Control and enforcement in urban freight transport

Definition

The overall traffic enforcement process can be divided into three separate functions:

- **Detection**: involves all the separate steps which are used to determine whether and to what extent a road user is behaving in contradiction to existing laws.
- **Documentation**: involves all the separate steps which are necessary to be able to adequately document the contravention. This function also includes transfer of the data to a central point, and its storage.
- **Processing**: involves all the activities which follow the transfer of the evidential record to the processing point (excluding its storage). These include for example the (manual or automatic) reading of a vehicle’s number plate or the verification of the functional image content.

As with the functional model, the physical parts of a traffic enforcement installation can be divided into several system components:

- **Roadside equipment**: This part includes all the on-site control devices, and in particular the image capture equipment, the measurement device(s) and any electronics used to evaluate the data.
- **Data transfer channel**: this mainly refers to the transmission channel linking the roadside equipment to the back-office system. It does not however exclude other transfer sections. It is possible for example to use longer-distance connections between individual system components as e.g. required for section speed control.
- **Back-office system**: this is where the further processing of an evidential record takes place, such as e.g. the manual confirmation of the automatic licence plate recognition or a check of the classification results. The background system is also where the data is archived and managed.

There are a variety of enforcement measures and technologies. The main known enforcement is **Video Enforcement**. Video Enforcement uses pictures as piece of evidence in case of contraventions and offences against existing regulations. Those pictures can be complemented by attributes like driving speed, time and location. Recently often wet films have been used in Video Enforcement but those films have a main disadvantage because films have to be picked up physically and developed after. Nowadays digital technology also has become very popular. Main area of usage is speed control and monitoring of traffic lights offences. Most Video Enforcement Systems (VES) use mainly automatically registration plate detection (LPR, Licence Plate Reading). Automatic Number Plate Recognition (ANPR) enables a new method of dealing with offences in which vehicles can be swiftly and easily identified and stopped, and allows enforcement of both traffic offences and other types of crime. Current ANPR systems work by scanning the number...
plates of passing vehicles and checking them against other databases. ANPR is used to enforce the London Congestion Charging Scheme.

Video Enforcement can be used for the following areas: speed control, monitoring of traffic light offences and

- fee collection: enforcement systems are an integral part within fee collection systems. An efficient and automatically electronic control in case of fee collection systems without physical barriers is necessary. The fee collection and control must not take place at the same location and a spatial separation is possible.

- monitoring of offences against weight restrictions.

- lane usage (allowance for trucks): Video Enforcement can also be used in case of monitoring non-allowed usage of bus/Truck lanes by cars. In case of non-allowed usage by car drivers the traffic flow for public busses and trucks is hindered and also traffic safety. For the control mobile or static cameras can be used. Mobile cameras are integrated in busses to observe and detect offences against forbidden lane-usage.

- access restrictions: a lot of cities in Europe are operating with driving bans for selected areas of the cities (city access). There are also examples of access restriction for urban freight transport. The passing of vehicles in those restricted areas is mainly monitored by laser-detectors which offers the possibility to take a photograph. The registration plate of the detected car is compared with those plates that are registered and allowed for entering the restricted city area by computer.

- driving bans (e.g. regarding emission classification): In the case of restricted driving bans for special trucks or delivery vehicles, an additional differentiation category can be necessary. The registration plate cannot be taken as the only characteristic. With support of laser scanners, stereoscopic cameras and induction loops, size of vehicles can be determined. Additional support tools like electronical equipment can be used (like EVI Electric Vehicle Identification).
Control and enforcement in urban freight transport

Figure 5: Standard enforcement scheme with video cameras (e.g. in case of road pricing)

Further enforcement measures are:

- Manually enforcement by police officers (mobile enforcement): In addition to automated enforcement, many offences are enforced through the use of manual observation and enforcement (such as parking and loading regulations enforced by the police and local authority parking attendants), and roadside spot checks on the roadworthiness of vehicles by qualified mechanics.

- Usage of physical barriers like gates or bollards: This approach to preventing vehicle access does not require accompanying enforcement.

- Fees (deterrence): Fees can also be seen as part of an enforcement strategy. The road pricing fee for example is one enforcement tool to prevent road users to use determined areas or roads.

Figure 6: Mobile Enforcement
Radar (radio detecting and ranging) control: device can bounce a radio signal off a moving object, such as a car. The reflected signal is picked up by a receiver. Traffic radar receivers measure the frequency difference between the original and reflected signals. This frequency difference is converted into a speed, which appears on the receivers display. Radar signals, like other types of radio signals, travel in straight lines until they hit an object that absorbs, reflects, or refracts the signal. Radar receivers cannot see around curves or overhills, so a vehicle must be in sight for traffic radar to get a speed measurement.

3.1.2 General framework conditions

For enforcement to work, it has to be an effective deterrent for all drivers. Road traffic laws must apply to everyone using the roads no matter where they live, work or are recognised to have citizenship. The enforcement of these laws and the penalties for violating them must also be applied equally to everyone using the roads. This fundamental principle of fair and equal treatment is enshrined in Article 1 of the Treaty on European Union which states that: “Its (the Union’s) task shall be to organise, in a manner demonstrating consistency and solidarity, relations between the Member States and between their peoples”

In 1999, the Schengen Community prepared a draft Treaty addressing cross-border enforcement. This draft Treaty provided a blueprint for facilitating cross-border enforcement.

Also, in 1999, The European Council endorsed the concept of mutual
recognition which was intended to become the cornerstone of judicial cooperation in both civil and criminal matters within the Union. In 2000, The Council adopted a programme of measures designed to implement this concept across Europe. As part of this programme, the European Commission Directorate General of Justice and Internal Affairs (DGJAI) developed a Framework Decision on the Application of the Principle of Mutual Recognition to Financial Penalties (commonly referred to as COPEN 249); which relates to the addressing the mutual recognition of financial penalties across Member States borders. This addresses a broad range of offences including “conduct which infringes road traffic regulations”.

The reality of enforcement in the majority of European Union States is, however, rather different. National enforcement regimes typically deal very effectively with drivers whose vehicles are registered in the State where they commit a violation. However, authorities in the majority of Member States find it difficult to enforce drivers of vehicles registered in other States who commit violations within their jurisdictions for a number of reasons as follows:

- There is no consistent legal basis and consistent approach to cross-border enforcement across the EU. In cases where agreements between Member States addressing cross-border enforcement have been drawn up, many have yet to be implemented whereas those that have, have often been found to be operationally impractical
- Identifying, locating and notifying a driver who resides in another State or whose vehicle is registered in another State is at best difficult and in many cases, impossible across the EU-25
- The level and application of penalties also differs significantly from one State to another
- A lack of harmonization between Member States means that the evidence of a violation captured by enforcement systems certified in one State may not be accepted by courts in another State, as the equipment will not be certified there.

This situation, where the decision to prosecute drivers committing the same violation on the same road is often made on the basis of the Member State in which their vehicle is registered, is in complete contradiction to the fundamentals of fairness and equal treatment expressed in Article 1 of the Treaty.

The EU has spent a lot of efforts in analysing different enforcement concepts and strategies within the EU Member States. The main objective of the EU policy is to harmonise the different enforcement measures and concept within the EU. One of the central projects regarding enforcement have been the research projects VERA and VERA2 (Video Enforcement for Road Authorities). As international cross-border traffic continues to grow, enforcement agencies have to deal with an increasing number of road traffic violations committed by drivers of vehicles registered in other countries. In its first four months of operation, approximately 25% of the violations recorded by the French national speed enforcement system (which started in 2003) were committed by vehicles registered outside France. Ensuring that these drivers are successfully prosecuted is a very real issue for Member States and for the European Union.

The European Commission Fourth Framework Project VERA (Video Enforcement for Road Authorities) examined opportunities to harmonise enforcement across the EU. Through the active involvement of its twenty-eight participants and through extensive liaison with other key actors in the enforcement sector, the project defined what have become known as the ‘VERA Principle for Cross-Border Enforcement’.

VERA2 was aimed at paving the way for cross-border enforcement of financial penalties in the field of road safety.

Building on the results of VERA, VERA2 has addressed the practicalities of cross-border enforcement in Europe. It has examined the legal basis for cross-border enforcement aligning much of its work with the Framework Decision on the Application of the Principle of Mutual Recognition to Financial Penalties. This has resulted in draft text for a future Directive on Cross-Border Enforcement which if enacted, would provide a basis for resolving many of the legal, organisational and technical issues. In support of this draft Directive, VERA2 has developed the concept of a cross border data exchange network for enforcement originally proposed in the first VERA project. eNFORCE, as the concept has been renamed, comprises:

- a ‘network’ of authorities and organisations in participating Member Countries who are competent to carry out the responsibilities associated with cross-border enforcement
- a data exchange service allowing members of this network to exchange data relevant to the enforcement process

VERA2 has developed organisational models for the eNFORCE Network and has developed an enforcement data dictionary and a demonstration data exchange service to highlight what the concept could provide. VERA2 has also defined an implementation path for eNFORCE and the draft Directive.

Furthermore VERA has demonstrated the use of video techniques for
detecting violations of traffic laws in urban areas (e.g. bus lane infringements), in inter-urban areas (e.g. speeding) and for pricing applications (e.g. non-payment of tolls).

3.2 Country overview

In the following section we give a very brief summary of the national situation in various countries. A more detailed description in various countries can be found in ANNEX 1.

In many countries enforcement and control take place on a broader national level. That means that those enforcement and control activities do not tend to focus specifically on urban freight transport. Enforcement and control with a focus on urban freight transport does occur when access restrictions for freight transport in the urban area have been introduced.

In most countries the legislation regarding control and enforcement is with regard to general traffic (freight transport and individual passenger road transport). Main areas of regulation are speed limits, parking regulations and other behavioural traffic regulations. With respect to freight transport other components that are part of enforcement and control plays an important role: driving time, loading, freight securing etc. But also those regulations and related enforcement and control are not with direct focus on urban freight transport. In urban freight transport mainly the control and check of access restrictions for trucks can be named. Especially pedestrian zones that are restricted for delivery activities are part of enforcement and control measures.

The enforcement and control of urban freight transport activities depends on whether measures for the reduction or hindrance of freight transport within the urban area have been introduced (access schemes).

The main reasons for enforcement and control activities are a high awareness of urban freight transport problems. The control and enforcement of urban freight vehicle is carried out with the aims of improved road safety, prevention of accident/ offences and improved environment.

If measures against the negative impacts of urban freight transport are introduced and the public pressure is high enough enforcement and control becomes an important issue. Especially if freight operations tend to underrun existing regulations municipal administrations and police foster the control and enforcement of adherence of regulations.
The introduction of enforcement and control schemes often depends on the measures and is connected with the general situation in the city. Especially if environmental problems, congestion and the delivery situation are a major problem or will be a big issue in the future relevant measures or future measures are or will be introduced that call also for control actions.

A further important issue for the introduction of access schemes and related enforcement technologies are high traffic volumes and congestion. In the case of London, for example, the congestion charge is enforced by usage of cameras. Also in Dublin the bad traffic situation caused by freight transport activities leads to the introduction of an access scheme for the port traffic.

Main problems and failure factors

The main problems regarding control and enforcement in urban freight transport are effort and costs. As seen from many projects the costs of an efficient and reliable control scheme are often high. Especially physical measures (electronic bollards) cause high investment costs. But once installed no additional enforcement is necessary. Also video enforcement can be expensive. Therefore often manual checks by police officers often take place. Most of the cost intensive control and enforcement technologies like camera observation or the introduction of bollards takes place in larger areas or areas where a high traffic volume occurs or is expected. In smaller areas that can be observed by man-power this is a less cost intensive enforcement measure.

Australia

A major trend in enforcement of urban freight regulations in Australia is the shift towards the onus on the private operator to take more responsibility towards demonstrating compliance. Many recent initiatives have involved contracting out requirements to industry. This involves the private sector having to provide detailed documentation and conducting audits. Major steps in education, licensing operators rely heavily on self enforcement and the increasing professionalism of the industry.

Austria

In Austria there are no enforcement and control measures with direct regard to urban freight transport known.

In general the police is responsible for Enforcement of the Road Traffic Act. Municipalities or private companies can be entitled by national or federal law to implement and operate enforcement strategies for specific tasks in defined areas. Within the cities there are general driving bans, which are mainly time restrictions. Manual enforcement by police or authorised persons from municipalities is the most common form to execute the legal regulations.

Bulgaria

In Bulgaria no special enforcement activities in the area of urban freight
transport are known. The enforcement on a general level (national freight and passenger transport) is mainly driven by police controls.

Belgium

There are enforcement and control strategies in urban freight transport with respect to access restrictions and time delivery windows (see also project descriptions, example Namur and Liege). Main reason for those restrictions and related enforcement and control of those rules aim to reduce negative environmental effects and congestion caused by urban freight transport. Besides this control and enforcement on a general level takes place.

Czech Republic

In general, the freight vehicles are not allowed to access the centres. They may go there only with permission:

- Police and municipal police check access restrictions and charging manually. 90% of controls are performed manually on the spot.
- Police use video detection systems and radars on certain places.
- Physical barriers are also used to restrict the access to city centres.
- Electronic equipment for the access restriction is used on private places (parkings).

Denmark

In Denmark enforcement in urban freight transport is known from the environmental zone schemes in various cities (city access concepts), where the transport is only allowed to enter the inner city within a short period of the day. Here the most important aspect is that the deliveries follow the legislation about noise pollution, air pollution and damages on the covering. The municipalities can voluntarily make action plans for the time period in which freight deliveries are permitted. Enforcement and control by video monitoring and physical restrictions are not seen in many inner cities in Denmark. The parking lot attendants and the police are responsible for the enforcement and control of the regulations.

Apart from that the control and enforcement is carried out on a general national wide level (control of speed, parking regulations, social and security regulations etc.)

Finland

In Finland enforcement and control measures with focus on urban freight transport are not known. There are also no restrictions for urban freight transport (like access restrictions) known that makes an enforcement necessary. In a sparsely populated country like Finland, neither environmental nor congestion problems are serious. Concern regarding road freight transport is mainly related to road safety.
France

In France urban freight transport is a key issue in transport planning and also incorporated in the Urban Development Plans (PDU). Different kinds of restrictions exist: weight, size, environmental with the use of clean vehicles (currently, only one case in France in Langres (10,000 inhabitants)). Then, regulation can be different from a city to another city. Some cities authorize freight urban distribution for the night. The enforcement and control activities encompass a wide variety depending on the restriction scheme and regulations.

Germany

In Germany enforcement in freight transport take place on a more general level. New technologies are especially used in case of the new introduced LKW-Maut-system (heavy vehicle fee). In urban freight transport are some approaches to reduce freight transport but until now not known to be introduced. Only the control of particulate emissions is a task with respect to reduce freight traffic in urban areas. According to the EU Directive measure have to be taken into account if the emission of particulates are constant about the limits over a time period of 30 days. In this case a the non allowed passing of selected areas for trucks not in line with new emissions standards is controlled by the municipal police.

Greece

The following measures against road traffic offences are allowed by law:

- Radars (speed enforcement)
- Video enforcement (traffic management – RTC violations enforcement)
- Physical barriers (gates) at toll stations (booths)
- Manual enforcement (access and parking restrictions)

Most enforcement activities take place on a more general level that means not with focus on urban freight transport. In professional transport, apart from random checks, prescribed bodies may conduct specific road checks, company visits or accident investigations. Road tests are considered most effective methods, but they are rarely carried out.

The National Technical University of Athens (NTUA) has conducted research programmes in the field of time restrictions and associated enforcement in urban freight transport. These programmes yielded results showing the impact of road traffic police presence along major arterials on the frequency of time restrictions violation –and, subsequently, on the average speed recorded on each road.

Hungary

Except a weight restriction system in Budapest there are no access restrictions in Hungary. Enforcement and control take place on a general level that is valid for all road traffic (speed control, parking control etc.).
Ireland

In Ireland the enforcement and control activities with respect to urban freight transport are connected with city access schemes. Those access restriction schemes are mainly in preparation for Dublin. Because of its heavily congested roads and negative environmental impacts Dublin plans to introduce a HGV strategy in combination with the opening of the Dublin Port Tunnel. The Strategy recognised the need for a simple enforcement mechanism that limits the need to stop vehicles to check permits. The preferred option is to rely on manual spot checks within the cordon based on observing the number of axles. Besides the HGV strategy also a pilot scheme for Commercial Traffic in the City Centre to improve traffic flow and road safety in the city centre. This involved restrictions on allowable delivery times.

Italy

Enforcement and control in urban freight transport is often carried out in connection with urban access restrictions schemes used in many Italian cities. With regard to the observance of regulations associated with the circulation of vehicles and access to limited traffic zones, the most widespread control practice is the one carried out manually by police officers. However, the adoption is spreading of the so-called “electronic traffic policemen”, i.e. technologies for the automatic detection of vehicles entering limited traffic zones (video cameras, telepass, RFID, photo cameras). In some cities these systems have already been operating for several years and have proved to be highly effective (e.g. Rome, Florence, Turin, Bologna, Milan, Siena).

Lithuania

There are no meaningful restrictions for freight transport concerning urban areas in Lithuania, but on a more general level.

Enforcement in freight transport is provided by State Road Transport Inspectorate (SRTI) under the Ministry of Transport and Communications in national level. SRTI is basically responsible: for issuing of licences for freight transport companies and copies of licences for their lorries; for freight transport taxes payment control in national and regional roads only, (there is no especially taxes for freight transport in urban areas); for control of freight transport companies concerning national and international rules, legal acts, directives, conventions etc (licences, weight, AETR, ADR, cohesion, etc.). Control of mentioned points provides officers of Dept. of Control of SRTI.

The Netherlands

Municipalities have the option to restrict access based on times, vehicle lengths, weights and environmental characteristics of the vehicles. Currently only the police is authorised to carry out control and enforcement activities. In the recent years there has been discussion that minor infringements should be handled by administrative penalties, instead of by offences.
checked by the police. In the current system (with police checks) are handled by the lex Mulder, or “Mulderwet”.

Two kinds of enforcement and control systems are used:
- Open systems with manual enforcement by police officers
- Closed systems with (manual and electronic) bollards, etc.

**Poland**

Enforcement and control activities for freight transport are carried out on a general level that means the general observance of traffic regulations. In Poland there are no restrictions for urban freight transport known, except one example from Wroclaw. The city of Wroclaw aims to reduce negative impacts on road freight transport in the historic and commercial city centre of Wroclaw. These regulations are in force within the area of the Old City Centre:
- There are zones of limited traffic for cars with a tonnage of more than 3.5 tons.
- There are special zones of limited traffic for delivery cars, i.e. from 6.00 am to 9.00 am and from 6.00 pm to 10.00 pm.
- Charging a fee for entering a “no traffic zone”.
- The places of loading/unloading operations are signed with special road signs with an information plate.

The abovementioned restrictions are enforced by municipal police.

**Slovakia**

There are no measures and restrictions especially in urban freight transport. Only general laws on speed limits and signalisation measures exist on the country-wide road network. Therefore there are no enforcement and controls strategies with respect to urban freight transport.

**Slovenia**

In Slovenia enforcement takes place on a general level (check of national tolling on motorways, general parking and speed limits etc.). In case of urban freight transport the city access schemes introduced in various Slovenian cities is enforced by the municipal police. Additionally sink cylinders to restrict access to the city zones are used.

**South-Africa**

The high level of car usage, especially by the urban and metropolitan people in South Africa, gives rise to serious congestion especially in Cape Town, Durban, Pretoria and Johannesburg. Congestion in cities during peak times is a great concern. Despite this there are no concrete enforcement and control activities with respect to problems of urban freight transport. There are also missing access restriction schemes in urban areas and other transport related measures that improve the negative traffic situation of
In Spain enforcement of freight transport takes place on a general level not with focus on urban freight transport. Objective of control and enforcement measures in road traffic are the observance of the traffic regulations in general.

One good example of enforcement in urban freight transport is the Urban Freight Management Plan Barcelona”.

Known enforcement activities in the urban areas are general speed detection and control of parking activities, but this is also carried out for private cars. Regarding urban freight transport there are no special restriction known until now. Therefore enforcement and control takes place on a general level that means not with special focus on urban freight transport.

In general both, police and public administration, are responsible for the enforcement and control. The police is responsible the operational control and enforcement function whereas the administration has to deal with the offences and to send the official demand for payment of a fine.

In general only cantonal police officers are allowed to detect offences against road traffic laws. But there are also private companies having the allowance to detect offences (e.g. against parking regulations).

In the UK a variety of enforcement and control activities with respect to access restrictions and road pricing schemes are applied in urban freight transport (London Congestion Charge, London Lorry Control Scheme, London Traffic and Environmental Zone etc.). Furthermore on a broader level road freight transport is actively monitored and controlled (weight restrictions, speed control etc.).

Responsibility for the enforcement of parking and loading regulations and some minor traffic offences has been passed from the national police force to local authorities in many towns and cities in the UK over the last decade.

3.3 Regarded case studies (project-level)

The main enforcement and control concepts in urban freight transport that are described within the case studies are introduced for the detection of offences in access restriction schemes. Main aim of those access restriction schemes is the reduction of heavy goods transport within the mostly old historic centres. Those bans enhance the quality of life in urban areas. To
ensure this offences are controlled and detected with technical support or manually by police officers.

Characteristics of projects

The best practices show how an access restriction scheme can be introduced successfully and how enforcement can take place efficiently. Often new and modern technology is used to prohibit the non allowed passing of those areas.
Example 3.3.1: Urban Freight Management in Barcelona (Spain)
Project from year 2000
[Abel, H. 2006]

Key words
Access restriction, video enforcement

Background
The project (including several different single measures) was initiated by the Municipality of Barcelona in order to approve the uncontrolled use of private vehicles which make goods deliveries more and more difficult. Furthermore the management of kerbside access with efficient enforcement was regarded as powerful measure to solve the problems.

- Some 25'000 vehicles realise approx. 100’000 loading/unloading operations each day in Barcelona.
- 4,000 kerbside spaces are required to accommodate the needs of goods delivery vehicles.
- Different measures need to be applied according to different typologies (area, street - in hierarchical design).
- Urban development planning norms should be modified to require delivery bays to be provided in new constructions of 400+ sq. m.
- Pilot regulatory measures require efficient, automated enforcement.
- Telematics techniques should be employed to optimise operations.

Objectives
The main objective of the project has been to increase the quality of life in the inner-city areas.

Basic approach / Enforcement concept
Traffic regulations at junctions which include:

- Zones which are reserved for loading/unloading only from 08.00 until 14.00 (or 20.00) within the city centre.
- Maximum stay period: 30 minutes.

700 zones have been implemented and within the “Forum 2004 - Poble Nou Infrastructure plan” the measure will be extended to all junctions involving “Primary” roads.

Combined-use of streets which is done by use of VMS messages which clarify who is allowed to use the street (residents, clear-way, deliveries) according to time of day.

Special zones for pedestrians where access is only possible with a special permission: These zones (5 zones which are centrally controlled) have only a few entrances (50 gates are installed city-wide) with barriers which can be entered by use of a special key-card (8'000 resident cards are issued, further cards are available for delivery vehicles). For delivery vehicles access is only
allowed during defined time windows. In order to avoid abuse the entrances are monitored by camera.

**Figure 8: Automatic Enforcement Barcelona**

The following experiences have been made during the first period of implementation:

- The good progress could only be reached because of a strong political will to continue & improve.
- The signed spaces allocated for goods give a 30-minute limit (defined through surveys, which is sufficient for all-but exceptional deliveries) for deliveries. Tow-away enforcement is used (strong and expensive efforts of the police are necessary in order to enforce the new measures) but to automate the enforcement is an important task which is currently a heavy policing burden.
- The implementation of all equipment (especially for the combined-use of streets, approx. 0.5 M. Euro per route) is quite expensive. Only step by step further lanes (applicable only for primary routes of the grid road system) or zones can be equipped and city-wide implementation takes long time.
- The combined-use of streets is successful. This measure is accepted by the users and could also rise the innovative image of the city.
• The acceptance of the inhabitants of the special zones for pedestrians is very high, quality of live increased.

More information

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See also References and contact persons!
Example 3.3.2: Transit ban for HGVs in Liège (Belgium)

[Van Isacker, N., 2006]

Key words  Road traffic ban, transit traffic, police control

Background  Because of the city’s geographic situation, road transit traffic of heavy goods vehicles in Liège has been very important in the past. This transit traffic concerns trucks driving to Germany or France for example. Efforts to reduce transit traffic have led to the construction of the tunnel de Cointe in 2000 to provide a connection between the E40 and the E25 highways on the southwest outskirt of the city (highlighted as “new” in the map below).

Source: Ministry of Equipment and Transport of the Walloon Region

Figure 9: Liège transit ban

Transit traffic was especially observed on the Quai de la Dérivation. With time, this caused depreciation of housing in the area due to the impacts of
this traffic in terms of noise and visual impacts. As a result, less people wanted to live in the area.

Objectives

To ensure that heavy vehicles in transit use the new connection, a regulation was developed to ban transit of vehicles exceeding defined length and weight limits. This regulations is essentially aimed at trucks and caravans. Trucks coming into Liège for deliveries are not concerned by the regulation which only applies to transit traffic.

It should be noted that another connection referred to as Cerexhe-Heuseux (E40) - Beaufays (E25) is under study. This connection would allow to ‘close’ the highway network so as to encircle the city of Liège.

Basic approach / Enforcement concept

Control and enforcement of the ban related to transit traffic for vehicles exceeding length and weight limits (vehicles of less than 7.5 tonnes and 12 meters) on the Quai de la Dérivation:

The ban for transit traffic of heavy vehicles is regulated by a decree which was taken by the mayor of the city of Liège.

Signalisation indicating the ban was put in place and controls organised by the local police.

Controls are organised by policemen posted at the Bressoux bridge. Vehicles are stopped and drivers are asked their destination. If their destination is not local (city centre or port of Liège), they are fined and asked to turn around to take the highway. It has been noticed that truck drivers who have been asked to turn around communicate this information to other drivers. Impacts of controls is thus larger than the drivers that have been fined. Motorised police patrols also monitor the situation.

The quays are also equipped with some cameras to monitor traffic. Images from the cameras arrive at the police station. If the cameras show that traffic of heavy vehicles is high policemen are sent to the quays to see what is happening (an accident may have occurred on the highway for example).

Results and experiences

With the inauguration of the E25-E40 connection, an average traffic reduction has been observed on the Quai de la Dérivation of 20% and 45 % of heavy vehicles as well as a reduction of speed further to the controls carried out.

Advantages gained from the new connection and its use by heavy vehicles include, for the inhabitants of Liège, reduced congestion, noise and pollution in the city centre. As a result, the neighbourhood was able to regain vitality. For truck drivers, the highway connection is a safer route with no crossroads.

It should be noted that trucks of more than 4 meters in height and trucks transporting dangerous goods are not allowed to drive through the Tunnel de Cointe and may thus not use the highway connection. They must follow
specific itineraries.

**Future plans development**

Police controls will continue in a similar way in the future.

Concerning other types of regulations, discussion is being held over delivery time zones. Liège does not currently have any regulations in this field. However, other cities have developed such regulations. There are worries that trucks will come to deliver their goods in Liège at times during which they are not allowed in other cities. This may be during peak hours for example. There is thus discussion on what could be done to prevent this from happening.

**More information**

Nathalie Van Isacker, STRATEC

Edmond Delvenne: as been actively involved in transport and mobility in Liège both for the Police Department and the Municipality.

See also References and contact persons!
Example 3.3.3: Control of delivery areas in Reims (France)

[LITTIERE, H., 2006]

Key words
- Delivery access restriction
- Time windows
- Control technology

Background
Reims is one of highest density French cities, so there are daily congestion problems. The situation of delivery becomes more and more problematic and the respect of the deliveries areas became less and less effective. The main problem for delivering takes place during peak hours, when transport for passengers (individual cars and public transports) share the road with freight transport. The problem for deliverymen is to find a place to park their vehicle to deliver with good conditions to work.

Objective
The main objective is to reduce congestion and to reach a better usage of different user interest (logistics companies, shop owners, residents and private car-users). Because of those reasons a time restriction scheme has been introduced that foresees time delivery windows for each delivery vehicle entering the inner-city area. A new technology system based on a floor system has been introduced to regulate and monitor delivery actions in the inner city of Reims.

Basic approach / Enforcement concept
That floor system recognizes the presence of a vehicle which is going to park to deliver goods. At once that the vehicle is parked a stop watch starts for 20 minutes (the time allowed is 15 minutes). There is no general limit to access to the city. Rules are different on the entire municipal territory. For example, deliveries and pick up are authorized only between 6 am to 11 am, only in the pedestrian precinct. The described system presented concerns the city centre and the pedestrian precinct.

That system functions thanks to a floor technology which identifies the presence of a vehicle which has just parked there in order to deliver goods. At once that the vehicle is parked a stop watch starts for 20 minutes (the time allowed is 15 minutes). After that period, a twinkling panel (2 meters high), lights on.

The control of the delivery areas are insured by municipal traffic wardens.

All information from on-street parking meters are linked to a central data center. A modeling system permits to know the average number of car parks occupied. So, if police agents observe a difference between the model and the observation (less than forsaken), they go on the site in order to check if the deliveries area is correctly used.

Since the start of the system, municipal traffic wardens observe a growing of
the entries of charge. But after that people understood the system and thanks to a better action of police agents, the infringements slew down, and now deliveries areas seem to be more respected.

The cost of that technology of the local authority is not so expansive. It is included in the global budget of the street management (including panels, maintenance of the road and pavements).

Results and experiences

For the moment, the experience of Reims gives satisfaction. The costs are not so expensive and the results are positive. However, the number of places equipped by that system is quite weak and only on the city centre.

The communication campaign was not important (just few articles in the local press) and no document was given to shop owners or inhabitants. There was a lack of consultation process but the fact still remains that we can say that that experience is positive.

However, observation of the non-respect is still manual and there is no possibility for traffic wardens to control the car parks in the whole city in a same times.

That experience is easily transferable to other cities.

Future plans development

The system which is in function since 2 years is qualified as “efficient”, by the mayor. In a short term, the system should be developed in the whole city centre (particularly in the central district). In a mid term, the project consists in linking one-street parking meters to a central of information, with the aim to develop a traffic wardens mobile unity which could intervene thanks to a system which keeps informed police units.

More information

Hervé LITTIERE
Head of “on-street pay parking area” Department
City of Reims (city hall)
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See also References and contact persons!
Example 3.3.4: London Lorry Control Scheme (United Kingdom) [Allen J., 2006]

**Key words**

Access restriction, time and weight restriction, manual enforcement

**Background**

The Greater London (Restriction of Goods Vehicles) Traffic Order 1985 was introduced as an environmental control measure to stop unnecessary lorry movements disturbing the peace of Londoners at Night and Weekends. The London Lorry Control Scheme is an environmental measure to protect Londoners against the disturbance caused by lorries over 18 tonnes at night and at weekends.

The ALG (Association of London Government) maintains the scheme, issuing permits to those lorry operators with essential business in London (around 56'000 permits per year) and produces the London Lorry Map which shows those roads affected by the scheme and provides assistance to lorry operators with information on routing. A team of officers to enforce the ban and we currently prosecute about 2,000 offences under the ban each year is employed.

It minimises the impact of lorries especially on residential areas and minimises through traffic but does so in a way that allows London’s economic activity to continue.

**Objectives**

The objective of the scheme is to reduce noise nuisance at anti-social times by eliminating through heavy lorry traffic at night time and weekends and minimising the environmental intrusion of heavy lorries with business in London during the ban period.

*Hours of operation* - lorries are banned during the most environmentally sensitive times. The “controlled hours” run from 9pm to 7am from Monday to Saturday and from 1pm Saturday through to 7am Monday.

*Ban area* - the scheme applies to the whole of the Greater London area so that all non-London traffic is diverted onto the M25. There is an “exempt road network” which is outside the ban. This consists of the North and South Circular Roads, major radials leading to the above, and some continuing further towards central London.

*Weight limits* - the lorry weight limit for the scheme is set at over 18 tonnes and is intended to cover the heaviest and noisiest lorries whilst taking into account recent legislation.

*Exemptions* - exemptions are provided for those lorries, which have essential business in London during the controlled hours. Lorry operators have to apply for a permit setting out the circumstances for the exemption. Some 55,000 permits are issued annually for those with regular, proven essential
Control and enforcement in urban freight transport

Some 5,000 lorries with infrequent business in London are granted a permit on a single journey basis.

Until 2004, the London Lorry Control Scheme was administered and enforced by the Association of London Government through its Transport and Environment Committee which is a joint committee of the 33 London councils.

The London Lorry Control Scheme was decriminalised under the provisions of the London Local Authorities and Transport for London Act 2003. Individual boroughs can now choose both to issue their own permits and carry out their own enforcement, or can continue to let the ALG administer and enforce the scheme on their behalf.

Decriminalisation has meant that Magistrates Courts could be relieved of dealing with prosecutions, and resources expended by local authorities on pursuing criminal prosecutions for offences could be reduced.

London-wide enforcement is carried out by a small team of mobile enforcement officers who carry out roadside monitoring on a peripatetic basis. Unlike the local area bans police assistance is not required. In addition the team also use CCTV cameras for enforcement purposes.

There is also a complaints 'hotline' which any member of the public can ring to report any night-time and weekend lorry disturbance.

Penalty charges are set at £500 (approximately 800 euros) for operators and £100 (approximately 160 euros) for drivers with a 50% discount for payment
within 14 days.

Future plans
development

The scheme was reviewed by Transport for London in 2003-2004. There are no plans to change the scheme.

Results and
experiences

A total of 4,321 penalty charge notices were issued to the firms and drivers breaking the London Lorry Control Scheme between 1 April 2004 and 31 March 2005.

- The London Lorry Control Scheme helps to prevent the use of heavy goods vehicles on unsuitable roads in London at night and weekends.
- In the Mayor of London’s Transport Strategy, the environmental objectives of the scheme and the support it enjoys from the boroughs are acknowledged.
- Despite the scheme’s popularity, there have been objections to the various aspects of it by the freight industry, since its implementation in 1986.

More information

Julian ALLEN, Transport Studies Group, University of Westminster

For more information see also:
See also References and contact persons!
Example 3.3.5: London Congestion Charging System (United Kingdom) [Allen, J., 2006]

Key words

Electronic fee collection, city access, camera detection, electronic enforcement

Background

The London Congestion Charge System is not a system that focuses only on urban freight transport but also on individual road traffic entering the city of London. Despite this it is a very up to date and modern enforcement concept that is worth describing.

A congestion charging scheme was introduced in central London in February 2003. The priority of this scheme is to reduce traffic congestion and the related environmental impacts. Any surplus revenues generated are invested in transport in London.

All drivers entering the charging zone were initially charged £5 (approx. 7.50 Euro) a day to drive within the zone between 07.00 and 18.00, on Mondays to Fridays. This was increased to £8 (approx. 12 Euro) in 2005. There is no charge at weekends or on public holidays.

Several exemptions and special tariffs are available for special transport vehicles.

Basic approach / Enforcement concept

There are no tollbooths or barriers around the congestion charging zone and no paper tickets or licences. Instead, drivers or vehicle operators pay to register their vehicle registration number on a database for journeys within the charging zone during charging hours for single or multiple charging days.

Receipts (or receipt numbers) are available and on occasion are vital for...
proving payment of the charge for the correct vehicle on the date of travel. The drivers are not required to display a licence. The registration numbers of these vehicles are entered into a database. The number plates of vehicles entering or moving within the central zone are observed by a network of 700 fixed and mobile cameras. There are no toll booths, gantries or barriers; drivers do not have to stop. The number plates collected by the cameras are then be checked against the registration numbers of those who have paid. The registered keeper of any vehicle identified within the charging zone without the congestion charge having been paid (unless exempt/discounted) is liable to a penalty charge.

However, motorists are not immediately penalised if they enter the charging zone without buying a licence - they have until the end of the day to register and pay the charge. Those not paying the charge have to pay of surcharge of between £40 - £120 (approximately 70 – 190 Euro).

The system, especially the collection of charges and the issue of certificates of exemption, is organized by a private company. The charging scheme is accompanied by a wide range of measures designed to make public transport and other alternatives to car travel easier, cheaper, faster and more reliable.

The scheme is run by Capita, a private company, on behalf of Transport for London (TfL). Cameras at every entry and exit point, and on key routes within the zone, capture images of vehicles entering and travelling within the charging zone during the hours of operation (07.00 to 18.30) every charging day. The images are continually fed through to a central processing centre where Automated Number Plate Recognition systems (ANPR) interpret the number plate of every vehicle captured by the cameras.

A network of about 700 ANPR cameras are used to enforce the scheme, located across about 250 sites (including all entry and exit points to the zone). These are supplemented on the Inner Ring Road and main radial approaches by 70 monitoring-only cameras.

Once a registration number has been interpreted by the cameras a complex process of confidence measurement of the images takes place during the day. At the end of the day, only the best, highest quality interpretation is used for checking against the database of paid, exempt, 100 percent discounted or fleet vehicle registrations. Once a match against the database is made the vehicle details and the images are automatically removed from the database. Images of all vehicles where there is no matching record on the database are then sent through to the next stage of the process.

By 02.00 on the next working day after the charging day, all the vehicle registration numbers for those vehicles where no match was made are sent to the Driver and Vehicle Licensing Agency (DVLA). By 07.00 on the same day the DVLA supply TfL with the name and address of the registered keeper and vehicle details including the make and model of the vehicle.
The final stage of the process before issue of any Penalty Charge Notice (PCN) involves a 100 percent manual check of all the images of vehicles identified as possible evaders of the congestion charge. Trained staff check that the ANPR camera systems have correctly interpreted the number plate. If there is any doubt that they have not, the case is rejected for re-interpretation or deletion.

Failure to pay the congestion charge or pay or register correctly for a discount results in a PCN of £100 (approximately 160 euros) being issued to the registered keeper of the vehicle as supplied by the DVLA. This amount is reduced by 50% for prompt payment within 14 days. Failure to pay the PCN within 28 days results in the amount due being increased to £150 (approximately 240 euros).

Every recipient of a PCN has the right to challenge its issue through a written representation to TfL. A representation must be made within 28 days of the date of receipt of the PCN.

The keeper of any vehicle related to a representation that TfL has considered but rejected may appeal against this decision to the Parking and Traffic Appeals Service (PATAS). All appeals are considered by independent adjudicators.

Future plans

Several changes and improvements to the enforcement process and operation took place during 2004 including:

- The inclusion of images of the vehicle on the PCN itself from July 2004. This has led to increased awareness and understanding by the keeper of the vehicle in relation to the offence committed.

- The inclusion of a short, clear and simple information leaflet with the PCN from July 2004, regarding the enforcement process. It explains why the penalty was issued, how to pay or make a representation and the implications of no action.

- Continuing review of enforcement processes, staffing levels and systems improvements to ensure that the processing of representations and appeals is fairly, efficiently and consistently applied. Introduction of a dedicated team of enforcement staff responsible for dealing with escalated calls from the call centre regarding more complex enforcement issues such as appeals, and bailiff and on-street enforcement action. This service has resulted in the provision of more accurate information and guidance to charge payers of the enforcement process and the steps required to resolve outstanding issues.

TfL will continue to seek to improve the quality of the enforcement service and respond to issues that emerge from adjudicators’ decisions on appeals.
The number of Penalty Charge Notices (PCNs) issued has gradually reduced and compliance improved over the course of 2004.

The number of PCNs issued per charging day has fallen from 8,000 in March 2004 to 5,865 in February 2005 as a result of various factors including:

- improvements to the services;
- improved awareness by chargepayers of the payment and enforcement processes, common mistakes and awareness of the scheme;
- increase in the Penalty Charge from £80 to £100 (approximately 130 to 160 euros) in July 2004.

The percentage of recovered PCNs and level of payment have continued to increase since the start of the scheme. Average PCN payment rate for PCNs issued in 2004 is 73 percent.

The percentage of representations made is now significantly lower than in 2003 from a high of 64 percent to current levels of 20 percent or lower, demonstrating improved processing by Capita and a better understanding of the scheme and the enforcement process by chargepayers.

The volumes of appeals received have reduced from a high of around 3.8 percent of PCNs issued in October 2003 to a rate of 1.3 percent in October 2004. The percentage of appeals ‘won’ by TfL has also improved and is currently consistently 70 percent or higher.

Since the introduction of the congestion charging scheme, the total volume of traffic entering the charging zone during charging hours has fallen by approximately 18% against pre-charging levels in 2002.

TfL has calculated that there has been a 30% reduction to delays inside the charging zone during charging hours compared to pre-charging conditions in 2002. Bus patronage has increased sharply since the scheme was introduced.

Results from TfL research suggest that congestion charging has had a broadly neutral impact on overall business performance in the charging zone. However, some retailers and retail groups believe they have been adversely affected.

More information

Julian ALLEN, Transport Studies Group, University of Westminster

See also References and contact persons!
Example 3.3.6: Management of Pedestrian Zones (Slovenia) [Politic, D., 2006]

Key words

- city access, physical restriction

Background

The reason for implementation of the enforcement activities was a very dense motorised traffic in the city zone resulting in a poor safety for pedestrians. Inhabitants used to complain about a dense traffic in the city zone. There was a substantial public pressure to improve the situation. Because of the negative situation there were several public discussions held about reducing the volume of traffic.

For delivery vehicles an access restriction has been introduced. Access restriction for freight transport consists of a weight restriction and a time restriction.

Basic approach / Enforcement concept

The general enforcement concept provides for a restricted access to the city zone by physical restriction. The Municipal Police supervises the area, in which the enforcement activities take place, recording the vehicles violating the rules and imposing appropriate punishment.

The delivery window is open from Monday to Friday between 6 a.m. and 9 a.m. and between 7 p.m. and 10 p.m. On Saturdays, Sundays and holidays, the delivery window is open between 1 p.m. and 3 p.m.

Parking is not allowed in the public traffic areas. Stopping at the delivery spot is limited to 15 minutes and a special written certificate has to be kept on board.

The maximum weight of vehicles entering the city zone is limited to 3.5 tonnes. Vehicles exceeding this weight are requested to have a special permit for entering the city zone.

The concept is publicly controlled. The enforcement concept was initiated by the Municipal authorities. Municipality of Maribor has adopted a decree determining the elements for the road traffic regulation. Its articles regulate the delivery time, set-up the criteria for the right of entering the pedestrian zone, and the volume of freight permitted.

Four sink cylinders are used to prevent unauthorised access. The access to the city zone is enabled by a valid card. Such card enables sink of the cylinder and ensures the access. The system is computer aided and provides for a video surveillance. The technology is based on the network, computer and the entrance card. The costs of technology amount to approximately SIT 20 Million. The measures taken included information
published in media and provision of help at the entrance. Main problems are related to damages on the sink cylinder.

There are several partners involved in the enforcement concept: Municipal Police, Office of Traffic and MRS. The administrative work is carried out by the Office of Traffic. Municipal and National Police Offices supervise the enforcement activities. There are no private companies involved with the enforcement concept.

The area, in which the enforcement activities take place, is daily inspected by one person employed with the Municipal Police. Once a month, the Municipal and National Police staff carries out a joint action punishing the individuals violating the rules. The inspection times are random; the officer tends to round the area in irregular times. The inspection covers the whole area of the enforcement activities. The enforcement activities remain the same during the whole year.

**Statistical Information:**

- Number of checks: 1 per day
- From 1 January to 31 December 2005, there were 1,002 violations recorded.
- Penalty rates: the fee for wrong parking amounts to SIT 20,000 (approx. EUR 83.5), and the fee for driving without a special permit accounts for SIT 40,000 SIT (approx. EUR 167), respectively.

<table>
<thead>
<tr>
<th>Entrance fees:</th>
<th>EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily entrance fee; vehicles up to 3.5 t (perishable goods)</td>
<td>350</td>
</tr>
<tr>
<td>Daily entrance fee; vehicles exceeding 3.5 t</td>
<td>210</td>
</tr>
<tr>
<td>Daily entrance fee; personal cars</td>
<td>5</td>
</tr>
<tr>
<td>Daily entrance fee; vehicles up to 3.5 t, without regular delivery permit</td>
<td>50</td>
</tr>
<tr>
<td>FINE (by a commenced hour exceeding permitted 40 minutes)</td>
<td>10</td>
</tr>
</tbody>
</table>
Figure 12: Entrance to the city zone (sink cylinder)

Since the technology works well, the authorities plan to use it in the future.

- The sink cylinders contributed to a decreased traffic volume in the city zone, which resulted in a higher safety with pedestrians.
- Decrease of congestion due to four different entrance/exit gates.
- Decrease of overall traffic due to limitation of exit/entrance to the specific gates.

David Politic, University of Maribor

See also References and contact persons!
3.4 Conclusions and recommendations

3.4.1 Conclusions

As seen in many examples enforcement and control in various countries often differ with respect to the measures that are introduced. Main enforcement and control activities with direct regard to urban freight transport takes place in the case of city access restriction schemes like for example the London Congestion charge or the environmental zone schemes in Scandinavia.

Also, a complex access restriction system or solution can make use of more technical enforcement systems (video detection or electronic bollards). The greater an area or system is, the more it makes sense to carry out checks and controls with support of electronic equipment.

Usage of video cameras

There are differences in the allowance to use video enforcement as a suitable measure to check and control offences in urban freight transport in different countries. Often the national regulation hinders its usage. If observations and detection are allowed than the data have to be deleted after a time period.

Main problems and failure factors

In several countries the introduction and operation of electronic control technologies like camera detection have been mentioned as a response to the main problems and failure factors of manual control and enforcement systems. However these electronic enforcement systems can be very expensive as this can prevent their adoption. Another important problem that has often been identified is the lack of availability of human resources able to continuously or regularly monitor and enforce offences.

Success factors

Especially in those access restriction schemes that are introduced on a geographically broader level (like the London Congestion Charge) electronic control and enforcement equipment run successfully. The costs of such systems that are sometimes viewed as a problem can be reduced if applied in larger access restriction areas or on areas where high freight transport traffic should be monitored and controlled. Also, the costs of these enforcement systems can be met if revenue from the fines and penalties imposed as part of the enforcement process can be used to pay for the enforcement equipment.

For smaller areas also the manual detection of offences against existing regulations for urban freight transport can be a solution.
3.4.2 Recommendations

It is important to introduce an enforcement and control scheme according to the function of a regulative measure and the area size. For a small city area to control forbidden loading activities it would make no sense to introduce a high technology control system. In this case ad-hoc spots can be an appropriate measure.

Therefore a good planning and consultation process regarding the implementation and operation of the right enforcement and control scheme should take place.

From beginning on of the introduction of a control and enforcement scheme all traffic participants should be informed by local authorities about the enforcement and control mechanism. Also the kind of control activities and fines should be published. That helps to provide a common sense and understanding of the necessity of such measure. On the other hand this should have a prohibitive character. Frequent controls (or better 24-hours observation and detection by electronic equipment) can contribute to a more restrictive freight transport operation.
4 City access restriction schemes

4.1 Introduction

Most European cities are confronted with problems in urban freight transport regarding air- and noise-pollution and congestion caused by motorised road traffic. In the past decades the development even worsened that situation, due to increasing delivery and pick-up activities in city centres, what has resulted in growing environmental problems which have become less and less acceptable. Shops and businesses suffer from the poor accessibility of the city, residents and shoppers experience the negative effects of the pollution caused by vehicles.

One of the main problems a city centre is confronted with is delivery activities. On the one hand delivering the shops and related distribution, supply and collection processes are crucial for the economic well-being of a city on the other hand related environmental problems like exhaust and noise emissions and the issue of safety for pedestrians reduce quality of life. One of the main problems of urban freight transport activities in city centres are space problems caused by parking of delivery vehicles in narrow streets of the centre. Parking and delivery are closely linked, usually because these activities compete to use many of the spaces within the central area. Various studies have identified delivery operations to be one of the main causes of traffic problems in central areas, with low levels of discipline (double parking, illegal parking) causes decreases in network capacity. This is one besides other reasons any access control system needs to encourage responsible use of the available spaces and minimise opportunities for infringing the access/parking regulations.

City authorities and municipalities try to solve the problems by managing urban freight delivery operations by different measures. The concepts for city access restrictions have gained importance regarding the prevention of city centres against the negative effects of urban freight transport. Many European cities in Western but also Eastern European countries, have introduced various and different access schemes. The most innovative and well known ones are for example the London Congestion Charge or the Environmental Zone Schemes in Scandinavia.

Access control schemes aim to restrict certain types of traffic from entering predefined areas during specific time periods. The most known access restriction concepts in urban freight transport are:

- Time restrictions / Time delivery windows
- Weight restrictions
- Bans for non-environment-friendly vehicles / vehicle limitations (e.g. only high environment-friendly standards)
- Loading capacity restrictions
- Utilisation degree restrictions

Despite the fact that a lot of municipalities and cities try to reduce urban freight transport by different strategies, concepts and measures a lot of truck drivers and freight transport companies try to avoid the restrictions set by local authorities. Therefore an important issue is to connect the access concepts with an efficient enforcement strategy (compare also chapter 3 about “Enforcement and Control in Urban Freight Transport). Municipalities and cities try to control urban freight transport activities and restrictions by enforcement activities. Those enforcement activities have the objective to detect offences and to set penalties to those who are not accepting given rules and carry out operations without permission.

Growing freight transport activities, the discussion about impacts of PM-10 emissions caused by urban freight transport and a rethinking of urban planning approaches have started a new discussion about city access schemes for freight transport. In recent years additionally an intensive new discussion of road pricing measures in different European cities has started. The aim of this Best Practice Handbook is to cover new approaches and ideas of access restriction concepts. New successfully strategies, concepts and projects therefore are presented in the following.

Usually access control will form part of a package of complementary measures designed to meet authorities’ transport and city-centre management objectives. Therefore a clear definition of the objectives is an essential pre-requisite for the implementation of a successful scheme.

For the set up of access restriction measures regarding urban freight transport different measures can be taken into account. The “right” measure depends on the aim and the feasibility of the overall concept. For authorities therefore it is important to have an intensive discussion and planning process to initiate a successful concept that is financially sustainable and delivers the highest efficiency to reduce unwished negative effects. Furthermore all relevant stakeholders (transport industry, shop owners, interest groups) should be involved in the planning and discussion process.

On basis on existing technologies the following main three possibilities of access management schemes can be named:

- Management of access permission of cities (dependent on: area, day time, vehicles type, reason of trip, kind of load, capacity usage, etc.)
- Management of loading zones and areas of larger loading activities (for example by vehicle prioritisation, loading space reservation, ramp management, constructions site management etc.)
- Road Pricing for streets, loading zones or ramps.
In the following some control measures are named that can be a suitable solution for municipalities (Miles, J. 1998):

- Control on entry (tag, beacon, video and permit systems, etc.): Many factors will determine the usability of this concept, including the volume and mix of vehicles, the speed of traffic and the availability of street space. If there is public parking within the control zone it will be necessary to identify unauthorised vehicles on entry and warn the driver that he/she may be committing an offence.

- Control at screen lines to prevent movement across the controlled zone: Where through traffic is a problem a system of control based on gates with Selective Vehicle Detection can be considered. The objective here is to allow only authorised vehicles to move from one part of the controlled zone to another. The gate does not have to be a physical barrier: traffic signal with selective detection, appropriate signing and suitable lane geometry are possible. Alternative (indirect) access routes from one part of the controlled zone to another need to be available.

- Control by physical barriers: Careful consideration has to be given to local circulation patterns and the possibilities for queues and congestion. Access arrangements for emergency vehicles need to be determined. Methods include the use of “smart barriers” that can be opened by a permit or key holder.

4.1.1 Definitions, classification and involved actors

The core objective of this analysis of best practices is to provide information and to make a comparative analysis on new approaches and concepts of city access restriction schemes in urban freight transport in various European cities.

City access schemes are usually based on legal regulations that prescribe the allowed usage of entering a special area within the city for a determined user group. “City access regulations” are regulations for all types of goods vehicles in the access to the inner cities.

Freight transport in this respect concerns both pick up and delivery activities in retailing, parcel and courier services, waste transport, transport of equipment for the construction industry and a broad range of other types of transport.

The purpose of these regulations is to reduce the negative effects in the city area caused by the interaction of goods vehicles with the inhabitants of the city and the other users of the infrastructure.

A successful implemented access scheme is only ensured if an efficient
enforcement of regulations set by municipal authorities is given. Relevant enforcement support (enforcement of rules and regulations) has to be regarded because it is a critical factor in the success of the policy on different measures and strategies to reduce urban freight transport. Those enforcement measures can be:

- **Organisational and operational measures like signalisation, traffic guidance, parking regulations**
- **Physical restriction measures like gates or bollards**
- **Control and monitoring like video enforcement**

Enforcement is traditionally a labour intensive task and by this costly. However new applications of information and communication technology (ICT) may improve the “enforcement efficiency” and enlarge the scope of enforcement.

An in-depth analysis of enforcement best-practice can be found in chapter 3 of this handbook.

**Classification**

City access schemes are applied and introduced in different types according to the objectives an access scheme wants to achieve:

- Bans for non-environment-friendly vehicles / vehicle limitations (e.g. only high environment-friendly standards)
- Vehicle-limiting measures (e.g. only vehicles not exceeding length/width/height) or weight regulations (axle-weight, total train weight).
- Loading capacity restrictions
- Establishing special protected loading zones in areas where there is considerable delivery traffic, parking places.
- Fee for parking or the use of special delivery window (city-centre-licence).
- (Pedestrian) zones in which deliveries can only be carried out at certain times of day or night or certain events.
- Allowance or obligation of night deliveries
- Limitation of the loading/unloading time at the point of delivery
- Protected zones that have to be kept completely or partly free of trucks.
- Access slots
- Access regulations depending on (only at certain points) existing regulations within the urban infrastructure (e.g. narrow bridge).
- Access charge based on specific times or environment standards or applicable for all vehicles
Issues to consider in the implementation of a scheme include:

- Use of organisational and operational enforcement measures for above mentioned schemes (signalisation, guidance, parking regulations)
- Use of physical restriction measures such as gates and bollards
- Control and monitoring with ITS, video, number plate recognition or other innovative systems

Several actors are directly or indirectly involved in urban goods transport. The following table shows all actors and their own specific interests to be regarded during planning and implementation of a measure or project:

<table>
<thead>
<tr>
<th>Actor</th>
<th>Main interest in regard of urban goods transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipper</td>
<td>Delivery and pick-up of goods at the lowest cost while meeting the needs of their customers</td>
</tr>
<tr>
<td>Transport-company</td>
<td>Low cost but a high quality transport operation, satisfaction of the interests of the shipper and receiver (shop)</td>
</tr>
<tr>
<td>Receiver / shop owner</td>
<td>Products on time delivered at a short lead-time</td>
</tr>
<tr>
<td>Inhabitant</td>
<td>Minimum hindrance caused by goods transport</td>
</tr>
<tr>
<td>Visitor / shopping public</td>
<td>Minimum hindrance caused by goods transport and a high variety of the latest products in the shops</td>
</tr>
<tr>
<td>Local government</td>
<td>Attractive city for inhabitants and visitors: minimum hindrance but having an effective and efficient transport operation</td>
</tr>
<tr>
<td>National government</td>
<td>Minimum external effects by transport, maximum overall economic situation</td>
</tr>
</tbody>
</table>

Table 1: Main interest group in regard of urban goods transport

To find an optimal compromise between all interests of the involved actors is therefore a main problem of all implemented measures concerning city access, parking regulations and access time regulations.
4.2 Country overview

In the following section we give a very brief summary of the national situation in various countries. For the countries already addressed within BESTUFS I (BESTUFS 2000) this overview focuses on updating the information. In addition, country overviews for the new member states are given. A more detailed description of the situation in various countries can be found in ANNEX III.

Australia

Few restrictions schemes

There are very few city access restriction schemes currently operating in Australian cities. Commonly access is controlled by the planning of designated loading zones in main streets and pedestrian malls in retail areas. These generally permit parking of vehicles for loading and unloading in the morning periods.

There are a number of truck curfews (time window, within which no HGV traffic is allowed) that operate on roads in metropolitan areas due to the social impacts of large vehicles.

Austria

Strict schemes rejected but a broad range of access restrictions across the country

In Austria there is an ongoing political discussion about implementing access restrictions for traffic in city centres, where nearly all possible solutions which can be found throughout Europe (e.g. London, Stockholm, etc.) have been discussed, but finally rejected. Usually in towns or municipalities the discussion is focused on traffic in general, not distinguishing between freight transport and individual traffic.

The most obvious problem why access schemes are discussed is the congestion problem, which can be found in many cities, also medium-sized towns. Due to the fact that usually main roads, except highways, are going directly into and through the city centre, very often a huge “regional transit problem” can be observed. Environmental problems, which are in some areas also obvious, do of course strengthen the position to introduce access schemes.

Due to the legal situation municipalities would be entitled to carry out several restrictive measures as in other European countries. The restrictions include time, weight, environment (un-)friendliness, loading capacity or traffic management solutions such as lane usage, parking regulations and regulations for loading and unloading (licences, reservation, time windows) / parking fees and limits for noise emissions in specified areas.
Similar to most European countries the development and implementation of city access schemes in Belgium are mainly motivated by congestion problems encountered and their impacts in terms of noise and emissions as well as preservation of the city centre and quality of life for people living and coming to the city centres. Urban freight transport regulations concerning city access restrictions and/or delivery time windows are developed by the cities and the municipalities through notably decree of the city's mayor. Enforcement and controls related to these urban regulations are carried out by the local police.

Municipalities across Belgium have developed and are developing Municipal Mobility Plans to facilitate transport and reduce negative impacts such as congestion, accidents and environmental impacts. These Mobility Plans mainly focus on passenger transport and integration of freight transport issues in Municipal Mobility Plans has been relatively low but interest is growing.

In most Belgian cases, access is not banned but it is regulated or delimited in time. Access restrictions schemes in application mainly concern delivery time windows and access to pedestrian historic city centres.

The Brussels Capital Region has decided to ban traffic of vehicles of more than 19 tons in the city centre as well as on intra-neighbourhood networks in general. A project for an urban distribution and storage centre is currently in discussion. This project includes a traffic ban for vehicles of more than 3,5 tons in Brussels city centre.

In competence of the municipalities restrictions apply for city access such as weight, time, and vehicle length for specified zones. Examples are given from Sofia and Rousse. Usually exception permissions are provided by the authorities for deliveries and collections, with a time limit for staying in the zone of maximum 2 hours per day (Sofia).

From 1990 there has been a sharp increase in general traffic volumes in Czech cities, an increase of 32% in Prague for instance.

In general, heavy freight vehicles are not allowed to access the city centres. They may go there only with permission. Czech Police and Municipal Police check the access restrictions and charge fines manually. Parking usually is charged and cities use parking zones as a tool for city access regulation. Police use video detection systems and radar in certain places. Physical barriers are used to restrict access to city centres.

The transport policy of the Czech Republic for the years 2005 – 2013 designates access regulations in cities with regard to heavy freight transport.

The topic concerning city access charges has not yet been discussed widely. But local authorities in the large cities, especially in Prague, and in the
City access restriction schemes

Ministry of Transport, are aware of the need to charge access to city centres in the near future. Projects ordered by the Ministry of Transport that are concerned with city access charging have been under way since 2004.

Danish legislation at present stage only allows smaller scale and time limited experiments of city access schemes, that cover general transport issues. The government will make some smaller changes in the legislation in the near future, which will allow permanent environmental zones in the inner cities for instance.

After a pilot project from February 2002 to October 2003 called Copenhagen City Distribution, which was mandatory for the freight companies, the municipality of Copenhagen in 2004 made an application concerning the establishment of an environmental zone arrangement in the inner Copenhagen with a duration period of three years.

The main reason for introducing a city access scheme is the increased particle pollution from diesel powered heavy vehicles and congestion. The idea of road pricing scenarios in the bigger Danish cities (especially in Copenhagen) was debated lately but it’s politically unfeasible at the time.

One of the major issues in this connection is freight transport connected to the ports in some coastal cities. Port traffic with heavy goods vehicles is banned from the inner city centre. Elsewhere, freight transport is not a big issue in Finland – except regarding cost and safety – therefore political interest is a minor. City access schemes are mainly formed by some local restrictions for heavy vehicles to use a specific part of a street. Because of the small scale of these kinds of actions, no relevant data on possible impacts is available. There is no political discussion about city access schemes.

Without restricting the city access a Helsinki project will handle goods traffic and waste collection under the surface by an underground road to 14 city centre blocks.

There are different kinds of restrictions in France: weight, size and environmental with the use of clean vehicles. The main part of municipalities in France does not have specific rules concerning the access for trucks in the city centre. More than 75% of small cities (< 100’000) and 44% of the larger cities do not have any access regulations. Most common among restriction rules is the weight restriction which occurs more often in lager cities.

Some cities authorize freight urban distribution for the night. Some municipal authorities consider this as a viable solution to the problem of traffic congestion: in Dijon, Marseille, Orléans and Paris they are strongly
encouraged. Others reject this arrangement on account of the annoyance caused by vehicle noise emissions: in Lille or Rennes, deliveries are banned at night for all vehicles.

Few municipalities have chosen an environmental parameter in their regulation yet. But Montpellier, Toulouse, Paris, Lyon are thinking about the establishment of an environmental regulation. Other kinds of restrictions exist, for example low emissions zones (Montpellier is experimenting the first one in France), which means that the inner city is accessible only for electric vehicles.

In France there are discussions about the creation of a congestion charge to access the inner city (like London), but it is not permitted currently. Officials estimate that an access charge would create imbalance between the users of infrastructures and companies, which is why low emissions zones are considered a better approach.

The legal framework to establish access restrictions in Germany is governed consistently on national level. Directives as the STVO (Directive for road traffic) describe the different measures that are possible. This includes low speed zones or blocking of roads for vehicles of a particular weight, size or kind. The implementation and enforcement is at the federal state side, where also the entity concerned (federal ministry) is determined.

Cities and city councils have mainly influence on (inner) city networks that are not of relevance for the federal and national network. Measures developed in the context of reducing traffic are fully at the city side while measures with influence on the intercity system are at the federal/national entities. Therefore, access restrictions for goods transport are mainly directed to inner city area. Measures on city level are:

- Access restrictions and bans (weight, size, time etc)
- Parking management
- Access and parking enforcement technologies

City access schemes are implemented in almost all major cities in Germany. Presently the discussion is to introduce a “low emission zone” in Berlin by 2008. Similar plannings are in other cities like Munich.

A major motivation in the recent past was the introduction of clean air plans in German cities. In many cities the restriction of goods transport is a major measure proposed in these clean air plans. Duesseldorf for example prohibited in the context of the clean air plan transits traffic over the Corneliusstrasse. A general prohibition for transiting the city area for vehicles > 3,5 t is in force since 2005 and enforced on a daily basis. Furthermore there are restriction prohibiting the delivery on specified roads, areas where only trucks up to 7,5t are allowed and area for trucks up to 30 t. In additions there are restrictions on the size of the vehicles.
In Stuttgart a prohibition for trucks transiting the Stuttgart city area was introduced in 2006. The prohibition was mainly justified with the high level of particulate (PM 10) emissions in Stuttgart.

A further motivation for restricting access for goods transport is to increase mobility within the city. Regarding goods transport the channelling of heavy goods vehicles through and in the city is a major concern. The cities provide maps as well as information over the internet to the drivers.

### Greece

**Basic time and weight based restrictions**

Main schemes in Greece base on time and weight restrictions in determined city areas. Main examples are found in Thessaloniki and Athens. Here, restrictions for delivery services, imposed by national administration, apply to goods vehicles exceeding a specific payload for an area encircled by a “ring road”. In case of other cities / towns, time windows for delivery services are determined by district councils at Prefecture level. Schemes with exceptions for specific types of goods can also be found, such as food, hospital supply or press.

Heavy vehicles are often banned from entering several cities’ central area, when there is a bypass.

### Hungary

**Long term experience in the capital**

In Hungary access restrictions of freight transport to urban areas is not widely spread. Nevertheless, in larger cities time window schemes can be found. Budapest has a long term experience (since eighties) with a system regulating freight traffic zone by zone with time windows, weight limitations and the limitation of loading time. As experienced elsewhere enforcement is intricate and to a certain degree, violations have to be accepted.

### Ireland

**Dublin leads the way with first pilot scheme**

The main reason for city access schemes in Ireland is the improvement of accessibility by the prevention of congestion. Environmental issues often only have a supporting roll in the argumentation of the scheme. Since Dublin is the main city in Ireland and the other cities are substantially smaller, the schemes developed for Dublin are often guiding for the rest of the country. The theme is politically discussed and led to a pilot scheme using time windows for deliveries aiming at moving deliveries to the off peak and early morning. No relevant evaluation data is available yet.

### Italy

**Towards environmental and credit schemes**

The main recent important evolutions in Italy concerns the new regulations adopted by some Italian regions giving city access restrictions for LCV for the winter season 2006-2007. The main aim of such measures is to reduce pollutants emissions, particularly PM10. One important example of this concerns the Piedmont Region, where Euro 0 and 1, and from 2008 Euro 2 vehicles are not permitted from November to March.
Similar measures are expected to be adopted in other Regions of north of Italy: Lombardia, Veneto, Trentino Alto Adige, Emilia Romagna, including the cities of Bolzano, Trento, Venezia – Mestre, Verona, Padova, Vicenza, Treviso, Aosta, etc.

Stricter restrictions with respect to winter 2005-2006 are also expected in the main cities of the centre and south of Italy (Firenze, Roma, Napoli etc.).

Another important evolution concerns some study about the adoption of “credits schemes” for urban distribution purposes. Into this context the Municipality of Genova is promoting a specific initiative; the study is in progress.

In Lithuania decisions on freight transport restrictions in urban areas are taken on municipal level as in other European countries. But there is no specific regulation or legislation on national level foreseeing access schemes. The national concepts and strategies are oriented towards intermodal development and logistics centres development, having the supposed effect of decreasing the number of lorries in urban areas as well. The restrictions in practise enclose weight limitations, height limitations or a total lorry ban.

A Lithuanian speciality is the fact that new schemes are not initiated by official concepts or strategies but by inhabitants calling for restrictions. Thereafter, the main point in the evaluation process of access restrictions is the existence of alternative roads for freight traffic.

There are no special heavy vehicle fees in urban areas. All kind of heavy vehicle fees are national matters.

The national Dutch government creates a framework for urban freight transport policy leaving space for municipalities (and the regional government) to set their own regulations. Until 2002 the Platform Urban Distribution was funded to carry out pilot studies and to encourage cooperation between stakeholders. Two forms of access schemes are implemented: Delivery windows and length/weight restrictions. The latest examples make use of access barriers in combination with access passes and licence plate identification for an effective enforcement of the restrictions. Some municipalities are considering environmental zones. Amsterdam already has an environmental zone, where goods vehicles above a certain age are banned.

The objective of a newly set up commission “Urban freight” is to stimulate the cooperation between local governments and public and private parties concerning urban distribution, as it is acknowledged that measures must balance the interests of the local economy, inhabitants and private sector. In case regional discussions don’t lead to cooperation, the Commission has the
power to mediate and force changes.

The development of city access schemes for freight transport is in an early stage. The National Development Plan contains among mainly economic goals a strategic concept for fostering the development of a more sustainable handling of transport. Regional Operational Programmes aim at implementing these strategic goals. Concrete actions will be: special parking zones for delivery vehicles, no-truck-traffic zones and limitations for pollution, noise and vibrations.

At this time there are no freight specific access restrictions for urban areas in Poland except one example from Wroclaw. The city of Wroclaw aims to reduce negative impacts on road freight transport in the historic and commercial city centre of Wroclaw. These regulations are in force within the area of the Old City Centre:

- There are zones of limited traffic for cars with a tonnage of more than 3.5 tons.
- There are special zones of limited traffic for delivery cars, i.e. from 6.00 am to 9.00 am and from 6.00 pm to 10.00 pm.
- Charging a fee for entering a “no traffic zone”.
- The places of loading/unloading operations are signed with special road signs with an information plate.

There is no special program for following of city access restrictions for urban freight transport in the Slovak Republic. Relevant data on city access schemes is not available. General environmental conditions as well as conditions for inspections and safety are met and accepted on a general level of road transport without any special strategy for urban freight transport. Urban freight transport is solved on case by case base at municipal level.

In Slovenia, regulations are adopted at the municipal level in order to control the transport in a specific city centre. The cities are aware of the problems caused by the traffic in the city centres. Accordingly, there were several political discussions initiated on reduction of the traffic volume.

In Slovenia at the national level, there is only one form of the city centre access scheme: That is physical restriction of entering the city centres by means of sink cylinders. These are operated by RFID access cards and may be in the “sunken” position during specific hours, during the day; outside this period, no entrance to the area is possible without permission (the concept of delivery windows).

Usually, the entry is possible during a couple of hours in the morning (2 – 3.5 hours) and/or a few hours in the afternoon (2 - 3 hours). In addition, there is
a time limit established for stopping in the area for delivery purposes, which usually accounts for 30 - 40 minutes. Delivery vehicles are allowed to enter the city centre upon payment of the entrance fee (with exceptions).

The implementation of the city access schemes resulted in decreased traffic volumes as well as air and noise pollution.

Many local governments across South Africa are facing increased requests from communities for permission to close off roads and erect boom gates to restrict access to residential areas.

South African schemes to restrict vehicle access to urban areas include initiatives such as the closure of Eeufees off-ramp for trucks and the restriction of vehicle access to Church Street in Pretoria; the Chapman’s peak drive boom-gate/toll road access restriction in Cape Town, as well as the restriction of heavy vehicles during peak hours (time restriction) on the Field’s Hill in Durban. These restrictions came to be because of the congestion, lack of parking space and environmental problems caused by different vehicles in those areas. Additionally there is the highly debated issue of enclosed neighbourhood (gated communities) in some urban areas of South African provinces.

In South Africa, access control is not limited to commercial developments, but is also common in residential and office land uses. Most of these access control systems make use of mechanical booms and sliding gates at a single access point to restrict access. In some instances access control is not enforced during peak periods to avoid excessive vehicle queuing.

Gauteng has most of the country’s enclosed neighbourhoods, including the controversial gated communities (using boom gates).

Road user charges – This issue has been hotly debated for a number of years but there has not been any final solution to the problem, which would result in a fair and cost-effective system. Claims that light motor vehicle users will subsidise the heavy freight operator have not been resolved yet.

In general, regulations in Spain define the load and unload activities. Some cities have included in the traffic regulations specific section for the urban distribution. The first one was the regulation for the city of Madrid, which was considered as a “revolution” in the transport sector. This was established in 1998. In 2000 Barcelona has introduced a key card and camera controlled zone system for the central city area. Freight vehicles may enter the zone during a specified time window and load/unload in designated loading areas. Lately, several cities consider the access in their regulations, bearing in mind limitations to the entrance to fixed areas for the cargo vehicles. The examples are: Alicante, Granada, Valencia, and Bilbao. In these regulations, restrictions are oriented to an identification of fixed areas where the circulation is restricted for cargo vehicles according to the tonnage or
volume. Also, some does not allow circulating transport up to a high tonnage or considers time windows for the access.

Road pricing schemes were discussed but politically not feasible at the time. The main motivation for the municipalities to introduce city access schemes are solely the congestion in the city centres rather than environmental or cost related aspects.

**Sweden**

Towards environmental zones and access charges

The implementation of environmental zones in Swedish cities has proven the practicability of such schemes. In Gothenburg, Malmö and Stockholm first emission based access restriction has been in operation since 1996. The acceptance of the scheme was poor initially but has risen constantly and there is demand for an extension now.

The very latest development is the referendum in favour of the Stockholm access charge in 2006, after a successful trial period in the first half of 2006. The charging and control system was installed as a trial with the effect of 25% reduced traffic in one month.

**Switzerland**

Strict restrictions mainly in pedestrian zones

On a country wide basis there are several direct regulations that affect freight transport in urban areas: The general prohibition for HGV to drive at night time on all roads (from 10PM to 5AM) and the HGV toll that applies for city streets as well as for other roads.

National legislation in Switzerland defines possible restrictions cantons or municipalities are allowed to introduce. These are as in most other European countries: time, weight and size restrictions for a specified area or street and loading time limitations.

There are many small to larger cities with pedestrian zones where deliveries are restricted to a certain time window. Weight and size limits are common as well. There is a strong connection between general traffic restriction zones to freight related restrictions. Only 4 smaller cities (Bulle, Zizers, Arbon, Riehen) ban HGV in their centres on a general basis, either for all or for through freight traffic. Due to the present legal framework there are no low emission schemes or access charge schemes in Switzerland. Nevertheless, based on the legislation concerning air quality, pilot projects and temporary restrictions are feasible and have effectively been realised in some cases.

**UK**

From congestion charge towards low emissions zones

The awareness for freight related problems is comparably high in the UK. As a result many initiatives and relatively strict restriction schemes can be found, mainly in London.

Local authorities in England and Wales can introduce such provisions as on way road, truck load limit, particular bay for cargo loading and unloading,
City access restriction schemes

parking restrictions, vehicle clamping and removal in the city areas. The city access restriction schemes are taken by the local city councils to keep the city moving, congestion free and environment friendly. The restriction takes the form of time restriction. UK-regulations allow national and local government to introduce a range of access restrictions on goods vehicles in urban areas including:

- Access restrictions based on time, weight or dimensions of vehicle in a given area
- Loading/unloading time restrictions at specific sites
- Loading/unloading time restrictions on-street (also in connected with noise issues)
- Congestion charging schemes

Some access restriction schemes involve the use of physical restraints to prevent vehicle access including pedestrianisation, width limits and barriers.

In addition, local authorities make use of advisory schemes to encourage drivers of goods vehicles to use suggested routes to reduce the impact of their vehicles on the communities they drive through.

Projects for Low Emission Zones are on the way (one is proposed to be introduced in London in 2008) that fine vehicles that do not meet specified emissions criteria from entering the LEZ.

### 4.3 Regarded case studies on project-level

In the year 2000 the material collection within BESTUFS I on the same theme brought 32 concepts form various European cities. This time 37 projects, new ones and updates were gathered. A description of these projects and schemes can be found in ANNEX IV. The following table shows a rough summary on overall occurrence of schemes in the reviewed countries:

<table>
<thead>
<tr>
<th>Measure / Scheme</th>
<th>few examples</th>
<th>some examples</th>
<th>many examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bans for non-environment-friendly vehicles / vehicle limitations (e.g. only high environment-friendly standards)</td>
<td>X increasing/more planned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle-limiting measures (e.g. only vehicles not exceeding length/width/height) or weight regulations (axle-weight, total train weight)</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Loading capacity restrictions</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Establishing special protected loading zones in areas where there is considerable delivery traffic, parking places</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
### City access restriction schemes

<table>
<thead>
<tr>
<th>Establishing special protected loading zones in areas where there is considerable delivery traffic, parking places.</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fee for parking or the use of special delivery window (city-centre-licence).</td>
<td>X</td>
</tr>
<tr>
<td>(Pedestrian) zones in which deliveries can only be carried out at certain times of day or night or certain events.</td>
<td>X</td>
</tr>
<tr>
<td>Allowance or obligation of night deliveries</td>
<td>X</td>
</tr>
<tr>
<td>Limitation of the loading/unloading time at the point of delivery</td>
<td>X</td>
</tr>
<tr>
<td>Protected zones that have to be kept completely or partly free of trucks.</td>
<td>X</td>
</tr>
<tr>
<td>Access slots (private only)</td>
<td>X</td>
</tr>
<tr>
<td>Access regulations depending on (only at certain points) existing regulations within the urban infrastructure (e.g. narrow bridge).</td>
<td>X</td>
</tr>
<tr>
<td>Access charge based on specific times or environment standards or applicable for all vehicles</td>
<td>X increasing</td>
</tr>
</tbody>
</table>

#### implementation and enforcement issues

| Use of organisational and operational enforcement measures for above mentioned schemes (signalling, guidance) | X |
| Use of physical restriction measures such as gates and bollards | X increasing |
| Control and monitoring with ITS, video, number plate recognition | X increasing |

**Table 2: Frequency of access schemes in European cities**

An increasing interest in schemes fostering the use of low emission vehicles can be observed. Another dynamic field is the road user charge schemes, where the access into a city can be bound to emission limits or other standards, such as loading factors or loading time etc.

Hereafter for a selection of new schemes or relevant updates of concepts is given. The schemes were chosen considering the degree of innovation and new and relevant results from recent years. Furthermore projects from the new EU member states were considered. More projects can be found in the BPH 2000 (BESTUFS, 2000).
### Example 3.3.1: Access restrictions Enschede (Netherlands)

[Rasch, A. 2006]

<table>
<thead>
<tr>
<th>Key words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access restriction, time window, access pass, licence plate identification</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Background</th>
</tr>
</thead>
<tbody>
<tr>
<td>The municipalities responded to the operators’ call for delivery window alignment by starting cooperation between the municipalities. Transport operators were faced with different rules and access restrictions, which was costly (in time and money). The differences in rules between municipalities were significant, which in some cases meant that it was needed to use different trucks for delivery rounds, instead of one. The lack of enforcement of the delivery windows, which made them rather ineffective, was the reason for introducing the bollard system with vehicle identification by video.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Objectives</th>
</tr>
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<tbody>
<tr>
<td>With this system the municipality of Enschede wants to create a safe and pleasant inner city. The access restriction minimizes the negative external effects (pollution, congestion,...) caused by delivery trucks within the city centre and shopping areas, while maintaining the possibility of supply to the firms and industry within the city centre.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Basic approach / concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>The inner city of Enschede - including the shopping area - is closed for all traffic between 11 am - 7 am. These opening times are enforced by a bollard system. This system functions with an access pass system combined with license plate identification (by video). This method of identification is used solely for trucks and taxi cabs. The municipality of Enschede is using a bollard system to close the city centre for all traffic. To visit the city centre outside the delivery window an access pass is needed. One can buy a pass at the local government offices. This pass will be linked to a firm name or license plate number and can only used once per 30 minutes to enter the restricted area. Road signs at the edge of the city centre combined with warning signs next to the bollards inform drivers about the access restriction scheme. This 4-hour delivery window is impacting business in this area. Deliveries in this restricted area to shops, restaurants, offices and bars have to take place within these opening times. Hotels are however located outside this restricted area and are not influenced by this delivery window. To minimize the burden of this delivery window dispensation to this restricted area outside the delivery window is allowed for two types of operators:</td>
</tr>
</tbody>
</table>
City access restriction schemes

- The first concerns operators with vehicles with more than 15 deliveries on the same day in the city centre. This group can get a (maximum) extension of the delivery window of three hours. With this regulation the municipality stimulates freight bundling and hopes to prevent commercial shopping chains closing their shops in the city centre.

- The second concerns deliveries to the catering industry. Deliveries to restaurants and bars are allowed outside the delivery windows, as they are generally closed during the delivery windows. These deliveries must take place via roads outside the shopping area in order that visitors and inhabitants are not hindered by these dispensations.

Beside the dispensation rules, exemptions of the 4-hour delivery window can be obtained by inhabitants (and their guests) and employees of offices:

- Inhabitants can obtain access at all times in the restricted area if they obtain an access licence. The price of this licence equals the administrative costs for making this licence (currently €23.90);
- Guests/visitors of the offices in the inner city can obtain a day access pass (cost €7); and
- Employees of the offices are able to obtain permanent access (cost also €23.90).

Results and experiences

The first results of this relatively new scheme are promising. In the old situation the city centre was closed for all traffic between 6 pm and 7 am. On a normal day about 600 vehicles travelled through the inner city. With the introduction of the bollard system this amount was reduced by 40%.

Outside the delivery window the city centre of Enschede is almost free from vehicles. This creates a more pleasant environment for visitors of the city and the shopping area. This stimulates the attractiveness of the inner city for business activities and visitors. At this time, there are no hard data of the results in Enschede, but in the near future the municipality will measure the results of this project.

Access restriction only works combined with effective enforcement. In the case of Enschede a lack of enforcement created a situation where passes where illegally used by unauthorized passenger cars outside the delivery windows.

More information

Amanda Rasch, NEA

See also References and contact persons.
Example 3.3.2: New regulation of city access in Montpellier (France)

[Bouhlel, H., 2006]

Key words

Environmental zone, access restriction, time window, electric vehicle

Background

An environmental report was the trigger of the project. The Air Clean Act (1996) obliges agglomerations of more than 100,000 inhabitants to adopt a Master Mobility Plan (MPM) that should include a section about urban freight. The municipality carried out a survey in order to improve knowledge of urban freight flows. The “FRETURB” modelling showed urban freight movements in the pedestrian zone: 25,945 freight movements per week and that 54% of these are operated with vehicles of less than 3.5 tons.

Montpellier is a city that had a dynamic development in the tertiary sector and where conflicts arise due to the urban sprawl, essentially between activities in the centre and in the suburbs:

- commercial conflicts: deliveries to the inner city are more difficult, which brings a comparative advantage for companies located in the suburbs,
- residential conflicts: the inhabitants who live in the city centre suffer from nuisances due to traffic emissions

Transport companies hold that the previous regulation was too strict and difficult to apply. In the pedestrian zone, they saw a major divergence between regulation and their application, notably because of non-adapted time-windows and too strict weight limits. Indeed, they need to use more vehicles on the morning hours to deliver on time. That situation encourages operators to use more and more small vehicles which generate congestion, including further environmental impacts. What's more, delivering bays are not frequent, unsuitable sized and often occupied by parked cars.

Because of this situation local authority was asked for an improved road traffic management and a more suitable time-window scheme for deliveries. The project of a new regulation was a wish of both transport operators and the municipality. In that way, Montpellier carried out a survey about the possibility to create public and private equipment to improve the urban logistics. A platform would be introduced from which clean vehicles could easily circulate to the inner-city.

Objectives

The objective of the project’s first step is to promote the use of electric vehicles in the pedestrian zone. Secondly, the municipality plans to extend that rule to GNV (Natural Gas) vehicles and other fuel-alternative powered vehicles. The city objectively decided to include the Euro norms in order to promote alternative and quiet vehicles and to distinguish between
conventional and new technology vehicles. The inner-city is a large pedestrian zone (25 km²) with neither car-parks nor delivering bays. Therefore, the city has to find a compromise between pedestrian flows (peak at noon) and the deliveries. An urban distribution centre had to be built from where all vehicles would operate.

Further objectives also were to find better solutions for harmonised freight deliveries and the enhancement of the quality of life of the city’s inhabitants.

The use of electric vehicles was easier to put in place than GNV at the start of the project. Besides, an electric lorry was tested in the city in order to experiment the use of that kind of vehicles in a city. The results were not very positive because of the size of the vehicle, rather than because of technical aspects.

In May 2006, the city of Montpellier voted for a new freight access regulation for the city-centre. For the first time a local regulation – of a city of more than 100,000 inhabitants - stipulates that access to the pedestrian zone is not allowed for non-electric vehicles during two time periods per day. All kinds of vehicles can access the pedestrian zone from 4 am to 9 am, after 9 am the access is restricted. Deliverymen have to insert an access-ticket into the pay and display machine which is situated at the entrance of the pedestrian zone. There is no weight or size limit for this period.

After this time window, from 9 am to 12 am and from 2 pm to 7 pm., only electric commercial vehicles (length < 3.50m and width < 1.60m) are allowed to access the area. Loading and unloading activities are often performed in the afternoon. Only electric vehicles can operate during this time, which creates a specific market for operators.

The technology used is quite basic. Pay and display machines with an intercom are located at the main entrances of the pedestrian areas and deliverymen have to take a ticket to that points, facilitating control by the municipal police. No specific enforcement staff is planned, but the municipality wants to improve communication and increase police agents’ awareness of urban freight to improve enforcement.

The novelty and originality of the experience of Montpellier lies in the integration of an environmental parameter in the regulation for a specific area (equivalent to low emissions zones). Those new rules apply to all vehicles with an engine inside that area.
Results and experiences

One of the main conclusions of that project is that cities more and more integrate urban freight in their environmental policy. They do not only consider it as a transport activity but as an element of the city which influences the quality of life. To create new rules for deliveries offers many advantages:

- benefits for the local environment (reduction of polluting emissions)
- foster a reduction of subcontracting, as cheaper subcontractors often use old vehicles which emit more polluting emissions
- support the development of clean vehicles
- offer more attractiveness to the inner-city

The project was put in place in May 2006, so it is difficult to make an assessment at that time. However, the municipality did not hear complaints yet from transport operators or others. Indeed, the survey made in 2003 showed that the main actors agreed to go ahead in this field.

Besides, one transport operator has decided to equip his own fleet with electric vehicles in order to make reverse logistics in the afternoon. That possibility allows the company to develop new markets.

So, benefits are shared between private and public partners because at the same time there is a reduction of congestion and improved facilities to
enforce the regulations.

It is remarkable that surveys show a real wish of public and private partners to contribute to a clean vehicle policy. On the other hand, the scheme allows integrating urban freight as an important component of the city life.

The city plans to write a regulation which would include all fuel-alternative vehicles, instead of electric vehicles. Despite the fact that the city of Montpellier was a city-pilot to experiment the use of GNV, the lack of compressor plants hinders the dissemination of GNV vehicles in the city.

However, the city plans to extend the regulation to the entire city. If that decision becomes more concrete, it would have a great impact on the local transport operators, as they would have to adapt their fleet to the new rules.

The city considers harmonizing the regulations between municipalities in the agglomeration. If a new “large regulation” is agreed, this would ease its application and enforcement.

This would need a tremendous change in the transport operator fleets and would generate a reduction of the subcontract operators. Only professional transport operators will be able to adapt their fleet. It would be an environmental and social progress.

More information

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See also References and contact persons!
### Example 3.3.3: Lorry guiding network in Bremen (Germany)

[Huschebeck, M., 2006]

<table>
<thead>
<tr>
<th>Key words</th>
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<tr>
<td>Access restriction, lorry guiding scheme, route planning, information campaign</td>
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<table>
<thead>
<tr>
<th>Objective</th>
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<tr>
<td>Main objective of the approach for a lorry guiding network in Bremen is the bundling of heavy goods vehicles to appropriate roads using a signing system. The lorry guiding network aims to provide transport operators and forwarders as well as all delivery transport assistance in finding the best way either through Bremen or to destinations in Bremen. Goods transport should be channelled away from minor residential roads towards major roads. The lorry guiding network is part of the Bremen traffic concept and aims to provide imperative advice to transport operators.</td>
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<thead>
<tr>
<th>Basic approach / concept</th>
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<tr>
<td>In the meantime there is the third issue of the lorry guiding network which became also part of the clean air act in Bremen. 5000 copies of the lorry map for Bremen have been printed and distributed to forwarding companies and transport operators. New is the electronic version. Access is possible under <a href="http://www.verkehrsinfo.bremen.de/lkw">www.verkehrsinfo.bremen.de/lkw</a>. The presentation of the lorry guiding map shows all major restrictions and advises in Bremen. In particular:</td>
</tr>
<tr>
<td>▪ The routes advised to heavy trucks</td>
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<tr>
<td>▪ Routes advised to interurban traffic having origin and destination in Bremen</td>
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<tr>
<td>▪ Routes, areas transit trucks are prohibited and in the case of high particulate emissions trucks over 3.5 t are banned</td>
</tr>
<tr>
<td>▪ Night time bans for trucks</td>
</tr>
<tr>
<td>▪ Height and weight restrictions</td>
</tr>
<tr>
<td>In addition the web site provides actual information on the traffic situation in Bremen.</td>
</tr>
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</table>
Results and experiences

The lorry guiding scheme is under permanent development of the Senate. Due to lacking acceptance of single network parts, some streets have been taken out of the network. As accompanying measure driving ban – especially for night hours - for particular roads have be established.

Overall the scheme is implemented since almost 10 years, with continuous development in the approach as well as in the presentation. The latest version is made available via (traditional) maps as well as an internet presentation. Actual traffic disturbances, e.g. construction sites or congestion are also shown on this site.

Web-links are:

www.bauumwelt.bremen.de/kap5/lkw-netz.pdf
www.bvoe-bremen.de

More information

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See also References and contact persons!
Example 3.3.4: Truck total-weight restriction zone Budapest (Hungary)
[Horvatth, B., 2006]

**Key words**
Loading time, access restriction, drive-in licence, loading disc

**Background**
The political and economic changes in the last decade had a significant influence on the transport system of the city. Changes in the economy and commerce had a multi-part effect on the good-supply. As production and good transport decentralised, the number of small businesses increased, and this caused the decentralisation of good supply operations. The largest part of commercial businesses is still situated in the city; this is why the traffic increasing effect of good transport, loading and unloading causes the greatest problems in the most congested part of the capital.

Important figures in Budapest:
- 30% of loading processes are carried out in public roads
- 90% of goods transport processes are carried out during working hours
- 60% of transport tasks have higher frequency than once a week; 20% of transport tasks are performed every day and 15% 2-3 times a day
- the ratio of unloaded runs is 18%, but of partly loaded runs is 59%

**Basic approach / concept**
The zone-system introduced in the eighties has the task to regulate the dispersion of freight traffic in time and space, decreasing (and in several critical places even terminating) transit freight transport. Total truck weight restrictions implemented in the zone-system push heavy truck traffic to the low traffic hours in order to establish a possible undisturbed daytime movement on roads. Since 1996 there is a new total truck-weight-limit system regulating goods transport:
- in Pest between the upper quayside (felső rakpart) and the middle ring road ((Nagykörút), in Buda between the upper quayside and the Buda Ring Road (Budai körút) there is a 3.5 ton total truck weight limit from 07 a.m. till 06 p.m.
- between the middle ring road (Nagykörút) and the outer ring road (Hungária körút) there is a total weight-limit of 12 tons from 07 a.m. till 06 p.m.

From 1997 other weight restrictions were extended over the following areas:
- in the 9th district in Buda has been introduced a total weight-limit of 12 tons
- Kelenföld-Albertfalva from 00 to 24 hour total weight-limit of 12t
- Wekerle-habitation (XIX. District) from 00 to 24 hour total weight-limit of 3,5t
- Restrictions in green areas: Margaret Island, Római-part, Városliget, Népliget, János hill - Normafa, Óbuda Island. Full drive-in restrictions, except with permission, Taxi, buses of the Budapest Transport Limited

Other prohibitions and limitations regarding freight traffic outside the above mentioned areas:
- Traffic calmed zones,
- Residential limitations and
- Pedestrian streets.

The distribution of goods inside these areas is possible only with drive-in licenses.

The issuing of the drive-in licences is managed by the Freight Transport Consultancy Office of Budapest (FSzT) on behalf of the Municipality of Budapest.

![Figure 15: Budapest drive-in licence and loading disc](image)

The valid drive-in licence has to be placed to be viewable behind the windscreen. The loading disc shows the loading time. On a joint loading space, the loading is possible during max. 20 minutes. The time set on the loading disc shows the beginning of the loading.

To the proper function of the formed areas the consequent control activity is essential. The checks by the responsible authorities are permanent (as on site controls, general area checks, weightings on the roadside and targeted checks on the frequent places. The Police Department- of Budapest and the
districts, the self-governments of the districts, The Municipality of Budapest, the Inspectorate for Public-area, the traffic control experts of the Capital Public Place Maintainer Company together have been managing the checks and controls for years.

The EU practice has to take into consideration regarding the present – and the planned – restrictions. The general European 3.5, 7.5 and 12 tons categories has to be introduced in the Hungarian cities too. The consideration of the specific parameters (total weight, minimal diameter of the turning-circle, emission- and noise data, economic efficiency, etc.) is also

Figure 16: Budapest freight transport routes and zone-system
The present zone system of the full weight-restriction areas has to be modernised in a phased approach connected to the development of the ongoing road- and area developments (e.g. the M0 bypass road).

The zone-system generally works well. A general zone-system for the whole city, managed by the Municipality of Budapest would be useful, avoiding the incompatibilities, which are sometimes arising because some restrictions were introduced by the districts without a common framework.

Years ago the V. district (the downtown area) introduced a video camera system to control the traffic into the protected areas, but as the police department of the district does not have enough staff for the permanent controlling; this system is not in operation at the time.

Another problem is the loading and unloading activities. Loading areas are signed with suitable boards, but the effectiveness of these boards is poor: parking cars occupy the space frequently. Because of this, loading is frequently carried out using the traffic lane, disturbing traffic flow significantly.

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See also References and contact persons!
Example 3.3.5: London Low Emission Zone (UK)
[Allen, J., 2006]

Key words
Access restriction, low emission zone, air quality, automatic number plate recognition

Background
The LEZ concept has been initiated by the Mayor of London, Ken Livingstone. In July 2006 he said: ‘The proposed Low Emission Zone is the most effective way of quickly reducing pollutants that are among the most harmful to human health. It will make London one of the first cities in the world to have taken such a radical step to tackle air pollution and safeguard our environment.’

The Mayor will need to publish Revisions to his Transport and Air Quality Strategies in order to introduce the LEZ that presently is a concept only.

Objectives
The objectives of the proposed LEZ are two-fold:

- To move London closer to achieving national and EU air quality objectives for 2010
- To improve the health and quality of life of people who live and work in London, through improving air quality

Basic approach / concept
A LEZ would aim to reduce air pollution by discouraging the most polluting vehicles from driving in Greater London. These are generally older, diesel-engined lorries over 3.5 tonnes, and buses and coaches. The Mayor is considering including the heavier, more polluting light goods vehicles (LGVs) from 2010. Cars would not be included in the LEZ.

The emission standards for the LEZ should reasonably encourage the upgrade or replacement of diesel-engined heavy vehicles to Euro III for PM10 by 2008 and to Euro IV for PM10 by 2012 (or to the relevant particulate standard in force at that time, for example, should the European Commission move towards a standard for ultra-fine particles or PM2.5).

The hours of operation are proposed to be 24 hours a day, Monday to Sunday, 365 days a year.

Operators wishing to bring vehicles into the Zone that did not meet the specified emissions standards for the LEZ would be required to pay a substantial charge. Operators that do not pay the daily charge and whose vehicles are identified as not meeting the proposed emission standards would have to pay a penalty charge. Vehicles which meet the proposed emission standards would be able to operate in the LEZ without paying the charge. The charge would be set at such a level as to encourage operators
City access restriction schemes

to modify or replace their vehicles to comply with the proposed LEZ standards. To encourage compliance, the level of the charge and associated penalties would need to be set at a far higher level than that for the Central London Congestion Charging Scheme.

It is proposed that the LEZ would be enforced using Automatic Number Plate Recognition (ANPR) cameras.

Future plans development

The Mayor has considered the results of Transport for London’s public consultation (which took place at the beginning of 2006) and has agreed to make the recommended changes to his Transport and Air Quality Strategies to allow for the scheme to be established. The next step will be a further consultation later this year (2006) on a draft scheme order which would set out the details of a proposed Low Emission Zone.

As a result of the public consultation the Mayor is considering delaying the introduction of the standard of Euro IV for PM10 in 2012 rather than in 2010.

Results and experiences

The estimated cost of the LEZ scheme to TfL is between £125 million and £130 million, from development of the scheme until 2015/16. This range reflects different scenarios around how operators would respond to the proposed LEZ, and the scope and cost of services from DfT. The capital costs are approximately £45 million (approximately 70 million euros), which include all development, consultation and implementation costs. The total operating costs of the scheme from early 2008 to 2015/16 are estimated at between £80 million and £85 million (approximately 130 – 140 million euros). There would also be costs to operators from complying with the LEZ. The costs to operators of the core LEZ scheme are estimated as being between £195 million and £270 million (approximately 310 – 430 million euros) for the period to 2015/16.

The proposed LEZ is not designed to be a revenue generating scheme and the revenues would not offset the costs of implementing and operating the scheme. Air quality improvements would be maximised by high levels of operator compliance. There would, however, be some revenues from the LEZ through charge and penalty charge payments. Revenues are expected of between £30 million and £50 million during the life of the scheme, from 2008 to 2015, and these would contribute towards the operating costs of the scheme.

More information

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See also References and contact persons!
Example 3.3.6: Namur Pedestrian Zone Deliveries (Belgium)
[Van Isacker, N., 2006]

Key words
Delivery zone, automatic bollard, loading time limitation, time window,

Background
The objectives of the restriction scheme are to preserve the historic city centre of Namur (the streets in the centre are often very narrow), to reduce congestion especially during rush hours and to ensure safety and conviviality to pedestrians.

Basic approach / concept
Two types of restrictions have been developed by the municipality with regards to heavy vehicles’ access to the city centre:

- Access to the city centre is not allowed to vehicles longer than 12 m except for the Rogier-Brabant axis and the roads located north of this axis.
- Access to the city centre is not allowed for vehicles of more than 3,5 tons, during the week between 11h30 and 17h30.

Delivery of freight is free if it is carried out in a delivery zone (see map below, delivery zones are in orange) during authorised delivering times (between 7.30 and 11.30 in the morning) as long as it is effectively active. If the delivery is not active, then normal parking procedures are in application (for example payment of the parking). There are 28 delivery zones in the city centre. Outside this time window, parking of other vehicles is authorised in these zones and must be paid for.

Figure 17: Delivery zones in Namur (F)
The Parking Plan of the city has been developed to ensure rotation in the use of parking space where parking needs are most important. In the pedestrian zones, deliveries are authorised:

- between 5h30 and 7h30;
- between 9h00 and 11h00;
- between 17h30 and 20h00.

Controls regarding these regulations are organised by the local police.

A leaflet on freight transport and deliveries has been published by the municipality to the attention of transport companies carrying out deliveries in Namur. It summarises the regulations in place and provides a map that highlights the location of the delivery zones.

Access to the pedestrian area is controlled by bollards that may be automatically moved down.

Drivers making regular deliveries to the city centre of Namur are advised to use the on-board individual parcometer Smart Park. This device is made up of a box and of electronic cards programmed and charged in function of the tariffs of the different parking zones. When the driver inserts the electronic card, units begin to be removed from the card. The driver stops the removal of units when he comes back to the vehicle. This means he pays only for the exact amount of time he remained on the parking stop. Costs for the device are as follows:

- 65 Euro for the Smart Park.
- 13 Euro of guarantee per rechargeable electronic card.
- 25 or 50 Euro for the programmed and charged electronic cards

The device is sold by the city of Namur.

The regulations are not very well respected today because enforcement is insufficient. In the future, controls will be improved as will monitoring and evaluation of the concept.

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See also References and contact persons!
4.4 Conclusions and recommendations

4.4.1 Conclusions

The theme addressed herein was already analysed within the first BESTUFS project from 2000 to 2004 (see BESTUFS, 2000). Most of the conclusions stated there are still valid. New developments mainly occurred in the field of environmental zones and city access charges. For the latter a specific material collection and derivation of best practices was done in BESTUFS I (BESTUFS, 2002). Hereafter an summary is given for all types of access schemes but with focus and update on the latest developments.

Legal framework situation

Legal framework is given on national level mainly. Within these boundaries regions and municipalities decide on implementation, as long as no interregional road connections are concerned. In recent years the legal basis for imposing environmental standards has changed. EU air quality directives tightened the limit values for air pollution. Air quality management plans have to be made in order to meet the limit values. On national level the legal framework for city access charges is still not regulated in some countries. Besides the London congestion charge (approved in a referendum and already implemented) there has been a political decision towards an access charge in Stockholm, Sweden in October 2006. Trials with several years of operation have shown success. In other countries, such as Switzerland, a revision of the constitution and/or other legislation will be necessary in order to introduce any road user charge. There are still some tremendous hurdles to overcome until such schemes are ready for realisation.

Motivation and approaches

Reasons for the set up of an access restriction are mainly a historical centre or a pedestrian shopping area where the negative impacts of all traffic is to be limited to an absolute minimum. After this the most found objective for a scheme is the reduction of congestion. Other driving factors such as air quality and the quality of life in urban areas in many cases just provide supporting arguments. Such schemes show a high level of acceptance with all stakeholders. Nevertheless there is an increasing number of successful and well accepted initiatives primarily targeting at environmental improvements.

Common schemes

As seen in many examples access restrictions for freight vehicles today are strongly linked with time windows and the limitation of weight and size. In many cases the restrictions apply to the inner city zone, often congruent with the pedestrian area. This approach is very pragmatic, successful and well accepted as it is easily to implement and no further technological innovation
than road signs and an appropriate enforcement is needed.

The most emerging scheme with a number of present trials is the environmental zone scheme. (see below)

Most innovative schemes in recent years

The theme of city access restriction was analysed in depth in the first BESTUFS project (see BESTUFS, 2000). Since then, in the last couple of years, main innovations, new concepts and trials occurred in the field of environment related schemes and access charging schemes. Therefore the following remarks mainly focus on these subjects. Nevertheless a short update of the known issues from BESTUFS I concerning all kind of access schemes is summarised below.

Environmental zones

Besides the known examples of cities offering limited access to central urban areas only for zero-emission vehicles, for electric vehicles or low emission hybrid vehicles (e.g. Amsterdam, Nuremberg, Zermatt) there is a remarkable number of new trials with concepts of Low Emission Zones (LEZ) or “Environmental Zones”. Successfully implemented examples from recent years can be found in the Swedish cities Stockholm, Gothenburg, Malmö and Lund. Furthermore LEZ are planned in London, Madrid, Paris, Copenhagen and Norwegian cities.

The LEZ may be based on

- a geographical area
- a time period
- vehicle emission standards
- vehicle types
- loading factor / utilisation rate

Unlike other schemes LEZ are mainly driven with the intent to reduce air pollution and noise. The given examples can capitalise on EU vehicle legislation for vehicles that sets progressively tighter emission limits for vehicles over 3.5 tons.

Low emission vehicles are also fostered by discounts in road pricing schemes and tax reductions.

City access charge

The most cited concept herein is the London congestion charging. The figures show a clear picture: minus 18% of overall traffic and minus 30 % of delays without any shift of congested roads. Furthermore there was a broadly neutral impact on overall business performance in the zone. Of course freight vehicles only partly contribute to the success. But it was heard in Bestufs workshops and elsewhere that freight operators are satisfied with the congestion charge, in spite of the fact that they have to pay the same
amount as cars. Operators may profit from several improvements:

- increased reliability of deliveries due to less delays
- more efficient vehicle and driver usage
- more reliable tour planning
- faster, more flexible deliveries

Such a scheme is not for freight traffic only of course and has a much broader impact on economy, society and environment than other, freight specific restrictions. As mentioned above, today’s legislation does not allow such schemes everywhere.

The most common regulations, vehicle size and weight have further found adoption even in smaller cities, leading to an enhanced use (and number) of small delivery vehicles. Time windows were adapted to businesses needs (e.g. second window in evening hours for restaurants in Berne), whereas night deliveries still are very controversial, some cities ban trucks at night because of noise emissions, others take advantage of the decrease in traffic load at daytime and an increase in transport efficiency followed with night deliveries. Solutions with only a limited geographical coverage, for instance in non residential areas, are possible too. Best practice here very much depends on local circumstances.

An improved cooperation between operators and authorities can be observed as well as among municipalities. A good example can be found in the Netherlands where a national committee on urban freight for an increased cooperation of urban freight parties was set up. First results of this initiative are a harmonisation of time-windows among a number of cities and the regard of businesses needs in urban freight concepts.

Most of the restrictions listed above are conveyed to goods vehicles drivers by the use of road signs. In several examples an information campaign with a wide spread distribution leaflets for businesses in the affected areas and transport operators was launched (London, Namur, etc).

It is to mention again that enforcement issues, be it by police, parking attendants, cameras or other ITS systems, are crucial for the success of most restriction schemes. This theme is addressed in detail in chapter 3 of this handbook.

Besides the restrictive schemes the very successful advisory schemes should not be neglected. Successful examples are the lorry guiding network in Bremen (Germany) or the information given to road users via signs and map information in the UK.
4.4.2 Recommendations

Policy

The following recommendations can be made what the implementation process of measures is concerned:

Technology driven concepts that barely take into account the needs of the stakeholders are likely to fail. Access concepts should be based on the needs of the involved parties.

Besides common access regulations (time, weight, size) also innovative schemes with environmental zones or charging approaches can improve transport efficiency and the quality of life in cities.

Harmonisation of regulations

Cooperation between cities for certain schemes (same environmental standards, weight and size restrictions, etc) enhance acceptance and overall transport efficiency.

Integrated planning and implementation of access schemes

The best practices show how an access restriction scheme can be introduced successfully if stakeholders are heard in an early stage of the planning process, particularly businesses in the city centre and their transport operators. This ensures a high level of acceptance.

Information and acceptance

Just as an early integration of all parties in the development of measurements it is crucial that an appealing information campaign upon the introduction or change of a scheme is made. The acceptance can also be improved when a concept is first implemented as a trial. In Gothenburg the initial resistance against the environmental zone introduced in 1996 turned into a demand of the public for an extension of the zone.

Consideration of local circumstances

There is no off-the-shelf solution for every city. The local framework conditions are important for a successful scheme. The structure of the local industry and businesses may need precise adjustment of an access restriction. However, as mentioned above benefits for all stakeholders out of cooperation between cities should also be regarded.

Enforcement is essential

Enforcement concepts have to be considered already during planning of a measure especially in regard of the arising costs. A reasonable extensive enforcement concept is not too light to ensure the effectiveness of the scheme, but not tormenting for the road user either. Automated enforcement techniques (such as number plate recognition, RFID access cards etc.) are
to be considered as they offer the opportunity to implement sophisticated measurements.

Evaluation of implemented measures

For further improvements and adjustments to scheme and for monitoring the success or failure it is further on essential to measure and evaluate the effects of a scheme. Of course it is also a means of finding best practice for decision makings if costs and benefits are known and analysed.

4.4.3 More information

Further BESTUFS publications

Within the BESTUFS project a good practice guide is published in 2007, providing in-depth recommendations in the field of city access schemes and other themes.
REFERENCES AND CONTACT PERSONS

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<th>References</th>
<th>Year</th>
<th>Title</th>
<th>Location</th>
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<tbody>
<tr>
<td>Anderson JF</td>
<td>2005</td>
<td>City Goods Ordinance – A case-study about potentials and barriers</td>
<td>Copenhagen, 2005</td>
</tr>
<tr>
<td>BESTUFS</td>
<td>2000</td>
<td>Best Practice Handbook Year 2000, BESTUFS I deliverable D2.1</td>
<td>Brussels, 2000</td>
</tr>
<tr>
<td>Copenhagen Municipality</td>
<td>2006</td>
<td>Environmental zones in Copenhagen</td>
<td>Copenhagen, 2006</td>
</tr>
<tr>
<td>Meyer M</td>
<td>2006</td>
<td>Clean air in Italy and Europe, presentation 25 February 2006</td>
<td>Milan, 2006</td>
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### Abbreviations

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<td>ANPR</td>
<td>Automatic Number Plate Recognition</td>
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<td>CCTV</td>
<td>Closed Circuit Television</td>
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<td>CEP</td>
<td>Curier, Express, Parcel Service</td>
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<td>CH</td>
<td>Confoederatio Helvetica</td>
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<td>CIVITAS</td>
<td>City–VITAlity–Sustainability</td>
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<td>Compressed Natural Gas</td>
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<td>EDI</td>
<td>Electronic Data Interchange</td>
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<td>EFV</td>
<td>Environmentally-friendly Vehicles</td>
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<td>Electric Vehicle City Distribution Systems</td>
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<td>Global Satellite Messaging</td>
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<td>Gross Vehicle Weight</td>
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<td>Heavy Goods Vehicles</td>
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<td>Integrated Services Digital Network</td>
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<td>Telematics Application Programme</td>
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<td>Full Form</td>
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<td>Urban Freight Solutions</td>
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<td>VERA</td>
<td>Video Enforcement for Road Authorities</td>
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<td>VES</td>
<td>Video Enforcement Systems</td>
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<td>VMS</td>
<td>Variable Massaging sign</td>
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ANNEX

ANNEX I  General situation within countries – Control and enforcement in urban freight transport

ANNEX II Collected case studies (projects-level) – Control and enforcement in urban freight transport

ANNEX III General situation within countries – City access restriction schemes

ANNEX IV Collected case studies (projects-level) – City access restriction schemes
ANNEX I: General situation within countries – Control and enforcement

<table>
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| Australia | A major trend in enforcement of urban freight regulations in Australia is the shift towards the onus on the private operator to take more responsibility towards demonstrating compliance. Many recent initiatives have involved contracting out requirements to industry. This involves the private sector having to provide detailed documentation and conducting audits. Major steps in education, licensing operators rely heavily on self enforcement and the increasing professionalism of the industry.  

**Chain of responsibility**

Australia has developed a broad national transport reform called Chain of Responsibility (CoR) that extends the liability for compliance with road transport laws to other parties in the transport chain. The objectives of this program are to provide a nationally consistent approach to the enforcement and compliance with mass, dimension and load requirements as well as to improve road safety and reduce damage to road infrastructure.

Traditionally drivers and operators have been the target of heavy vehicle enforcement activities. However, the new legislation recognises that others (i.e. Consignors, packers, loaders and receivers) have a responsibility to ensure transport laws are complied with and no undue pressure is put on drivers to break the law.


Offences have been categorised into minor, substantial and severe based on their risk. A range of sanctions have been defined including, improvement notices, commercial benefits penalties, supervisory intervention orders and prohibition orders. There has been a substantial increase in the level of fines. More information such as the levels of fines, formal warnings and risk categories can be found at the following websites:

⇒ www.vicroads.vic.gov.au
⇒ www.vta.com.au

**Intelligent Access Program (IAP)**

The Intelligent Access Program (IAP) is an ongoing project that involves the application of vehicle telematics that enables the provision of services to transport operators that can monitor the compliance of vehicles with respect to access conditions set by jurisdictions. The objective of the IAP is the implementation of a system that will remotely monitor freight vehicles to ensure they are complying with their agreed operating conditions, that is ensuring they operate how, where and when they should.

Jurisdictions have considered schemes, permits and applications to provide improved access to the road network for the operators of heavy vehicles. In addition, Performance Based Standards, (as opposed to the existing prescriptive approach), can provide improved heavy vehicle utilisation of the network. It was recognised these new approaches required an improvement of heavy vehicle monitoring to ensure compliance.

By monitoring the movement of heavy vehicles, IAP ensures that transport operators comply with the agreed operating conditions, determined by jurisdictions – these are known as Intelligent Access Conditions (IAC). This monitoring allows jurisdictions to ensure that transport operators only operate their vehicles how, where and when they should.

In brief, the IAP operates as follows:

1. Heavy vehicles are fitted with sensors to enable monitoring of a number of vehicle parameters – vehicle identity, location, time and speed. Some, or all of these parameters may be used to ensure that the transport operator works within the conditions set by a jurisdiction.
2. Private sector companies provide the compliance monitoring services. Ideally, they combine these services with other services that they currently provide to a transport operator, e.g. fleet management.
3. A transport operator joins the IAP through a jurisdiction to gain access to the benefits being offered. They engage a private sector company on a fee-for-service basis.
4. The private sector company notifies the jurisdiction whenever the transport operator is in breach of the conditions, i.e. an incident of ‘non-compliance’.
5. The Certification and Auditing Group (C&A Group), a national group established by governments, ensures that the private sector monitoring company meets the agreed monitoring and reporting requirements.

Preliminary investigations have found the IAP can provide significant benefits to jurisdictions across all areas of activity including, improved safety, reduction in infrastructure wear, reduction in environmental effects, better managing public perceptions and expectations of heavy vehicle movements, and optimisation of the road freight policy and operations tasks, including optimisation of the on-road enforcement activities.

| **Austria** | The main legislative basis in Austria for the regulation and organisation of traffic on public roads is the Road Traffic Act from 1960 (Straßenverkehrsordnung StVO 1960). The responsibilities for roads and traffic organisation are stated in chapter XII:
| | ▪ The Federal Ministry of Transport, Innovation and Technology is responsible for the regulations concerning Highways.
| | ▪ The governments of the federal states are responsible for the traffic police on highways.
| | ▪ The districts enact orders and notice concerning regulations in their area which are not covered by state police or municipalities.
| | ▪ The municipalities are responsible for all kinds of regulations and rules concerning minor roads (Parking regulations, speed limits and safety regulations).
| | The State Police Department is responsible for the traffic police except on highways and the execution and enforcement of the law.
| | The legal authorities are entitled to enact the following measures:
| | ▪ Installation of permanent or temporary restrictions or bans for traffic on specific according to: speed limits, vehicle size, vehicle weight, stopping and parking restrictions
| | ▪ They are entitled to dictate a certain behaviour on specific roads, they can exclude certain groups from access to roads or specific parts of the road and they can dictate the usage of special parts of the road.
| | ▪ If there is commercial interest they can implement loading / unloading zones.
| | ▪ Dedication of compulsory routes for special vehicles or special loading.
| | Due to the legal situation municipalities would be entitled to carry out several restrictive measures like:
| | ▪ Time restrictions / Time delivery windows, weight restrictions, bans for non-environment-friendly vehicles / vehicle limitations (e.g. only high environment-friendly standards), speed limitation, loading capacity restrictions, traffic management solutions (lane usage), parking regulations and regulations for loading and unloading (licences, reservation, time windows) / parking fees, limits for noise emissions etc..
| | In general the police is responsible for Enforcement of the Road Traffic Act. Municipalities or private companies can be entitled by national or federal law to implement and operate enforcement strategies for specific tasks in defined areas.
| | Video enforcement is used to detect speeding and HGV’s which haven’t paid road pricing. It is also used in toll stations on specific highway sections where the driver can go through the "Video Maut", where his plate number is registered. If he has paid the fee in advance he is able to go through the station without a stop and without waiting in a queue.
| | Within the cities there are driving bans, which are mainly time restrictions. Manual enforcement by police or authorised persons from municipalities is the most common form to execute the legal regulations.
| | **Focussing on urban freight transport, there are no specific enforcement actions known at the moment.**
| | The limit of particulate emission is a major topic in Austrian cities, where Traffic is responsible for up to 25% of the emissions. Several measures have been presented and are discussed at the moment, but the reduction of traffic is a major topic. The reduction of speed limits and the ban of old vehicles are also measures to be regarded in the near future.

| **Belgium** | There are enforcement and control strategies in urban freight transport with respect to access restrictions and time delivery windows (see also project descriptions, example Namur and Liege). Main reason for those restrictions and related enforcement and control of those rules aim to reduce negative environmental effects and congestion caused by urban freight transport. Besides this control and enforcement on a general level |
Road transport in Belgium is regulated by:

- the Law relative to goods transport by road dated 3 May 1999
- the Royal Decree relative to goods transport by road dated 7 May 2002
- the Ministerial Decree taken in execution of the royal decree relative to goods transport by road dated 8 May 2002.

Controls in respect to this law and these decrees are the responsibility of the Federal Public Service for Mobility and Transports.

The Federal Police organises controls relative to regulations related notably to the vehicles weight (44 tons in Belgium), driving time and resting time and customs.

Urban freight transport regulations such as city access restrictions or delivery time windows are developed by the cities and the municipalities through notably decree of the city’s mayor. Enforcement and controls related to these urban regulations is carried out by the local police.

In Bulgaria no special enforcement activities in the area of urban freight transport are known. The enforcement on a general level (national freight and passenger transport) is mainly driven by police controls. As regards roadside inspections, the Executive Agency for Road Transport Administration, established in 2002, is in charge of licensing of transport operators, authorisation of roadworthiness test centres, training and testing of drivers and roadside inspections. Of its current 533 employees, 210 are involved in roadside and premises checks.

In the Czech Republic the responsibilities of enforcement in road traffic are shared between:

- The national police of the Czech Republic: the Act about the Police of the CR determines the responsibility of Police. Police supervise the safety and smooth operation in road transport and cooperates in its control (according to the Act about road traffic). Police performs the check weighing of road motor vehicles. According to the Act about road transport, Police check the documents of the vehicle, the marking and equipment of the vehicle, the operation time, the compulsory safety breaks and the time for rest of the driver.
- The municipal police: are established according to the Act about municipal police. They are responsible for local matters of public order. They cooperate in supervising the safety and smooth operation in road transport.

Control and enforcement are performed in accordance with the European legal rules.

In general, the freight vehicles are not allowed to access the centres. They may go there only with permission.

- Police and municipal police check access restrictions and charging manually. 90% of controls are performed manually on the spot.
- Police use video detection systems and radars on certain places.
- Physical barriers are used to restrict the access to city centres.
- Electronic equipment for the access restriction is used on private places (parkings).

In Denmark enforcement in urban freight transport is known from the environmental zone schemes in various cities (city access concepts), where the transport is only allowed to enter the inner city within a short period of the day. Here the most important aspect is that the deliveries follow the legislation about noise pollution, air pollution and damages on the covering. The municipalities can voluntarily make action plans for the time period in which freight deliveries are permitted. Enforcement and control by video monitoring and physical restrictions are not seen in many inner cities in Denmark. The parking lot attendants and the police are responsible for the enforcement and control of the regulations.

Apart from that the control and enforcement is carried out on a general national wide level (control of speed, parking regulations, social and security regulations etc.)

The control of road transport is made by the Danish police. All vehicles on the Danish roads have to respect the Road Traffic Act. Furthermore some locations in Denmark are monitored by the Danish Road Directorate.

Legal restrictions do not allow control of offences by video cameras installed in the road network:

- Danish Law of prohibition about camera monitoring, which sets up rules for monitoring of public and private spaces.
Estonia

In Finland enforcement and control measures with focus on urban freight transport are not known. There are also no restrictions for urban freight transport (like access restrictions) known that makes an enforcement necessary. In a sparsely populated country like Finland, neither environmental nor congestion problems are serious. Concern regarding road freight transport is mainly related to road safety.

The police are responsible for check and controls of freight transport. The national police are specialized on traffic surveillance and uses 10% of its resources for freight transport. Main activities are checks with regard to:

- The conditions of vehicles and drivers
- Loading weight and load safety
- Work and resting times
- Transport permits

Ministry of Transport and Communications together with Finnish Road Administration and Ministry of Interior have financed research on the potential for enhanced police enforcement. The aim is to study how the volume of traffic enforcement, selectivity, methods and technology should be developed during this decade in order to improve traffic safety. They have noticed that currently manufacturers provide a solution for practically all conventional enforcement needs such as enforcement of red light violations, speed enforcement, turning violations, use of bus lanes and monitoring of stolen vehicles by means of automatic licence plate identification.

France

Framework conditions:

In France, 10% of the national road network is congested daily and the urban traffic grew up 20% from 1982 to 1994 (European Union). Urban freight represents 13 to 20% in vehicle-kilometre, 45 to 65% of transports for purchases are realized with cars.

Moreover, the times lost by drivers who look for a place to deliver or pick up generate emissions of CO2. So, if a better respect of regulation is done, this could improve a better quality to work for drivers and could reduce the congestion. Indeed, the road traffic represents 7.3% of the gross domestic product (PIB).

On an environmental point, the impacts of urban freight flows were recently taken into account. Some national surveys put in light that 50% of freight transport was done by private persons and those 50% are responsible for 11% of CO2 emissions. In a general way, urban freight occupies 20% of the road. So in 1996, the Act on Air and Rational Energy Use makes compulsory for all urban areas of more 100,000 inhabitants the Plans de déplacements urbains (urban transport and mobility master plans). They have to give specific orientations for freight planning. The Urban Solidarity and Renewal Act (SRU), voted in 2000 extended the scope and strengthened the content of the PDUs, in particular as regards road safety, parking, delivery of goods and mobility plans. The role of the urban development plans (PDU) is strengthened and clarified, in particular as concerns parking, in-town delivery of goods and safety. They are drafted by the authorities responsible for organizing urban transit. PDUs have to give coherent pick up hours, weight and size of freight vehicles.

Urban freight transport access restrictions:

Different kinds of restrictions exist: weight, size, environmental with the use of clean vehicles (currently, only one case in France in Langres (10,000 inhabitants)). Then, regulation can be different from a city to another city. Some cities authorize freight urban distribution for the night (40% for cities of more 100,000 inhabitants, 23% for the other ones). Some municipal authorities see them as a viable solution to the problem of traffic congestion: in Dijon, Marseille, Orléans and Paris they are strongly encouraged. Others reject this arrangement on account of the annoyance caused by vehicle noise emissions: in Lille or Rennes, deliveries are banned at night for all vehicles, and over the entire municipal territory.

In 2004, a survey realised by the GART puts in light that despite the non-obligation for the mayor to regulate the access to the city, a main part of local authorities have a specific regulation. Among 80 cities inquired:

- (cities of more 100,000 inh.) : 40% have a weight limit, 13% have a size regulation and the other ones have only punctual rules, not established in the entire municipal territory (only some parts of the city have a rule).
Enforcement and control:
Freight transport regulation is very difficult to check, except in the case of weight or size limit. Indeed, the check of the weight can be done looking at the plate of vehicles (located on the cabin) which indicates the weight. However, even if trucks of more 3,5 tons must have that plate, the fact still remains that a part of them do not have it.

Time limit for delivering is not fixed by law. So, if the driver is not in the delivery area, traffic wardens check the warm of the engine and the opening time of the loading door by manual observations. Some of them choose to stay more than 10 minutes. If the vehicle does not move, it is considered parked and not stopped for delivering. So the control stays really difficult.

Some technical systems to regulate the access for delivery areas exist (retractable bollards, chains). But the problem concerns a juridical point because it is illegal to prohibit the access for individual delivery vehicles. Delivery areas are not controlled by a specific police.

In France, video enforcement is essentially used to control speed limit on major highways (and not on local or urban roads) and for make safe the street. The implantation video on the public road is regulated by a law voted in 1995. That law stipulates that video enforcement is possible for: buildings protection, installations for National Defence, road traffic regulation, observations of rules infringement. A represent of the State must give one’s agreement.

Concerning delivery controls, manual observations are mainly used. In some cities, access restrictions by bollards on delivery areas were implanted. Particularly, it is the case of the cities of Clermont-Ferrand and Nice in which respectively 13 and 25 retractable bollards were implanted. On other cities, specific police agents check car parks and delivery areas. It is often municipal traffic wardens who are in charge of that control. In the city of Marseille, a specific urban brigade was created. To make easier the applications of the urban rules and to facilitate the work of traffic wardens, the city of Nantes has published a document for citizens which indicate the rules for parking and the risk for motorists and deliverymen if they not respect the regulation. That document stipulates that 54 ASVP (Agents du Stationnement sur la voie publique, Agents for the parking control on public ways) who are recognizable with the specific yellow and black checkerwork caps of the agents.

Administration of enforcement and control activities
In December 2005, a legislative report about fee-policies for car-parks puts in light that in France, per year, there are 4.3 million penalties relative to speed limit instructed with an recent automated system called CSA (automated sanction check, process with radars) and 19 million instructed with "antiquated" methods. The non respect of parking rules generates 12.5 million penalties.

Concerning the use of the CSA, the owner of the vehicle which is in infraction receives at home the verbal lawsuit while the traditional process consists in manual observation by agents who fill a form and a copy of the verbal lawsuit is put on windshield of the vehicle checked.

On the second case there is a lack of security for the contravening. The result is a feeling of inequality with the law: the rate of disputes is about 5%.

The legislative report mentioned insists on the cost for the instruction of verbal lawsuits which is nearly 12 € (average) by one: it costs 240 € for the instruction. So, the traditional method for instructing infractions does not cover the public charges for finance. That the reason why the recent report ordered by the Ministry of Finance proposes to dematerialize the payment of infringements. For example, an e-payment could generate a reduction of costs for public services, the unit costs could pass from 12 € to 4 € with a better security for the payment and a reduction of ratio of disputes.
Research
In France, a national program for research in transports started in 1996 (PREDIT). PREDIT is a program of research, experimentation and innovation in land transport, started and implemented by the ministries in charge of research, transport, environment and industry, the ADEME and the ANVAR. By stimulating cooperation between public and private sector, this program aims at encouraging the creation of transportation systems that would be economically and socially more effective, safer, more energy saving, and finally more respectful of Man and environmentally-friendly.

PREDIT 3 (2002-2006) has been marked by a specific effort put on goods transportation and energy and environment issues, greenhouse effect in particular, as well as a diversified research on safety. This third program has been given about 300 million Euros in public funds.

PREDIT is going to launch a call for project about parking including the enforcement for the rules relative to goods movements in the city.

Germany
Enforcement of goods transport is mainly related to control of the Lkw-Maut system in Germany. Trucks of more than 12 t GVW using German motorways are due to pay user charges. In order to ensure the enforcement of the Maut system a comprehensive enforcement system has been developed. The enforcement authority responsible for the new truck toll system is the Federal Office for Goods Transport (BAG). The enforcement system reviews the correct payment of the toll. It does not record and bill the toll.

The enforcement is basically divided into two forms of enforcement:

- Automated enforcement: Fixed control bridges (overall 300 over the German motorway network) use infrared sensors to track approaching trucks. The data is evaluated and compared to the data stored at control headquarters. At the same time, data on suspected toll violators can also be sent to officers employed by the Federal Office for Goods Transport (BAG) at a nearby parking lot who can then flag down the vehicle and inspect it (stationary control).

- Mobile control: Mobile control units supplement the control bridges and allow for broad-based and flexible enforcement. About 300 mobile teams are deployed 24 hours a day. During the trip, trucks are checked by both automated and mobile controls. The flow of traffic is not impeded. Only trucks that have not properly logged on can be halted by BAG. Government guidelines stipulate the number and locations of the automated control bridges and the number of mobile control teams.

In addition the BAG also carries out random inspections of shippers and transport companies.

With regard to German urban goods transport new enforcement measures are to be introduced in order to control the compliance of the measures to reduce particulate emissions. Since 2005 a German law related to the EU directive on particulate emissions is in force stating that measure have to be taken in the case of exceeding a particulate threshold on more than 30 days. Cities are obliged to defined measures and an action plan for reducing particulate emissions. Diesel propelled vehicles and goods transport has been pointed out as main polluter of particulate emissions to which most of the measures are related. For example the following measures are part or in discussion for specific action plans:

- In Darmstadt transit traffic over 7,5 t GVW is prohibited. Further measure can also include vehicles of 3,5 t GVW
- In Halle a general speed limit of 30 km/h is proposed for particular roads
- In Düsseldorf on particular roads diesel trucks with more than 3,5 t GVW are only allowed to drive in the south direction between 6 and 10 O’clock

In general the application of the measures will be regulated over the vehicle specific emissions following the Euro classification. Each car has to tag a sticker on the front window showing the specific Euro classification.

According to the measure proposed the police will enforce the compliance of the measures.

There are several issues that needs to be considered on framework conditions for enforcement:

Charging:
So far the legal basis is only given to levy charges for motorways. Presently there is no example for a city charging scheme in Germany.

Safety:
For ensuring safety issues on urban roads (e.g. at traffic light regulated crossings or to ensure speed limits) video based enforcement is applied as in line with data protection issues.
Administrative processes:
For the video enforcement of administrative processes the legal basis is presently given only for specific purposes. For instance these are to control the access control at gates to particular buildings or installations, however, mainly to ensure safety belongings. No German examples are known on a video enforced access control for inner city areas for goods transport.

Enforcement of administrative processes will be made via police in the case of concrete administrative offences.

Greece

General enforcement activities
The Greece laws allows the following measures against road traffic offences:
- Radars (speed enforcement)
- Video enforcement (traffic management – RTC violations enforcement)
- Physical barriers (gates) at toll stations (booths)
- Manual enforcement (access and parking restrictions)

In professional transport, apart from random checks, prescribed bodies may conduct specific road checks, company visits or accident investigations. Road tests are considered most effective methods, but they are rarely carried out.

Legislation and responsibilities
New laws concerning road traffic rules and road safety are issued within the Greek Parliament. The current Road Traffic Code (RTC) has been established by means of Law 2696/1999, as certified by the President of the Hellenic Republic on March 23rd 1999 and amended by Laws 2963/2001 and 3254/2004 (Ministry of Transport & Communications)

The RTC allows the Police to perform checks on excessive speed and drinking & driving at random (preventative) or in fatal road accidents (compulsory for alcohol).

With respect to video enforcement, according to the Directive 1122/2000 of the HDPA (Hellenic Data Protection Authority) it is not legal to film road traffic, except for cases of urgent need to settle traffic or to protect individuals and their properties.

Urban freight transport is considered as part of professional transport; therefore, the authorities involved in pertaining legislation are: Ministry of Transport & Communications (MTC), Ministry of Employment & Social Protection (MESP), Ministry of Environment, Physical Planning & Public Works (MEPPPW). The MTC is supposed to be the main law-making body. Yet, since employment provisions may interfere, the preparation of certain regulations may call for input from MESP.

The bodies involved in the enforcement of rules in the urban freight transport context include: Traffic Police, specialized transport inspectors, Customs, Tax Department, mixed task forces. Private companies are not allowed to perform enforcement activities.

The main aspects of road traffic operations are addressed to some extent by the RTC (drinking & driving, speeding, overtaking, use of safety devices, road pricing etc). Most of these issues entail primarily manual enforcement. Since this constitutes a tedious procedure, various means are used to improve efficiency. Radars and cameras are used with respect to speeding, alcohol-meters with respect to drinking and driving, physical barriers (gates) at toll booths to support road pricing, etc.

Technologies
Radars are commonly used in speed checking. This appears to be a limiting factor on the efficiency of the system [3: 4-country focus – Greece & Portugal vs. Sweden & UK], in terms of ability to perform checks (capacity) and deterrent effect exercised on drivers (potential violators). Therefore, the Greek Road Traffic Police have started to use automated equipment (laser instruments, speed cameras) in their enforcement operations, already yielding tangible benefits.

Speed cameras along national road network will be managed by 10 Data Processing Centres. Speed will be measured in “traps” of double inductive loops placed in the pavement, whereas digital photo cameras will take high-resolution pictures of violators’ vehicles. After being stored in cameras’ hard discs, photos will be sent to the Data Centres for processing. In the future, there is intention to upgrade the system, so that pictures are sent via modem (GSM / ISDN), while tickets will be issued at the spot according to Greek legislation through
**Awareness**

Despite budget constraints, under the pressure of increasing air pollution and traffic congestion incidents (primarily in urban areas), as well as of huge costs due to road accidents, public awareness has been raised, resulting to the commitment of substantial sums on enforcement. In April 2005, the Minister of EPWW announced an expenditure of €12.1 million for the provision, installation and operation of about 400 cameras at selected “black” spots of the national road network, until the end of February 2006. These 400 spots cover a total length of 3,500 km of various road types across 10 Regions. Although not strictly related to urban transport, this action reveals a philosophy of caution on freight vehicles mixing in road operations.

**Research activities**

The Ministry of Environment, Physical Planning & Public Works (MEPPPW) has funded a time restrictions programme, carried out by transportation engineers and faculty of NTUA: “Investigation of implementation and effectiveness of delivery restrictions”, 2001-2002

This research project deals with the investigation of implementation and efficiency of delivery restrictions for super markets and department stores. A dedicated methodology is developed and an analysis of traffic conditions and parking characteristics takes place. A database is developed, while the implementation and the efficiency of delivery restrictions are evaluated.

The National Technical University of Athens (NTUA) has conducted research programmes in the field of time restrictions and associated enforcement in urban freight transport.

- A 2nd programme in the same field was recently completed (code name: Blue Zone). These programmes yielded results showing the impact of road traffic police presence along major arterials on the frequency of time restrictions violation—and, subsequently, on the average speed recorded on each road.

| Hungary | Except a weight restriction system in Budapest there are no access restrictions in Hungary. The restriction system is from the 1980ies and redesigned in the 1990ies. Main responsible enforcement authorities are the CIT (Central Inspectorate of Transport) and the local police departments. |
| Ireland | In Dublin, driven by the “Celtic Tiger” economy, vehicle registrations have doubled during the last decade. Car numbers up from 100,000 to 250,000 leading to a doubling of commuting times and a halving of traffic speeds in the city. Commuting peak times have increased from 1 to 2 hours. Freight deliveries have also increased and more than 20 million tonnes per year are now carried in the greater Dublin area. Ireland enjoys an annual growth rate of from 3% to 5% in GDP and this gives rise to a corresponding increase in traffic intensity. The costs of congestion to society and to the regional economy are estimated by the chamber of commerce to amount to be in excess of €1 billion per year. Congestion is the main reason for implementing tighter controls on commercial traffic but mitigating damage to the fabric of the historic city is also an important consideration. The main responsible authorities for control and enforcement are the national police force, in collaboration with the city council. The National Roads Authority (NRA) sets the tolls on the M50 peripheral ring motorway which affects access to the city centre. Private companies are sub-contracted by the City Council to manage the parking meters, to collect fines and to clamp offenders. Offences are dealt with by the police and the courts. New Environmental Noise Regulations came into force on 29th March by order of the Minister for the Environment (Statutory Instrument 140 of 2006). These set guidelines and target dates for action plans for all the Local Authorities in accord with the EC Directive on Noise. Managing urban congestion is a political issue and the Irish Road Haulage Association is currently protesting the new HGV strategy, restrictions and toll charges proposed by the City Council. Following the opening of the €800 million port access tunnel later in 2006, HGVs of 5 or more axles will be prohibited from accessing the city centre between 7 am and 7 pm. This will mean more night deliveries. In response to the EC Noise Directive, the City Council started in April 1999 to prepare a strategic noise map of the inner city between the north and south circular roads. This exercise feeds into the EC “CALM” thematic |
network that monitors and harmonises the progress of noise mapping in European cities which have a population of 200,000 or more. The city council used a proprietary noise model and software called ‘Pedect’ Noise maps were developed linking noise level bands and contours to land use patterns, to the populations affected and to traffic data.

The draft HGV strategy under development by the city council will increase night deliveries by large trucks and the noise mapping exercise provides a benchmark for monitoring the increase in noise disturbance that is likely to arise. It can also be used as a basis for developing a permitting regime to mitigate the noise nuisance and for developing acoustic limits for night delivery operations in accord with the EC Noise Directive. The HGV draft strategy document is currently the subject of public consultation and the restrictions are to come into effect at the end of 2006 following the opening of the Dublin Port Tunnel (DPT).

Provisions of the new HGV Strategy for Dublin

The main provisions of the draft Strategy are set out as follows:

1. Restrictions to be applied to HGVs

The draft Strategy proposes that all movements of restricted HGVs within the Canal cordon will be confined to the period 19.00 to 07.00hrs apart from those that have been granted exemption via a permitting system. This restriction will operate from Monday to Sunday. However, the Strategy recognised that provision will have to be made for this restriction to be relaxed automatically whenever the DPT is fully closed or partially closed.

2. Size of HGVs to be restricted

The draft Strategy proposes that the restriction will apply, in the first instance, to HGVs with 5 or more axles (irrespective of the load they are carrying and the number of axles in use at the time). In this regard it is worth noting that:

- Approximately 35% of all Port related HGVs have less than 5 axles while 65% have 5 or more axles. (This excludes cars, vans, buses, tankers and car transporters); and,
- Approximately 75% of all trucks crossing the Canal cordon have less than 5 axles, 25% have 5 or more axles.

This restriction would come into operation shortly after the opening of the DPT. In addition, it is proposed that the restriction would apply to vehicles with four or more axles after a period of 3 to 5 years; following the completion of the M50 upgrade works. The arguments for this approach are:

- it will allow a more restrictive approach to be taken to the issue of permits;
- it will reduce the adverse cost implications for industry;
- it will allow industry a period to adjust to the more restrictive regime, and;
- it will be possible to assess the response of industry in terms of moving to smaller vehicles or night time deliveries.

In order for the Strategy to be effective it must be supported by penalties that provide a significant deterrent to non compliance together with an effective enforcement regime. In this regard the experience with the enforcement of the exiting 3 tonne limits in the City Council area is not encouraging. The Strategy recognised the need for a simple enforcement mechanism that limits the need to stop vehicles to check permits. The preferred option is to rely on manual spot checks within the cordon based on observing the number of axles.

<table>
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<th>Italy</th>
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<td>The activities involving the enforcement and control of freight transport in Italy are of major importance and are mainly addressed at reducing environmental problems and congestion, besides safeguarding the quality of life.</td>
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<td>In Italy the general framework of regulations intended to reduce congestion and pollution denotes an extensive lack of homogeneity among the different cities, both in the ways of application and in the enforcement practices.</td>
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<td>However a general tendency is revealed towards the spreading of measures for limiting circulation and making them more stringent, such as:</td>
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<td>- limited traffic zones (areas to which access is allowed only to determinate categories of users or vehicles);</td>
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<td>- partial blocks (which allow circulation only to “ecological” vehicles in determinate urban areas or circulation with alternate licence plates);</td>
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ANNEX I – General situation within countries – Control and enforcement in urban freight transport

[71x780]ANNEX I – General situation within countries – Control and enforcement in urban freight transport
• total blocks (which prevent the circulation of all or almost all types of vehicles and users).
In many cities both circulation and parking are also ruled by tariff systems.
In general, for access to limited traffic zones it is necessary to pay an annual fee, which is differentiated depending on the type of vehicle or user (e.g. Rome, Ferrara, Florence, Turin, Milan, Parma, Reggio Emilia).
The spreading of automated surveillance systems is growing and is linked to their low cost compared with manual enforcement and its effectiveness (“certainty of punishment”).
Concerning freight transport, though according to highly differing criteria among the different municipalities, rules and rates are differentiated according to the following parameters:
• vehicle pollutant emission level (e.g. waivers for electric vehicles, LPG, methane, hybrids, or class Euro4 and more recent);
• vehicle dimensions (e.g. in Milan transit is prohibited in an extensive area for vehicles longer than 7m)
• vehicle weight (e.g. in many cities facilitations for vehicles with Gross Vehicle Weight below 3.5t, or 8t, or 11t);
• type of transport: facilitations for freighting on account of others.
Facilitations mostly consist in rate reductions or extension of the time bands for access and circulation, or in exemption from the need for specific permits.
In addition, in some instances, like Rome, limited traffic zones are delineated for freight vehicles.

Responsibility for control and general situation
In Italy the definition of the rules and of the fines and penalty system is the task of Municipal Administrations, while enforcement (including collecting fines) is the responsibility of the Municipal Police. However, the management and control of pay car parks can be deputed to other bodies (e.g. public transport company).
In general, the manual checks by the Municipal Police are increasingly aided by automatic infringement control technologies (e.g. video cameras).

Circulation and access control
With regard to the observance of regulations associated with the circulation of vehicles and access to limited traffic zones, the most widespread control practice is the one carried out manually by police officers. However, the adoption is spreading of the so-called “electronic traffic policemen”, i.e. technologies for the automatic detection of vehicles entering limited traffic zones (video cameras, telepass, RFID, photo cameras). In some cities these systems have already been operating for several years and have proved to be highly effective (e.g. Rome, Florence, Turin, Bologna, Milan, Siena).
The experience of certain cities has revealed the importance of the lighting of the video cameras themselves to prove their existence in compliance with the law on privacy.

Lithuania
There are no meaningful restrictions for freight transport concerning urban areas in Lithuania. Municipalities provide control of road transports in urban areas. Municipalities decide road-signs location within urban areas. Enforcement in freight transport is provided by State Road Transport Inspectorate (SRTI) under the Ministry of Transport and Communications in national level. SRTI is basically responsible: for issuing of licences for freight transport companies and copies of licences for their lorries; for freight transport taxes payment control in national and regional roads only, (there is no especially taxes for freight transport in urban areas); for control of freight transport companies concerning national and international rules, legal acts, directives, conventions etc (licences, weight, AETR, ADR, cohesion, etc.). Control of mentioned points provides officers of Dept. of Control of SRTI.
The municipal police are allowed to carry out controls and enforcement activities within urban areas. Control is related to Rules of Roads only. Private companies are not allowed to carry out controls and checks.
Radar monitoring is focused on speed control of all kind of transport in city areas. Only road signs restrict lorries traffic in some streets of the cities. Control is made by municipality police officers directly on streets. Video monitoring is provided in some cities streets for the reason of social safety and not for freight transport control.

Netherlands
Municipalities have the option to restrict access based on times, vehicle lengths, weights and environmental characteristics of the vehicles. Currently only the police is authorised to carry out control and enforcement.
activities. In the recent years there has been discussion that minor infringements should be handled by
administrative penalties, instead of by offences checked by the police. In the current system (with police
checks) are handled by the lex Mulder, or "Mulderwet". In the proposed system, which still has to pass
Parliament, municipal civil servants will be authorised to carry out checks and to impose fines. This is already
the case for illegal parking. The new law on administrative penalties still has to pass Parliament. It was
originally due to be implemented by 1st January 2005, but was delayed.

Two kinds of enforcement and control systems are used:
- Open systems with manual enforcement by police officers
- Closed systems with (manual and electronic) bollards, etc.

The electronic bollard systems are effective, but costly. Traffic enforcement by the police is insufficient
because it doesn't get priority.

A number of cities have signed an agreement to establish environmental zones due to severe environmental
problems on certain sites in cities (exceeding EU emission limits and noise problems).

| Poland | In Poland there are no restrictions for urban freight transport known, except one example from Wroclaw.
Enforcement and control activities for freight transport are carried out on a general level that means the
general observance of traffic regulations. The main regulations concerning freight transport are:
- State Ordinance of the Minister of Infrastructure containing regulations concerning the conditions of road
  traffic management and control (23th September 2003): The ordinance specifies the exact conditions of:
  ⇒ public road management and control
  ⇒ inhabited area management and control.
- Road Traffic Law (20th June 1997): The law regulates rules of public road and inhabited area traffic as
  well as requirements for vehicles and drivers. The rules are also applied to non-public roads in case it is
  necessary to avoid dangerous situations.
- Transport Law (15th November 1984): It regulates transport against payment of people and goods by
  hauliers, except for maritime and horse transport. The regulations are applied to international transport,
  unless there are some individual regulations that may be used.
- Local Government Law (8th March 1990)
- Public Roads Law (21th March 1985)
- State Ordinance of the Minister of Transport and Maritime Economy containing regulations concerning
technical conditions and location of state roads (2th March 1999)
- State Ordinance of the Minister of Interior and Administration containing regulations concerning road
  signs and road signals (31th July 2002)

The abovementioned laws are related to public roads.

The cities' transport policy and planning is build on the Transport Development Strategy for the years 2007 –
2013 (TDS) and the goals of the National Development Plan and aims at:
- Creating integrated city transport development plans.
- Extending and improving road infrastructure.
- Establishing integrated communication junctions.
- Establishing a body dealing only with city transport matters.
- Realizing projects connected with Intelligent Transport Systems including delivery cars management
  systems.

Below there are some examples of solutions connected with freight transport in the City of Wroclaw. These
regulations are in force within the area of the Old City Centre:
- There are zones of limited traffic for cars with a tonnage of more than 3.5 tons.
- There are special zones of limited traffic for delivery cars, i.e. from 6.00 am to 9.00 am and from 6.00 pm
to 10.00 pm.
- Charging a fee for entering a "no traffic zone".
- The places of loading/unloading operations are signed with special road signs with an information plate.

The abovementioned restrictions are enforced by municipal police. Main physical measures of enforcement
<table>
<thead>
<tr>
<th>Country</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>South-Africa</td>
<td>The high level of car usage, especially by the urban and metropolitan people in South Africa, gives rise to serious congestion especially in Cape Town, Durban, Pretoria and Johannesburg. Congestion in cities during peak times is a great concern. Despite this there are no concrete enforcement and control activities with respect to problems of urban freight transport. There are also missing access restriction schemes in urban areas and other transport related measures that improve the negative traffic situation of South-African cities.</td>
</tr>
<tr>
<td>Slovakia</td>
<td>There are no measures and restrictions especially in urban freight transport. Only general laws on speed limits and signalisation measures exist on the country-wide road network. Therefore there are no enforcement and controls strategies with respect to urban freight transport. In general enforcement takes place by signalisation measures and police control.</td>
</tr>
<tr>
<td>Slovenia</td>
<td>In general enforcement takes place on a general level (check of national tolling on motorways, general parking and speed limits etc.). In case of urban freight transport the city access schemes introduced in various Slovenian cities is enforced by the municipal police. <strong>Legislation</strong> At national level, there are different acts regulating enforcement in the freight transport. These acts are the following: Public Roads Act, Road Transport Act and Road Traffic Safety Act. Data protection is regulated by Personal Data Protection Act. Municipal authorities are eligible and bound to set up legal regulations applicable in their areas. They regulate transport at the city level based on their own decrees. Decree on Road Traffic Regulation1 provides for regulation of traffic in Ljubljana. At the entrance to the city zone in Ljubljana, the authorities marked that traffic is monitored by a video camera. Pursuant to Personal Data Protection Act2, the data on the person violating the law as recorded by video camera may be used providing that there is a sign in place indicating that the area is monitored by video. The City of Ljubljana has a video surveillance established in several crossroads. The data is used exclusively for statistical purposes and personal data is not published. In case of an accident, the Police is authorized to use the video data. <strong>Responsibilities in enforcement</strong> There are the following authorities responsible for the enforcement and control: Ministry of Transport, Office of Traffic, municipal authorities and municipal Police Offices. The city zones are supervised by the Municipal Police. Municipal Police has the authority to impose penalties for individuals violating laws and regulations. <strong>Access restrictions in Slovenian cities and enforcement concept</strong> At the urban level, the authorities started closing the city zones due to a high volume of traffic and high air and noise pollution. Through restricted access to the city zones, the authorities succeeded to reduce the traffic, which resulted in decreased air and noise pollution. Ljubljana, Maribor, Celje and Kranj use sink cylinders to restrict access to the city zones. The access to these areas is permitted exclusively for delivery vehicles and inhabitants. There are some exceptions established based on special permits. The sink cylinders are connected with the card-readers placed on pillars. If the user has a valid card available, the cylinder can be sunk and access to the city zone is admitted. The sink cylinders are connected with computers through a network. The computers record vehicles entering/exiting the city zone. This concept provides also for video surveillance enabling monitoring of the city zone entrances and exits. This solution aims at decreasing of the volume of traffic in the city zone, contributing at the same time to reduction of the air pollution and noise pollution, which are considered major problems in the city zones. Such areas are usually managed as pedestrian zones. Delivery vehicles have the time windows available for delivering the goods into the city zone. There is also a time limit established for stopping in the area for delivery purposes. Inhabitants are admitted to access the area, but usually they have to have their vehicles parked on their own property, since parking in the city zone streets is prohibited. Such areas are supervised by the Municipal Police.</td>
</tr>
<tr>
<td>Spain</td>
<td>In Spain enforcement of freight transport takes place on a general level not with focus on urban freight.</td>
</tr>
</tbody>
</table>

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1 Odilok o cestnoprometni ureditvi (Official Gazette of the Republic of Slovenia No. 33/2001, p. 3711)
2 Zakon o varstvu osebnih podatkov, (Official Gazette of the Republic of Slovenia, No. 86/2004, p. 10389)
Objective of control and enforcement measures in road traffic are the observance of the traffic regulations in general. One good example of enforcement in urban freight transport is the Urban Freight Management Plan Barcelona.

### Switzerland

Regarding urban freight transport there are no special restriction known until now. Therefore enforcement and control takes place on a general level that means not with special focus on urban freight transport: speed control and parking control.

In Switzerland all enforcement activities are regulated by laws. Each enforcement activity that is carried out is based on a legal basis; it is not possible to carry out enforcement activities without a legal basis. The legal rules for road traffic are laid down in road traffic law (Strassenverkehrsgesetz SVG). Further important laws and directives regarding road traffic are:

- The signalisation directive (Signalisationsverordnung, SSV)
- Traffic rules directive (Verkehrsregelnverordnung, VRV)

The level of fine for offences that have been detected depends on a catalogue (Bussenliste) where all offences against road traffic laws are listed. The range is between 20 CHF and 250 CHF in dependence on the offence (in the inner-village area a non-allowed speed of 1-5 km/h above the prescribed and allowed speed costs 40 CHF and 11 km/h above costs 240 CHF).

#### Data protection

Data protection in general is regulated in the data protection law (Bundesgesetz über Datenschutz DSG). Special laws include also articles regulating data protection. For example the Swiss Heavy Vehicle Fee Directive (Schwerverkehrsabgabeverordnung SVAV) also regulates enforcement activities and data protection regarding control and monitoring procedures of offences.

Requirements regarding data protection and data security: these include, on the one hand access protection and monitoring of roadside components. On the other hand the data must be adequately protected during the transfer process. Where this cannot be guaranteed through the characteristics of the data transfer channel itself, the data must be encrypted. Also, during storage of the data in the back-office system the data must be protected so that access to it is only possible for authorised persons.

There are currently discussions about the enforcement praxis regarding speed control and camera detection of speed limits offences and traffic light offences in Zurich. Conservative political parties are emphasizing that camera detection is only a measure to take money out of pockets of car drivers. There is no need to have such a density of radar and camera detection for speed limits in the city. Furthermore they are not willing to accept that detection is made if the driver is only 3 km/h faster than allowed. There should be a minimum tolerance that is higher than 3 km/h. The opposite party emphasize that a dense control speed and traffic light observation system is necessary to guarantee the protection against accidents and non-allowed speeding.

A further discussion has started last year about the introduction of road pricing schemes within Swiss cities but a decision has not be made until now to introduce road pricing in city areas. Regarding this discussion also enforcement praxis has been debated.

#### Responsibilities

In general both, police and public administration, are responsible for the enforcement and control. The police is responsible the operational control and enforcement function whereas the administration has to deal with the offences and to send the official demand for payment of a fine.

In general only police officers are allowed to detect offences against road traffic laws. But there are also private companies having the allowance to detect offences (e.g. against parking regulations), like in Zurich for example KRV (Kontrolle Ruhender Verkehr), PAD (Polizeilicher Assistenzdienst).

#### Technologies

At present, automatic traffic enforcement uses almost exclusively cameras with films which have to be chemically-developed (so-called wet films). Additional data (such as date/time, location, etc.) are merged directly into the picture and photographed as part of the scene.

### United Kingdom

In the UK a variety of enforcement and control activities with respect to access restrictions and road pricing schemes are applied in urban freight transport (London Congestion Charge, London Lorry Control Scheme, ...
London Traffic and Environmental Zone etc.). Furthermore on a broader level road freight transport is actively monitored and controlled (weight restrictions, speed control etc.).

**Legislation**

The main regulation for control and enforcement of freight transport vehicle is the Road Traffic Act 1988 sections 66A to Section 77. Under this act vehicle examiner is employed by the Secretary of State (for Department for Transport). Also Customs and Excise authority can conduct checks goods vehicle for such reasons as fuel duty. This Road Traffic Act regulates for example the allowed speed, maximum weights etc. Also a number of other legislations and regulations are relevant or applicable for control and enforcement in urban freight transport including:

- Employment legislation includes contract specifying terms and conditions about salary/ wages, working hours, leave etc.
- Working time regulations
- Health and safety law

**Responsibilities**

The Vehicle and Operator Services Agency (VOSA) provides a range of testing and enforcement services with the aim of improving the roadworthiness standards of vehicles ensuring the compliance of operators and drivers with road traffic legislation, and supporting the independent Traffic Commissioners. VOSA is responsible for control and enforcement in urban freight transport. For this purposes freight vehicles having higher than 3.5 tonne capacity must have annual inspection by managers. VOSA also inspects vehicle on the spot randomly on the road. It conducts targeted check using technology such as auto number plate reader (ANPR). VOSA closely works with Highway Agency and Police.

Local authorities in England and Wales can enforce parking restrictions in their areas. The Traffic Management Act 2004 allowed enforcement of moving traffic offences to be extended to authorities outside London.

Police officers as well as traffic wardens, parking attendants and other traffic and vehicle-related bodies conduct enforcement measures manually.

Also the physical barriers such as bollards are used as enforcement measures.

For parking, access and environmental control and enforcement measures the following responsibilities are valid:

<table>
<thead>
<tr>
<th>Urban parking and loading regulations</th>
<th>Traffic wardens &amp; police parking attendants on behalf of urban authority</th>
<th>Manual observation and camera enforcement. Fines, vehicle clamping and removal. Fixed penalty notice or via the Court system if issued by police and traffic wardens. Penalty charge notices if issued by parking attendants.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle access restrictions (including dedicated lanes)</td>
<td>Traffic wardens &amp; police parking attendants on behalf of urban authority</td>
<td>Manual observation and camera enforcement. Fines, vehicle clamping and removal. Fixed penalty notice or via the Court system if issued by police and traffic wardens. Penalty charge notices if issued by parking attendants.</td>
</tr>
<tr>
<td>Noise and time limits – Urban local authorities:</td>
<td>Environmental Health Officers/Planning controls by urban authority</td>
<td>Manual spot checks and checks based on complaints.</td>
</tr>
</tbody>
</table>

**Motivation and approach for enforcement and control**

The control and enforcement of urban freight vehicle is carried out with the aims of improved road safety, prevention of accident/ offences and improved environment. Congestion is not the main issue, from VOSA point of view, although strict control and enforcement improves the congestion situation on the road.

The term sustainable development in government reflects the motivation and approach that is being followed.
It ensures a better life for everyone, now and for generations to come. Social progress, protection of environment and prudent use of natural resources and economic growth are at the heart of the motivation of control and enforcement of urban freight transport. The Department for Transport’s (DfT) objective is to oversee the delivery of a reliable, safe and secure transport system that responds efficiently to the needs of individuals and business whilst safeguarding the environment.

Over the years responsibility for control and enforcement has been transferred from the Police to VOSA, Local Authorities as well Traffic Officers. The range of offences subject to civil enforcement now includes parking, banned turns, box junction infringements, and bus and cycle lane violations under local authorities. The transfer of responsibilities has resulted in a dramatic increase in the number of penalties imposed.

Technologies used
The latest technologies are employed to control and enforce of urban freight transport by the authorities. For example, VOSA employs Video Enforcement System (VES) to record automatically number plate. To monitor the offences of weight restrictions weigh bridge as well as mobile weight pad are used by VOSA. VOSA is empowered to prohibit the vehicle (roadworthiness as well as financial soundness) or driver (exceeding the legal working hour limits) committing offences. Mobile roller is used to test the vehicle’s brake as well as exhaust emission. Testing equipment is used to see the gas exhaust extent. Also empowered local authority, such as London, employs latest technologies for control and enforcement of vehicles including cars and goods vehicles.

Cameras are widely used in the UK to enforce speed limits, traffic light offences, bus-lanes offences, parking and loading violations, and minor moving traffic offences.

There are three types of camera in use in urban areas to enforce bus lane, and parking and loading violations and moving traffic offences. These technologies came into use in the mid-1990s: (i) Manned CCTV systems involve pan-tilt-zoom cameras controlled remotely by operators, who have the ability to select cameras and monitor different areas of road. When a contravention is witnessed, the operator notes the time and offence, and reviews the recording and input details of the vehicle and offence into a separate system at the end of the enforcement period; (ii) Unmanned CCTV systems make continuous recordings of a site (such as a bus lane); a second lens will capture number-plates. The recordings are collected manually, and watched by enforcement officers who monitor contraventions; and (iii) Cameras on buses are automatically activated (via microwave ‘countdown’ beacons) when a bus enters a bus lane, and the footage is viewed to record contraventions after a bus finishes its route.

Further instruments are:
- Speed cameras
- Red light cameras
- Automatic Number Plate Recognition (ANPR) enables a new method of dealing with offences in which vehicles can be swiftly and easily identified and stopped, and allows enforcement of both traffic offences and other types of crime. Current ANPR systems work by scanning the number plates of passing vehicles and checking them against other databases. ANPR is used to enforce the London Congestion Charging Scheme.
- Surveillance can also aid traditional police enforcement. An example of this is video-equipped police cars and motorcycles, including unmarked vehicles. Most Police Forces in the UK use video-equipped police patrol cars to record incidents and stops by police. A number of forces also use video-equipped ‘plain vehicles’ to monitor and record bad driving behaviour.
- In addition to automated enforcement, many offences are enforced through the use of manual observation and enforcement (such as parking and loading regulations enforced by the police and local authority parking attendants), and roadside spot checks on the roadworthiness of vehicles by qualified mechanics on behalf of the UK government.
- Physical restrictions are also used in some urban areas to prevent vehicle access. This approach to preventing vehicle access does not require accompanying enforcement.

Data protection
VOSA carries out normal video enforcement on the road as they are empowered to stop goods vehicle for such purposes but time to time they need permission from the Regulator of Investigation power Act (RIPA) to carry out check on someone’s premise. Also, London congestion charging scheme uses Video (colour images and the other black and white or monochrome) to take image of vehicles including cars. Video can be used in
two ways: one in different point (stationary) on the road and from control and enforce authority vehicle. There are no conflicts in principle, although some complaints are there in terms of use of old databank to identify the operator / owner of the vehicle, recently sold to another operator. Also sometimes fake number plates used by frauds cause/raise complaints about the effectiveness of the use video by the original holder of number plate of a vehicle.

**Research activities**

VOSA has been continuing research into the upgrading of technology and equipment. For this purposes VOSA works with vehicle manufacturers. For control and enforcement of urban freight transport vehicle VOSA has a number of research activities. VOSA is currently conducting research/ testing on a hand held mobile, Laptop type, device to see the effectiveness of road side checking. Another research project into vehicle weight is investigating a Vehicle in Motion Sensor. This equipment will measure the weight of the vehicle without stopping it.
ANNEX II: Collected case studies (projects-level) – Control and enforcement

Projects highlighted in grey are described in detail in the main part of the best practice handbook

<table>
<thead>
<tr>
<th>Code</th>
<th>City/Region</th>
<th>Name of concept</th>
<th>Description of concept</th>
</tr>
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</table>
| BE – 01 | Namur      | City access restriction Namur | To preserve the historic city centre of Namur (the streets in the centre are often very narrow) and the ensure safety and conviviality to pedestrians two restrictions are applicable with regards to heavy vehicles’ access to the city centre:  
  ▪ Access to the city centre is not allowed to vehicles longer than 12 m except for the Rogier-Brabant axis and the roads located north of this axis.  
  ▪ Access to the city centre is not allowed to vehicles of more than 3.5 tons, during the week between 11h30 and 17h30.  
  Delivery is free if it is done in the delivery zone (see map below, delivery zones are in orange) during authorised parking times (between 7.30 and 11.30 in the morning) as long as it is effectively active. If the delivery is not active, then normal parking procedures are in application (for example payment of the parking).  
  Controls are organised by the local police. Automatic bollards allow to control vehicles entering the pedestrian area.  
  The on-board individual parcometer Smart Park is a useful device for drivers making regular deliveries to the city centre. It allows drivers to be assured that they pay only for the exact amount of time he remained on the parking stop. |
| BE – 02 | Liège      | Transit ban for HGVs     | Control and enforcement of the ban related to transit traffic for vehicles exceeding length and weight limits (vehicles of length 7.5 m and of 40 tons in weight).  
  Source: Ministry of Equipment and Transport of the Walloon Region/  
  Source: www.mappy.be  
  Transit traffic of heavy goods vehicles in Liège has been very important in going to Germany or France for example. Efforts to reduce transit traffic date in 2000 to provide a connection between the E40 and the E25 highlighted as “new” in the map below.  
  Transit traffic was especially observed on the Quai de la Dérivation. With time, this caused depreciation of housing in the area due to the impacts of this traffic in terms of noise and visual impacts. As a result, less people wanted to live in the area. |
To ensure that heavy vehicles in transit use the new connection, a regulation was developed to ban transit of vehicles exceeding defined length and weight limits. This regulation is essentially aimed at trucks and caravans. Trucks coming into Liège for deliveries are not concerned by the regulation which only applies to transit traffic. It should be noted that another connection referred to as Cerexhe-Heuseux (E40) - Beaufays (E25) is under study. This connection would allow to ‘close’ the highway network so as to encircle the city of Liège.

The ban for transit traffic of heavy vehicles is regulated by a decree which was taken by the mayor of the city of Liège. Signalisation indicating the ban was put in place and controls organised by the local police. Controls are organised by policemen posted at the Bressoux bridge. Vehicles are stopped and drivers are asked their destination. If their destination is not local (city centre or port of Liège), they are fined and asked to turn around to take the highway. It has been noticed that truck drivers who have been asked to turn around communicate this information to other drivers. Impacts of controls is thus larger than the drivers that have been fined. Motorised police patrols also monitor the situation.

A Defence Committee has been created by people living in the area. When they feel they are suffering from transit traffic, they contact the municipality.

The quays are also equipped with some cameras to monitor traffic. Images from the cameras arrive at the police station. If the cameras show that traffic of heavy vehicles is high policemen are sent to the quays to see what is happening (an accident may have occurred on the highway for example).

With the inauguration of the E25-E40 connection, an average traffic reduction has been observed on the Quai de la Dérivation of 20% and 45% of heavy vehicles as well as a reduction of speed further to the controls carried out.

The European Union has adopted a directive on clean air, that foresees specific limits for particulate in 2005 and NO\textsubscript{2} emissions in 2010. The European directive has been adapted to the German law in 2002. Although there has been several measures to reduce particulate emissions the limits were exceeded in 30 German cities. In order to avoid these exceeding the federal authorities have to set up clean air plans as well as specific action plans.

As diesel propelled vehicles are the main polluter of particulate in urban area a differentiation of vehicles on their emission exhausts has to be made in order to exempt “clean” vehicles from the bans. The direction follows the aim for a national consistent regulation for particulate stiggers. Besides the stigger also a common traffic sign was introduced to order the traffic ban. The particulate stiggers are introduced to ease the enforcement of traffic ban. Without the stigger the police would need to control each single vehicle being not practicable for an efficient enforcement. The approach is that vehicles are showing the EURO emission norms. The stiggers are uniform white and show the number of the emission class. Diesel vehicles with Euro 1 norm and older are emission class 1 and receive no stigger. Vehicles without stiggers are not allowed to drive in the case of a traffic ban.
It is up to the federal authorities to decide which vehicles are allowed to drive in the case of traffic bans. Foreign vehicles will be included in the scheme. A classification takes place on the basis of the date of production as well as their Euro classification.

The stiggere will be distributed via the federal authorities. A further distribution can take place via the technical services licensed for an emission maintenance (e.g. TÜV or garages). The costs for a stigger shall be kept low, in Bavaria for instance a price of 1 Euro was raised. The owner of the vehicles either has to apply for a stigger at the federal authorities or get the stigger in the course of regular technical maintenance. So far no case of traffic ban took place.

In the period of the 1st of February 2002 until the 31st of October 2003, the Municipality of Copenhagen has conducted an obligatory trial ordinance that stipulates that all vehicles over 2,500-kg registred total weight must have a certificate to stop in the medieval city of Copenhagen. Vehicles over 18,000-kg registred total weight must have special permission to stop in the medieval city of Copenhagen.

The three types of City Gods Certificates:

- The Green Certificate may be issued to vehicles with an engine that is a maximum of 8 years old that also utilise at least 60% of its carrying capacity on average. The certificate is valid for the entire trial ordinance period of time and gives the right to use special loading zones. This certificate requires that the quantities of goods transported be reported.
- The Yellow Certificate is for vehicles that cannot fulfill the conditions for acquiring the Green Certificate. Until the 31st of January 2003, all transport vehicles may purchase a Yellow Certificate without fulfilling any demands for the vehicle. After this date, it will only be possible to acquire a Yellow Certificate if certain conditions are met.
- The Red Certificate is a one-day certificate created for vehicles that seldom transport goods in the medieval city of Copenhagen. There are no special demands or conditions in association with this certificate.

Loading zones are marked off areas that have a special sign. The loading zones may only be used by vehicles with a valid Green Certificate within the hours of 8-12 Monday through Friday. Outside these hours, these zones go back to normal use. These loading zones are a supplemental offer in addition to already existing loading and unloading possibilities. The

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<td>DK-01</td>
<td>Copenhagen</td>
<td>Environmental zones</td>
<td>In the period of the 1st of February 2002 until the 31st of October 2003, the Municipality of Copenhagen has conducted an obligatory trial ordinance that stipulates that all vehicles over 2,500-kg registred total weight must have a certificate to stop in the medieval city of Copenhagen. Vehicles over 18,000-kg registred total weight must have special permission to stop in the medieval city of Copenhagen. The three types of City Gods Certificates: The Green Certificate may be issued to vehicles with an engine that is a maximum of 8 years old that also utilise at least 60% of its carrying capacity on average. The certificate is valid for the entire trial ordinance period of time and gives the right to use special loading zones. This certificate requires that the quantities of goods transported be reported. The Yellow Certificate is for vehicles that cannot fulfill the conditions for acquiring the Green Certificate. Until the 31st of January 2003, all transport vehicles may purchase a Yellow Certificate without fulfilling any demands for the vehicle. After this date, it will only be possible to acquire a Yellow Certificate if certain conditions are met. The Red Certificate is a one-day certificate created for vehicles that seldom transport goods in the medieval city of Copenhagen. There are no special demands or conditions in association with this certificate. Loading zones are marked off areas that have a special sign. The loading zones may only be used by vehicles with a valid Green Certificate within the hours of 8-12 Monday through Friday. Outside these hours, these zones go back to normal use. These loading zones are a supplemental offer in addition to already existing loading and unloading possibilities. The</td>
</tr>
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</table>
The project is not seen as a success. Following reasons have contributed to that perception:

- It was possible to cheat, for instance with an old truck by buying daily The Red City Gods Certificate
- Too few and not reserved special parking places in the city
- The problems within the experiment:
  - To control and verify the use of capacity in the trucks.
  - The possibility of bypassing the rules by buying the red certificate.
  - The amount of traffic through the medieval city which did not make a stop within the city.
  - The lack of measurable results, which could give a better picture of the overall result of the experiment.

The experiment is public driven, and is initiated by the three municipalities of Copenhagen, Aarhus and Aalborg.

This experiment takes its starting point in the narrow streets of the medieval city centre of Copenhagen. The idea of the project was that every vehicle above the weight of 2,500 kg only was allowed to enter the medieval city of Copenhagen if it had a sticker from City Gods. Therefore both tradesman and the local inhabitants were affected by the project that lasted for 21 months. The experiment was allowed due to a change in the Road Traffic Act made by the Minister of Justice, where the earlier mentioned § 92 d was established.

The experiment was based on three types of certifications. A green, a yellow and a red sticker. The green were for trucks, which should use at least 60% of their cargo load and at the same time deliver this load in the medieval city. The use of the trucks capacity should be reported to City Gods every three month. Trucks that would obtain a green certificate could not be more than 8 years old.

The yellow was for truck that did not satisfy the standards for the green certificate. During the experiment the yellow certificate were not given to trucks more than 7 years old.

The red was for truck, which rarely drove into the area. This certificate had no restrictions attached to it.

If any truck stopped within the medieval city without a sticker, then the carrier should pay the same fine as if it has been an offence to the parking regulations.

During the experiment almost 40,000 certificates were sold. Most of these were red.

There has not been data available of the frequency for the controls of the stickers. But the control of the stickers was made by the parking lot attendants and the police. Furthermore the control of the age of the trucks was carried out at the office of City Gods.

- number of checks per day, week or month
- number of sanctions
- rates of prescription
- percentage of offences against all detected cases

During the experiment a lot of data was collected. Therefore the involved municipalities have applied for more resources.
in order to be able to analyse these data more thoroughly, and hereby be able to publish the results.

The experiment has been a big success. Many carriers/ truck operators have after the experiment ended, told the City Gods office that they have tried to develop their city logistics, and hereby have tried to improve their freight transport in an attempt to improve the environment in the city. The number of trips taken within the medieval city is only decreased a bit, due to the fact that many carriers used the opportunity to by the red certificate.

As a positive effect of the experiment it can be seen, that the main part of transports which stopped within the medieval city were carrying the green or the yellow certificate. The experiment had in addition a positive effect on the citizens of inner Copenhagen.

The problems with the experiment can be said to be:
- To control and verify the use of capacity in the trucks.
- The possibility of bypassing the rules by buying the red certificate.
- The amount of traffic through the medieval city which did not make a stop within the city.
- The lack of measurable results, which could give a better picture of the overall result of the experiment.

Positive aspects/ Best practices:
- Use freight pooling
- Use fewer trips, by making co-operating city logistic companies.
- Use the right vehicle for smaller trips into the medieval city.

**ES – 01 Barcelona**

Urban Freight Management in Barcelona

The project (including several different single measures) was initiated by the Municipality of Barcelona in order to approve the uncontrolled use of private vehicles which make goods deliveries more and more difficult. Furthermore the management of kerbside access with efficient enforcement was regarded as powerful measure to solve the problems.

The following measures have been implemented:

Traffic regulations at junctions include:
- Zones which are reserved for loading/unloading only from 08.00 until 14.00 (or 20.00) within the city centre.
- Maximum stay period: 30 minutes.

700 zones have been implemented and within the “Forum 2004 - Poble Nou Infrastructure plan” the measure has been extended to most junctions involving “Primary” roads.

Also introduced have been special zones for pedestrians where access is only possible with a special permission: These zones (5 zones which are centrally controlled) have only a few entrances (50 gates are installed city-wide) with barriers which can be entered by use of a special key-card (8'000 resident cards are issued; further cards are available for delivery vehicles). For delivery vehicles access is only allowed during defined time windows. In order to avoid abuse the entrances are monitored by camera.

**FR – 01 Paris**

New regime for the City of Paris goods delivery regulations

Paris is the only city in France where traffic and parking matters are not regulated by the local government, but by a representative of the national State (“prefet de police”). A review of the previous regulation was necessary as a reaction
on the large amount of expressed discontents of e.g. residents, truck drivers, truck companies, police forces, bus companies.

The delivery regime in Paris includes 6 strategies:
• To simplify past regulations and to make them more understandable by truck drivers: Instead of 4 categories of vehicles only three are defined now. The same principle as before applies (the bigger the truck the larger the time regulations, with trucks defined by the floor surface they occupy):
  ⇒ Vehicles which occupy less than 16 m² are authorised to deliver goods at all time in the city (forbidden in bus driveways between 7:30 - 9:30 and 16:30 – 19:30)
  ⇒ Vehicles which occupy between 16 m² and 24 m² are authorised to deliver goods from 0:00 to 16:30 and from 19:30 to 24:00 (forbidden in bus driveways between 7:30 - 9:30)
  ⇒ Vehicles which occupy more than 24 m² are authorised from 0:00 to 7:30 and from 19:30 to 24:00.
• To increase maximum size of authorised trucks so that professional carriers can make a better job at consolidating their load and increase the length of their delivery rounds. The city of Paris opens a change because it decided to grow up the size restriction (till 43 m² against the current 24 m²) and wants to create specific window delivery for clean vehicles. Moreover, the city of Paris wants to restrict the access to delivery vehicles at each peak pollution, except Euro 3 ones. The city centre is open for trucks, depending of their size and windows delivery. To help traffic wardens, the city is going to set up a time disc which indicates the time start for delivering or picking up: 30 minutes are authorized. A consulting process between shippers, carriers, police department and city of Paris was at the origin of that new system which implicates a reinforcement of the enforcement.
• To increase the number of on-street loading/unloading zones and better protect them by enforcement.
• To give permanent and temporary derogatory permits to specific deliveries (flour, oil, cold, construction material, outdoor markets, post office, etc.).
• To favour night deliveries.
• To protect passenger peak hours from freight traffic.

Exceptions exist for specific categories of goods.

In order to enforce the regulations traditional police forces are intended to be used. But so far (despite promises of the “prefet de police” to approve enforcement), enforcement remains the weak point of delivery regulations in Paris (as in many other French cities). The harmonization with the neighbouring cities is still missing and causes problems.

FR – 02 Dijon Zones de livraison éclair (Speed delivery zones)

The city centre of Dijon undergoes problems of congestion. That the reason why the municipality and the agglomeration decided to elaborate a policy in order to reduce congestion and give more areas for pedestrians (reduction of the use of the cars in the city centre with a restrictive parking policy). The PDU of Dijon, adopted in 2001, stipulates that one of its aims is to create a new organization for urban freight deliveries and new services for barges. There is no general rule to access to Dijon, neither for the weight nor the size of the vehicles, except for some streets. Moreover, prohibits a part of it for trucks in a specific perimeter. Concerning the deliveries window, specific hours exist for pedestrian precincts. So, the
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<td>FR – 03</td>
<td>City of Reims</td>
<td>Control of deliveries areas</td>
<td>Reims is one of highest density French cities, so there are daily congestion problems. The situation of delivery becomes more and more problematic and the respect of the deliveries areas became less and less effective. The main problem for delivering takes place during peak hours, when transport for passengers (individual cars and public transports) share the road with freight transport. The problem for deliverymen is to find a place to park their vehicle to deliver with good conditions to work. Therefore a time restriction scheme has been introduced that foresees time delivery windows for each delivery vehicle entering the inner-city area. A technology system based on a floor system has been introduced to regulate and monitor delivery actions in the inner city of Reims. That floor system recognizes the presence of a vehicle which is going to park to deliver goods. At once that the vehicle is parked a stop watch starts for 20 minutes (the time allowed is 15 minutes). There is no general limit to access to the city. Rules are different on the entire municipal territory. For example, deliveries and pick up are authorized only between 6 am to 11 am, only in the pedestrian precinct. The described system presented concerns the city centre and the pedestrian precinct.</td>
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| GR – 01 | Athens city – central area | Investigation of implementation and effectiveness of delivery restrictions | **Situation:** Delivery services cause by nature various problems due to frequent stops. It is reasonable that the situation of such services becomes constantly more difficult, especially in urban areas (especially Athens). The impact of heavy vehicles associated to delivery services and other freight operations on environment is adverse due to certain features:  
  • Increased emission of air pollutants,  
  • Higher level of noise production,  
  • Low travelling speed (high traffic density, steep increase of private vehicle ownership, unfavourable driving style) and, subsequently,  
  • Difficulty to find a parking place (demand exceeding supply by far, low occupancy rate due to usage of passenger car for many trip purposes with activities that imply long stay at destination, low compliance with RTC restrictions, moderate enforcement)  
**Objective** The goal of the research project was to construct a frame of rules and proposals for the improvement of the effectiveness of delivery restrictions. Those refer to the morning peak hours (07:00 – 10:30) within downtown Athens district and in... |
specific traffic corridors in the greater Athens area.
The idea is to come up with a reasonable scheme of patrol frequencies in central Athens, depending on the density of
super markets, the number of lanes per direction along examined axes and the time of the year (holiday or common
period).
This followed an investigation of the relationship between a corridor’s speed and a number of parameters that were estimated during relevant field surveys. The number of violations of time restrictions emerged as a critical factor that influences speed negatively.
The idea is to investigate the effect of a short period of clearly intensified enforcement of time restrictions violations by freight delivery vehicles along certain roads. A “before-after” study has been performed, recording average speed per road during am-peak, along with certain parameters with some influence. It is generally expected that violations should decrease since interested parties (truck drivers, enterprises in need of delivery services) are informed that enforcement has become stricter. According to the Road Traffic Police, if sanctions were severe enough, drivers would be prevented from violating restrictions for a period exceeding the period of strict enforcement (in this case: 1 week).
Therefore, the interaction between the number of violations and police surveillance characteristics was reasonably examined in terms of looking for possible improvements of the system. The findings of the whole analysis have highlighted the role of enforcement in dealing with violations.
At first sight, it may seem like the study will be used for the punishment of offences. However, on the long run it should serve as a useful tool on the prevention of such violations (field of enforcement).

The pilot project approach
The project refers to manual enforcement methods. Two field surveys were conducted, during which major traffic flow parameters were gathered. Data were collected by means of the “moving observer” method along a predetermined circular route. The current situation on compliance with existing restrictions was also investigated.
Between those surveys, police surveillance was applied for one week in order to enforce the restrictions. In particular, the patrols (number, route) and verified violations (time – place, vehicle type) were recorded. Overall, the objective is to evaluate:
- The effect of time restrictions in delivery hours
- The application of the intense surveillance scheme tested

The data from the two surveys were entered (modelled) into a computer database. The database was designed using the Limdep econometrics software and was used to derive two multiple linear regression models on:
- The correlation between a traffic corridor’s speed and a set of parameters (illegal roadway occupation, number of shops along a stretch of road, traffic occupancy, number of lanes, police presence)
- A similar correlation involving the number of violations on a road axis and a slightly different set of parameters (including surveillance characteristics, i.e. police presence and intensification)
Most parameters were estimated during surveys. The results of the first model demonstrated the impact of violations on average speed, leading to further investigation of the features related to delivery vehicles. The impact of police presence on drivers' compliance with the rules was examined. With respect to the extent of the proposed scheme, it is noted that this only regards super markets and large department stores. The application of intensified enforcement on the delivery of smaller stores is considered rather questionable, presumably yielding much smaller traffic and environment-related benefits than the associated costs.

**Evaluation results**

It has been verified that average speed along an arterial is adversely affected by the number of violations (reduction of 2 km/h for each violation of time restrictions). Other negative factors include the presence of super markets, the number of large stores and the significance of the road. On the other hand, speed –reasonably– increases with the number of lanes (by 4 km/h for one lane), while it does not seem to be related to the presence of police.

The number of violations of time restrictions on delivery activities, as a major parameter influencing average speed, appears to increase with the number of super markets and the number of lanes per direction. It is also much higher while still close to the end of major holiday periods. On the other hand, it decreases with the presence of police and with the intensification of associated enforcement.

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| HUN – 01 | Budapest | Truck weight restriction zone-system | Shopping centres accommodated in the outskirts attract significant freight traffic with an average of 3,000-3,400 vehicles per month, which means about 100-140 vehicles a day. 54% of the whole transport needs is carried out by freight vehicles, the second biggest part belongs to smaller freight vans (42%), and only 4% to trucks. As a result of the increasing number of shopping centres, the last part of the supply chain is carried out by customers and inhabitants, taking the goods from the shopping centre to home by own car. This part of freight transport cannot be monitored by the ordinary methods of logistics administration, at the same time it provides a significant surplus in road traffic. Important figures in Budapest:  
  - 30% of loading processes are carried out in public roads  
  - 90% of goods transport processes are carried out during working hours  
  - 60% of transport tasks have higher frequency than once a week; 20% of transport tasks are performed every day and 15% 2-3 times a day  
  - the ratio of unloaded runs is 18%, but of partly loaded runs is 59%  
  The zone-system introduced in the eighties has the task to regulate the dispersion of freight traffic in time and space, decreasing (and in several critical places even terminating) transit freight transport. Total truck weight restrictions implemented in the zone-system push heavy truck traffic to the low traffic hours in order to establish a possible undisturbed daytime movement on roads. Since 1996 there is a new total truck-weight-limit system regulating goods transport:  
  - in Pest between the upper quayside (felső rakpart) and the middle ring road ((Nagykörút), in Buda between the upper... |
quayside and the Buda Ring Road (Budai körút) there is a 3,5 ton total truck weight limit from 07 a.m. till 06 p.m.
- between the middle ring road (Nagykörút) and the outer ring road (Hungária körút) there is a total weight-limit of 12 tons again from 07 a.m. till 06 p.m.

From 1997 other weight restrictions were extended over the following areas:
- in the 9th district in Buda has been introduced a total weight-limit of 12 tons.
- Kelenföld-Albertfalva from 00 to 24 hour total weight-limit of 12t
- Wekerle-habitation (XIX. District) from 00 to 24 hour total weight-limit of 3,5t
- Restrictions in green areas: Margaret Island, Római-part, Városliget, Népliget, János hill - Normafa, Óbuda Island. 
  Full drive-in restrictions, except with permission, Taxi, buses of the Budapest Transport Limited

Other prohibitions and limitations regarding freight traffic outside the above mentioned areas:
- Traffic calmed zones,
- Residential limitations and
- Pedestrian streets.

The distribution of goods inside these areas is possible only with drive-in licenses.

The requested data for a licence are the followings: name of the claimant, personal identity number (if private person), tax number, address, phone number, e-mail address, name of the contact person. Data, regarding the claimed drive-in licence: number of the requested licenses, code of the approval, code of the vehicle, total weight, permissible maximum full-weight, data of the vehicle, justification of the drive-in licence, validity period, stamp, signature.

The handing in of the requests, the administration and the handing over of the licences – on cost refund – is managed by the FSzT, just as the collection of the expired licences.

To the proper function of the formed areas the consequent control activity is essential. The checks by the responsible authorities are permanent (as on site controls, general areal checks, weightings on the roadside and targeted checks on the frequent places.

The Police Department- of Budapest and the districts, the self-governments of the districts, The Municipality of Budapest, the colleagues of the Inspectorate for Public-area, the traffic control experts of the Capital Public Place Maintainer Company together with the FSzT are managing the checks and controls for years.

The valid drive-in licence has to be placed to be viewable behind the windscreen.

The loading disc (see below) shows the loading time. On a joint loading space, the loading is possible during max. 20 minutes. The time set on the loading disc shows the beginning of the loading.

The zone-system generally functioning well. As we mentioned above a general zone-system for the whole city, managed by the Municipality of Budapest would be useful, avoiding the incompatibilities, which sometimes arising because of some restrictions introduced by the districts without a common framework.

Another problem is the loading. Loading places are signed with suitable boards, but the effectiveness of these boards is
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| IE – 01 | Dublin | Innovation Partnership: “Low Noise Solutions for Night Deliveries” | Because of increasing congestion and environmental impacts that reduces quality of life the demonstration project “Low Noise Solutions for Night Deliveries” has been initiated. The research focuses on bringing low noise/low cost products to market, both on the vehicle and at the urban logistics sites, which will meet realistic acoustic limits to come into force in 2008. However, the issue of developing a permitting regime with rewards and penalties forms part of this assignment. The Scandinavian models as demonstrated in Copenhagen, Stockholm, Gothenburg, Malmo and Lund for controlling Low Emission Zones (LEZs) are seen to be particularly relevant. It is proposed to recommend reliable ICT technologies to enforce the new acoustic regime. The controls are applied by the police in collaboration with traffic wardens. The parking meters are managed by commercial contractors to the City Council. Fines are regularly reviewed and depend on the zones where the offence takes place. Following consideration of the acoustic limits for night deliveries to be recommended by the DIT, the City Council may make further modifications to the permitting regime to reward the acquisition by hauliers of low noise vehicles and ancillaries. What are the main experiences and conclusions?  
• noise disturbance and sleep deprivation has moved up the political agenda  
• the Innovation Partnership model provides an effective public/private partnership framework for research towards developing cost effective and acceptable solutions  
• The research initiative has generated effective support from all the parties affected by the growing trend to night deliveries  
• The applied research project is seen to “be close to the real world” and to bring new innovations onto the city streets  
• Collaboration with the Dutch PEAK Programme, with the EC thematic networks, BESTUFS, CALM and SILENCE is proving very effective. Close contacts have being developed with other European cities and with the vehicle suppliers.  
• The cost penalty of bringing new low noise vehicles and ancillaries to market need to be reduced.  
• Acoustic standards need to be better harmonised at EC level – it is a chicken and egg situation for some sub-suppliers who are reluctant to bring appropriate HGVs and ancillaries to market.  
• It is felt that countries like the Netherlands who were the first to introduce restrictive noise limits may suffer a competitive disadvantage.  
• Dublin city is ahead of many other European cities in the noise mapping and the evaluation of commercial delivery patterns.  
• There is a trend by distributors to deploy ever bigger HGVs: seven in ten HGVs sold in Europe are now 16t gvw and over of which 257,000 were sold in 2004. For this reason R&D by the main auto manufacturers should focus on... |
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<td>IE – 02</td>
<td>Dublin</td>
<td>Pilot Scheme for Commercial Traffic in the City Centre</td>
<td>Attenuating noise by the bigger HGV tractor units. In Ireland we propose to continue to focus on the local sub-suppliers of ancillaries and of acoustic materials for application to trailer units and for the fit out of logistics sites.</td>
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IE – 02 Dublin Pilot Scheme for Commercial Traffic in the City Centre

In March of 2004 the City Council launched a pilot scheme to improve traffic flow and road safety in the city centre. This involved restrictions on allowable delivery times. The restrictions involved the introduction of 9.5 hour clearways on strategic routes. The affected streets can be seen on the map above – “Routes Affected by DCC Clearway Hours”. The clearway hours mean that no on-street deliveries are permitted on the streets highlighted above between 7.00 am and 10.00 am and between 12.30 and 19.00 pm except where there are indented loading bays and/or designated parking. Normal deliveries are permitted between 19.00pm and 7.00am and between 10.00am and 12.30 pm Monday to Saturday and all day Sunday. These restrictions have had the effect of moving deliveries to the off peak in the early morning. Businesses receiving goods in a restricted zone may be forced to co-ordinate out of hours deliveries with their distributors and this may incur additional costs to have staff available to receive the goods and to ensure security. The additional annual costs to a small shop that does not usually function outside normal opening hours, is estimated at €4,000. This is based on a scenario involving a shop required to accept out of hours deliveries twice a week and to pay additional overtime wages for staff. The success of any system based on time restrictions depends on the number of premises willing to receive deliveries after hours. This is not a major problem in Dublin because 24% of food deliveries to the city centre now occur before the 7.00am peak and this trend is likely to grow.

IT – 01 Rome Access Control System

The main objective of the system is to enhance the old town centre of Rome by lightening the incoming flows. In 2001 the City Council of Rome and STA (Agency for mobility of the City Council of Rome) brought into operation a complex system aimed at the enforcement of traffic regulation in the capital’s old town centre:

- A video surveillance system called IRIDE;
- A management system aimed at:
  - management of permits,
  - confirmation of fines (Municipal Police),
  - management of claims,
  - supervision.

The system is dedicated to both freight and passenger transport. The "Iride" system automatically controls the accesses to the Old Town Centre through 22 "electronic entrances". The system works with a technology similar to the motorway Telepass based on Automatic Licence Plate Recognition: the licence plates of the vehicles that cross the entrances are photographed and then compared automatically with those enabled gathered in a Data Base. The vehicle is fitted with an O.B.U. (On Board Vehicle Unit) with smart card. When crossing the entrance a transponder can detect the authorised vehicles. In the lack of enabling a sensor system detects the passage and activates a television
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<td>detector which films the vehicle licence plate.</td>
<td>The total management system calls for the use of 49 persons, who are devoted to the performance of the following processes:</td>
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<td>• permit management process (10 persons)</td>
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<td>• fine confirmation process (Municipal Police – 20 persons)</td>
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<td>• claim management process (18 persons)</td>
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<td>• supervision process (1 person)</td>
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<td>The period 2001-2005 revealed the following statistics:</td>
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<td>• overall, following the implementation of the system there was a total reduction (passengers and freight) of 15% of the access / transit vehicle traffic (from approx. 90000 to approx. 75000);</td>
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<td>• the 20% of unlawful accesses (sanctionable) on the total of accesses in 2001, became 10% of sanctionable accesses.</td>
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<td>In 2005 the system management cost was approx. 3.2 million Euros (personnel and maintenance), the revenues (permits and fines) amounted to 58 million Euros.</td>
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<td>On the total of access permits granted (200,000) 4% (8,000) corresponds to freight vehicles.</td>
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<td>NL – 01</td>
<td>Utrecht</td>
<td>Access to pedestrian area</td>
<td>40 years ago the pedestrian area with delivery time windows was installed to make the city centre safer and more attractive. Physical restrictions became a necessity in the historical centre because of narrow streets and the structural limits of the canal streets, because cellars are located underneath the road. EU environmental legislation requires a new approach. The entire city has problems regarding particulates and six locations with NOx. Recently an agreement was signed to establish environmental zones. Enforcement of the pedestrian area is carried out by bollards (eight manual and two electrical). The physical restrictions (maximum axle load and length) and un(loading) locations are enforced by the police and parking police. The official civic guards are responsible for opening and closing the pedestrian area. General police enforcement is minimal: parking police has five rounds per day, but only during hours when parking fees have to be paid. The enforcement with (manual) bollards is too limited and not watertight. Electronic bollards are too expensive to use extensively.</td>
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| NL – 02 | Amsterdam | City access scheme | The control and enforcement was started in 1996 to alleviate the nuisance of large vehicles and safety on the canal streets. Originally only the vehicle length was limited, but later the environmental quality became more important. The age restriction was added in 2004. The entire city centre (except some main routes) is a restricted area for vehicles over 7.5ton. Exemptions are possible for vehicles shorter than 10m, younger than 8 years, with at least Euro 2 engine and with over 80% of deliveries in the city centre (on average). A large yellow sign to be put in the vehicle proves exemption. Some local measures are in force due to the traffic situation, for instance vehicle width or one-way traffic for trucks. Enforcement is carried out by the police. Parking offences and misuse of un(loading) areas is enforced by Dienst Stadstoezicht (municipal employees).
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<td>PL – 01</td>
<td>Wroclaw</td>
<td>Pedestrian Area</td>
<td>A pedestrian area is controlled with electronic bollards (and some manual). The investment costs of one bollard are 30-40,000 euro. Enforcement has low priority for police. Checks are only carried out regarding weight, based on maximum total weight on vehicle registration. No actual weighing takes place. A study showed a 50% compliance rate for the exemption. This means more attention is needed.</td>
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<td>SLO – 01</td>
<td>Maribor</td>
<td>City Access – Management of Pedestrian Zone</td>
<td>The reason for implementation of the enforcement activities was a very dense motorised traffic in the city zone resulting in a poor safety for pedestrians. Inhabitants used to complain about a dense traffic in the city zone. There was a substantial public pressure to improve the situation. Because of the negative situation there were several public discussions held</td>
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<td>about reducing the volume of traffic. For delivery vehicles an access restriction has been introduced. Access restriction for freight transport consists of a weight restriction and a time restriction. The general enforcement concept provides for a restricted access to the city zone by physical restriction. The Municipal Police supervises the area, in which the enforcement activities take place, recording the vehicles violating the rules and imposing appropriate punishment. The delivery window is open from Monday to Friday between 6 a.m. and 9 a.m. and between 7 p.m. and 10 p.m. On Saturdays, Sundays and holidays, the delivery window is open between 1 p.m. and 3 p.m. Parking is not allowed in the public traffic areas. Stopping at the delivery spot is limited to 15 minutes and a special written certificate has to be kept on board. The maximum weight of vehicles entering the city zone is limited to 3.5 tonnes. Vehicles exceeding this weight are requested to have a special permit for entering the city zone. The concept is publicly controlled. The enforcement concept was initiated by the Municipal authorities. Municipality of Maribor has adopted a decree determining the elements for the road traffic regulation. Its articles regulate the delivery time, set-up the criteria for the right of entering the pedestrian zone, and the volume of freight permitted. Four sink cylinders are used to prevent unauthorised access. The access to the city zone is enabled by a valid card. Such card enables sink of the cylinder and ensures the access. The system is computer aided and provides for a video surveillance. The technology is based on the network, computer and the entrance card.</td>
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<td>SLO – 02</td>
<td>Kranj</td>
<td>Traffic safety concept</td>
<td>▪ Sink cylinders are placed at two city zone entrances. The chip-cards are used to enable access to the city zone. The concept is monitored by computer and it includes a video surveillance. ▪ The delivery window is open between 6 a.m. and 10 a.m. After that, the access is enabled by a licence. By now, there were 37 such licences granted. A maximum delivery time is limited to 30 minutes per vehicle. ▪ Inhabitants use chip-cards to access their homes. They must park their vehicles on their own property, as in the city zone streets, parking is prohibited. ▪ The enforcement concept was initiated by the Municipal authorities. ▪ The concept is publicly driven and controlled by the Municipal Police.</td>
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<tr>
<td>SLO – 03</td>
<td>Ljubljana</td>
<td>City Zone Management</td>
<td>▪ The city zone is protected by sink cylinders. Access to the city zone is ensured by a valid card. ▪ The delivery window is open between 6 a.m. and 9:30 a.m. ▪ The maximum weight of the vehicle entering the city zone is limited to 3.5 tonnes. Vehicles exceeding this weight have to have a special permit for entering the city zone. ▪ The concept of sink cylinders is publicly driven and controlled. ▪ The enforcement concept of sink cylinders was initiated by Municipal authorities.</td>
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<td>UK – 01</td>
<td>Greater London</td>
<td>London Lorry Control Scheme</td>
<td>The London Lorry Control Scheme is an environmental measure to protect Londoners against the disturbance caused by lorries over 18 tonnes at night and at weekends. It minimises the impact of lorries especially on residential areas and...</td>
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|      |               | **“Ring of Steel” (traffic and environmental zone)** | The City Traffic and Environmental Zone is an area wide traffic management scheme which was implemented in 1993. At the time it was commonly referred to as the ‘ring of steel’ because it had not only objectives of improving the street environment, but also gave the City Police a surveillance capability in response to the two terrorist bombs planted in the City in 1992 and 1993.  
  The core of the City’s ‘Square Mile’ is contained within the Zone with 140,000 people employed in it (about 60% of the City’s workforce) predominantly in the financial services sector and related businesses. This concentration of activity gives rise to a correspondingly intense generation of access traffic which, before the scheme was implemented, was overlain by a significant element of through traffic.  
  The basic concept of the Zone is related to the ideas of environmental areas set out by Colin Buchanan in the 1960’s which proposed making existing through routes in an area less attractive, or impossible. However, a somewhat differing emphasis in this project has been the intended effect of removing a significant amount of traffic capacity in the Zones by reducing the number of access points, and by reducing their width to a single lane. Improving the efficiency of the surrounding street network and altering traffic signal timings has created provision of additional capacity for diverted traffic outside the Zone.  
  The basic concept of the Zone is related to the ideas of environmental areas set out by Colin Buchanan in the 1960’s which proposed making existing through routes in an area less attractive, or impossible. However, a somewhat differing |
| UK – 02 | City of London | **“Ring of Steel” (traffic and environmental zone)** | The City Traffic and Environmental Zone is an area wide traffic management scheme which was implemented in 1993. At the time it was commonly referred to as the ‘ring of steel’ because it had not only objectives of improving the street environment, but also gave the City Police a surveillance capability in response to the two terrorist bombs planted in the City in 1992 and 1993.  
  The core of the City’s ‘Square Mile’ is contained within the Zone with 140,000 people employed in it (about 60% of the City’s workforce) predominantly in the financial services sector and related businesses. This concentration of activity gives rise to a correspondingly intense generation of access traffic which, before the scheme was implemented, was overlain by a significant element of through traffic.  
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<td>UK – 03</td>
<td>City of London</td>
<td>London Congestion Charging Scheme</td>
<td>A congestion charging scheme was introduced in central London in February 2003. This congestion charging system effects all kind of vehicles (private and freight transport). The priority of this scheme is to reduce traffic congestion and the related environmental impacts. Any surplus revenues generated are invested in transport in London. All drivers entering the charging zone were initially charged £5 (approx. 7.50 Euro) a day to drive within the zone between 07.00 and 18.00, on Mondays to Fridays. This was increased to £8 (approx. 12 Euro) in 2005. There is no charge at weekends or on public holidays. Several exemptions and special tariffs are available for special transport vehicles. There are no tollbooths or barriers around the congestion charging zone and no paper tickets or licences. Instead, drivers or vehicle operators pay to register their vehicle registration number on a database for journeys within the charging zone during charging hours for single or multiple charging days. Cameras at every entry and exit point, and on key routes within the zone, capture images of vehicles entering and travelling within the charging zone during the hours of operation (07.00 to 18.30) every charging day. The images are continually fed through to a central processing centre where Automated Number Plate Recognition systems (ANPR) interpret the number plate of every vehicle captured by the cameras. A network of about 700 ANPR cameras are used to enforce the scheme, located across about 250 sites (including all entry and exit points to the zone). These are supplemented on the Inner Ring Road and main radial approaches by 70 monitoring-only cameras.</td>
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<td>UK – 04</td>
<td>Greater London</td>
<td>London Low Emission Zone (planned for 2008)</td>
<td>To improve air quality in London - which is currently among the worst in Europe - the Mayor is proposing to designate Greater London as a Low Emission Zone (LEZ). The objectives of the proposed LEZ are two-fold: • To move London closer to achieving national and EU air quality objectives for 2010 • To improve the health and quality of life of people who live and work in London, through improving air quality A LEZ would aim to reduce air pollution by discouraging the most polluting vehicles from driving in Greater London. These...</td>
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are generally older, diesel-engined lorries over 3.5 tonnes, and buses and coaches. Cars would not be included in the LEZ.

The emission standards for the LEZ should reasonably encourage the upgrade or replacement of diesel-engined heavy vehicles to Euro III for PM10 by 2008 and to Euro IV for PM10 by 2010 (or to the relevant particulate standard in force at that time, for example, should the European Commission move towards a standard for ultra-fine particles or PM2.5). The standard of Euro IV for NOx from 2010 is being considered subject to a suitable certification and testing mechanism being established.

The hours of operation are proposed to be 24 hours a day, Monday to Sunday, 365 days a year.

Operators wishing to bring vehicles into the Zone that did not meet the specified emissions standards for the LEZ would be required to pay a substantial charge. Operators that do not pay the daily charge and whose vehicles are identified as not meeting the proposed emission standards would have to pay a penalty charge. Vehicles which meet the proposed emission standards would be able to operate in the LEZ without paying the charge. The charge would be set at such a level as to encourage operators to modify or replace their vehicles to comply with the proposed LEZ standards. To encourage compliance, the level of the charge and associated penalties would need to be set at a far higher level than that for the Central London Congestion Charging Scheme.

It is proposed that the LEZ would be enforced using Automatic Number Plate Recognition (ANPR) cameras.

It is planned that the LEZ would be enforced using Automatic Number Plate Recognition (ANPR) cameras similar to those used for London Congestion Charging scheme. Fixed cameras would be supplemented by mobile patrol units fitted with ANPR cameras. A database would be established to assist the identification and matching process, using data from licensing authorities such as the DVLA, and operators. TfL would only require registration from vehicles for which emission characteristics could not be determined from these records. Signs alerting drivers to the LEZ would be erected on roads at the boundary of Greater London, and on key roads beyond Greater London.

The estimated cost of the LEZ scheme to TfL is between £125 million and £130 million, from development of the scheme until 2015/16. This range reflects different scenarios around how operators would respond to the proposed LEZ, and the scope and cost of services from DfT. The capital costs are approximately £45 million (approximately 70 million euros), which include all development, consultation and implementation costs. The total operating costs of the scheme from early 2008 to 2015/16 are estimated at between £80 million and £85 million (approximately 130 – 140 million euros).

There would also be costs to operators from complying with the LEZ. The costs to operators of the core LEZ scheme are estimated as being between £195 million and £270 million (approximately 310 – 430 million euros) for the period to 2015/16.

The proposed LEZ is not designed to be a revenue generating scheme and the revenues would not offset the costs of implementing and operating the scheme. Air quality improvements would be maximised by high levels of operator compliance. There would, however, be some revenues from the LEZ through charge and penalty charge payments. Revenues are expected of between £30 million and £50 million during the life of the scheme, from 2008 to 2015, and

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Public consultation on the proposed LEZ is currently taking place. Depending on the outcome of consultation, the earliest an Order could be confirmed would be in spring 2007 and the earliest a LEZ could be operational would be in early 2008.

The proposed LEZ is an environmental measure that seeks to achieve health and air quality benefits for Londoners and people who live, work, visit and do business in London. By reducing overall PM10 and Nox emissions emitted in London by diesel-engined vehicles, the proposed LEZ would help to reduce the overall area of London that exceeds the AQS objectives and EU limit values. This would have positive health benefits for communities in London. It would:

- reduce the tonnage of pollutants emitted; and
- reduce the areas of London that exceed the AQS objectives

The 2008 LEZ proposals (with a standard of Euro III for PM10) would deliver reductions of around 8 percent in the area of London exceeding the annual PM10 objective, and around 12 percent reductions in the area exceeding the daily PM10 objective. In 2010, the proposed core scheme (a standard of Euro IV for PM10 for HGVs, coaches and buses) would deliver reductions of around 18 percent in the area of London exceeding the annual PM10 objective, and 17 percent reductions in the area areas exceeding the daily PM10 objective. Adding LGVs to the core scheme would reduce the area exceeding the annual PM10 objective by a further 2 percent, and the daily mean by a further 3 percent.

The 2008 LEZ proposals would also deliver reductions of around 7 percent in the area exceeding the annual mean NO2 objective. NO2 reductions would be achieved because the LEZ would encourage newer vehicles, which have a tighter NOx emission standard.

In 2010, the core LEZ proposals would deliver reductions of around 10.5 percent in the area of London exceeding the NO2 annual mean objective. The inclusion of a standard of Euro IV for NOx would reduce the area of London exceeding the 2010 annual mean objective by around 28 percent.

While the introduction of the proposed LEZ would not necessarily lead to the meeting of the 2010 objectives in all locations, it should reduce the areas of London that exceed these objectives, and most importantly the exposure of people who live, work and visit London to these pollutants. The health benefits from the LEZ are likely to be widespread across the Greater London area, and outside London.
ANNEX III: General situation within countries – City access restriction schemes

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<th>Country</th>
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<td>Australia</td>
<td>There are very few city access restriction schemes currently operating in Australian cities. Commonly access is controlled by the planning of designated loading zones in main streets and pedestrian malls in retail areas. These generally permit parking of vehicles for loading and unloading in the morning periods (eg. up to 11am). There are a number of truck curfews (time window, within which no HGV traffic is allowed) that operate on roads in metropolitan areas due to the social impacts of large vehicles. Many operate 24 hours a day and 7 days a week, while others prohibit trucks travelling on specific links during the night time (eg. 8pm to 6am) and on weekends. A recent initiative in Australia is the Intelligent Access Program (IAP) that allows for improved heavy vehicle access to the road network in return for monitoring vehicles compliance of their with specific access conditions using telematics. IAP is a voluntary program that State and Territory road authorities will be able to apply as an operating condition to current jurisdictional schemes, permits or applications that provide improved vehicle utilization. It uses existing vehicle telematics which comprises a combination of global positioning systems (GPS), in-vehicle sensors and transmitters, and communications technology to transmit vehicle performance data to a base station for downloading and analysis.</td>
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<td>Austria</td>
<td>The legal authorities are entitled to enact the following measures: - Installation of permanent or temporary restrictions or bans for traffic on specific according to: speed limits, vehicle size, vehicle weight, stopping and parking restrictions - They are entitled to dictate certain behaviour on specific roads, they can exclude certain groups from access to roads or specific parts of the road and they can dictate the usage of special parts of the road. - If there is commercial interest they can implement loading / unloading zones. - Dedication of compulsory routes for special vehicles or special loading. Due to the legal situation municipalities would be entitled to carry out several restrictive measures like: - Time restrictions / Time delivery windows - Weight restrictions - Bans for non-environment-friendly vehicles / vehicle limitations (e.g. only high environment-friendly standards) - Speed limitation - Loading capacity restrictions - Traffic management solutions (lane usage) - Parking regulations and regulations for loading and unloading (licences, reservation, time windows) / Parking fees - Limits for noise emissions There is an ongoing political discussion about implementing access restriction for traffic in city centres, where nearly all possible solutions which can be found throughout Europe (e.g. London, Stockholm, etc.) have been discussed, but finally rejected. Usually in towns or municipalities the discussion is focused on traffic in general, not distinguishing between freight transport and individual traffic. The most obvious problem why access schemes are discussed in the congestion problem, which can be found in many cities, also medium-sized towns. Due to the fact that usually main roads, except highways, are going directly into and through the city centre, very often a huge &quot;regional transit problem&quot; can be observed. Environmental problems, which are in some areas also obvious, do of course strengthen the position to introduce access schemes.</td>
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<td>Belgium</td>
<td>Urban freight transport regulations concerning city access restrictions and/or delivery time windows are developed by the cities and the municipalities through notably decree of the city’s mayor. Enforcement and controls related to these urban regulations are carried out by the local police. The development and implementation of city access scheme are mainly motivated by congestion problems</td>
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encountered and their impacts in terms of noise and emissions as well as preservation of the city centre and quality of life for people living and coming to the city centres.

Municipalities across the country have developed and are developing Municipal Mobility Plans to facilitate transport and reduce negative impacts such as congestion, accidents and environmental impacts. These Mobility Plans mainly focus on passenger transport (public transports, car traffic, soft modes,...). Integration of freight transport issues in Municipal Mobility Plans has been relatively low but interest is growing.

A study entitled « Etude pour la mise en œuvre d’outils d’analyse permettant une politique intégrée du transport de marchandises à l’échelon local » (Study for the implementation of analysis tools allowing for an integrated policy for local freight transport) carried out by the Centre de Recherches Routières (CRR) was published by the Walloon Ministry of Transport (MET) in June 2005. This study includes an analysis of the existing Mobility Plans and the measures of urban freight measures undertaken in Walloon cities of more than 15 000 inhabitants. This document is available on the Internet at http://mobilite.wallonie.be/transport-marchandises.htm.

Another study by the CCR entitled « Manuel du MET n° 7 : Comment prendre en compte le transport des marchandises quand on élabore et quand on met en œuvre un plan communal de mobilité ? (How to take into account freight transport when elaborating and implementing a Municipal Mobility Plan) is also available at the same address.

In most cases, access is not banned but it is regulated or delimited in time. Access restrictions schemes in application mainly concern delivery time windows and access to pedestrian historic city centres.

Examples of recent measures undertaken in Belgium:

The Brussels Capital Region has decided to ban traffic of vehicles of more than 19 tons in the city centre as well as on intra-neighbourhood networks in general. The Regional Development Plan (PRD) indicates that heavy vehicle traffic has to be concentrated on major roads; strictly regulated on inter-neighbourhood roads; banned, besides exceptions, on intra-neighbourhood roads. A so called “confort zone” has been developed in the historic city centre. Some of the streets have become pedestrian, speed in other streets has been limited to 30 km/h and deliveries to the area have been regulated.

Legislation concerning deliveries: the legislation referred to as ‘Circulaire 18 (Circulaire Draps) on parking in the Region imposes the construction of off-street delivery quays for new buildings of more than 1 000 m² of offices and for industrial buildings of more than 500 m².

A project for an urban distribution and storage centre is currently in discussion. This project includes a traffic ban for vehicles of more than 3,5 tons in the Pentagon (city centre).

In the city of Namur access restriction bollards are used in the city centre pedestrian area. Specific regulations have been implemented regarding delivery windows.

In Brugge regulations have been developed concerning delivery time windows and parking of trucks according to their weight.

Bulgaria

In competence of the municipalities restrictions apply for city access such as weight, time, and vehicle length for specified zones. Examples from legislation:

Community of Rousse. It is forbidden:

- The traffic of all sorts of vehicles on the zone determined for pedestrians, parks and gardens in the city of Rousse. The ban has no reference to vehicles of MI and BMP, for under 14 year - old children driving bicycles , boards and rollers as well the vehicles provided with a special permit by the Community of Rousse in accordance with RDI.

- The traffic of lorries over 2,5 tones and a specialized construction techniques in zone C with exception of those provided with a permit by the Community.

- The traffic of vehicles with animal traction in zone C on the main streets’ organization and the secondary ones - road-bed of MU , with exceptions of those provided with a permit by the Community of Rousse in accordance with RDI.

Ordinance for the organization of the traffic in Sofia municipality:

It is forbidden:

- Entering of lorries with permitted value over 4t from 07.00 till 21.00h inthr Centre of the city.

- Entering of buses with more than 22 seats from 7.00- 21.00h in the Centre.
• Entering of lorries with permitted value over 15t in the zone “First”
• Entering of vehicles in off-days from 08.00 till 17.00h on the roads of Vitosha Park.
• Entering of vehicles on some boulevards and pedestrian area.
• Vehicles, with exception of automobiles, lorries with permitted weight to 4 t, buses and trolley buses.
Exceptions of the bans are allowed only by a permit:
• for lorries and building machines in the areas in par.1 for executing building work – in the period determined in the schedule.
• for vehicles, supplying trade places or executing collection work in the area for a defined period but not more than 2 hours in the day and night.

Czech Republic
Since 1990 there has been a sharp increase in general traffic volumes in city centres. In Prague there was an increase of 32% of vehicles. The share of freight deliveries in Prague varies from 7 to 15% during the day. In general, freight vehicles are not allowed to access the city centres. They may go there only with permission. Czech Police and Municipal Police check the access restrictions and charge fines manually. (90% of regulation is performed manually, on the spot.) Parking is charged. Cities use parking zones as a tool for city access regulation. Police use video detection systems and radar in certain places. Physical barriers are used to restrict access to city centres. Trends: use of video enforcement and new technologies.

The transport policy of the Czech Republic for the years 2005 – 2013 contains access regulations in cities with regard to heavy freight transport.

A common concern in most cases is local regulations and restrictions. Through traffic causes problems in cities. Local authorities are able to solve these individual problems, but often they have to counter objections of different groups with particular interest. But public opinion on this topic has been generally critical of the pace of development of motorways in the Czech Republic.

The topic concerning city access charges has not yet been discussed in the media. But the local authorities in the large cities, especially in Prague, and in the Ministry of Transport, are aware of the need to charge access to city centres in the near future. Electronic fee collection on motorways is supposed to start in 2007. Projects ordered by the Ministry of Transport that are concerned with city access charging have been under way since 2004. It is a politically sensitive topic, so discussion in the preliminary phases is only happening among public authorities and planning experts thus far.

The “Traffic management in historical city centres” project has been underway since 2004, and continues until 2007. Besides these projects, submission of the ‘Information System for Freight Transport’ project is in progress.

Denmark
An overall strategy for city access in Denmark does not exist. But due to the fact, that the Danish legislation at present stage only allows smaller scale and time limited experiments concerning transport in general, the government will “probably” during the autumn 2006 make some smaller changes in the legislation, which will allow for instance permanent environmental zones in the inner cities.

Since 1993 there has been an ongoing debate about environmental zones and a city distribution arrangement in inner Copenhagen. This debate has among others resulted in the Copenhagen City Distribution project which was described in Best Practice Handbook from 2000. An elaboration of this project was effectuated during the period from February 2002 to October 2003, but this time it was a mandatory project for the freight companies. On the background of these projects the municipality of Copenhagen in 2004 made an application concerning the establishment of an environmental zone arrangement in the inner Copenhagen with a duration period of three years.

The main reason for introducing a city access scheme in form of for instance environmental zones, is the increased particle pollution from diesel powered heavy vehicles. Congestion of course also contributes to the problems, and is therefore also regarded as a negative issue that could be improved by establishing city access schemes. Another topic, which has been debated thoroughly by the politicians during the last years, is the idea of introducing road pricing scenarios in the bigger Danish cities (especially in Copenhagen). But as it looks now the present government is against it, as they are afraid, that the municipalities will use it as a possibility to impose more taxes.

Finland
When most Finnish cities have relatively small population and therefore small city centres, the traffic problems also stay limited. One of the major issues in this connection is freight transport connected to the ports in some
coastal cities. Freight transport is not a big issue in Finland – except regarding cost and safety – therefore political interest is a minor one and no political discussions about city access schemes exist.

City access schemes are mainly formed by some local restrictions for heavy vehicles to use a specific part of a street. This kind of action is mainly triggered by local inhabitants suffering from noise and/or feeling that heavy vehicles pose a safety risk. Because of the small scale of these kinds of actions, no relevant data on possible impacts is available.

France

In France, local authorities have no competence to organize freight transport. However, the Local Authorities Code (Code Général des Collectivités Territoriales, document which stipulates the rights and competences for local authorities) entrusts to the mayor a competence for traffic and parking regulation. The mayor has to ensure the security, public healthiness, law and civil order. For that reason, he can restrict or support the access for delivery vehicles on the city or a part of it.

The Mayor must respect some rules such as the prohibition to prevent an access to the city for trucks if there is no alternative way. In 1977, the Ministry for Transports imposed four conditions to the mayor about regulation: - trouble for public security / - impossibility to act with less vigour / - proposition of an alternative way / - exemption by category (delivery, small vehicles,…).

So, each mayor can restrict the access to the city to some vehicles and practice a specific regulation for deliveries and picks up (window delivery,…). Different kinds of restrictions exist: weight, size, environmental with the use of clean vehicles (currently, only one case in France in Langres (10.000 inhabitants) and Montpellier).

In 2003, a national survey (realized by the GART) shows that the main part of municipalities does not have specific rules concerning the access for trucks in the city centre. For “medium” municipality (between 30.000 and 100.000 inhabitants), only more than three quarter of them have not rules, and among them 95% have chosen a size limit. Lots of greater municipalities (more than 100.000 inhabitants) do not have access regulations (44% of them). 76% of municipalities with a specific regulation have chosen a size limit.

Some cities authorize freight urban distribution for the night (40 % for cities of more 100.000 inhabitants, 23 % for the other ones). Some municipal authorities consider them as a viable solution to the problem of traffic congestion: in Dijon, Marseille, Orléans and Paris they are strongly encouraged. Others reject this arrangement on account of the annoyance caused by vehicle noise emissions: in Lille or Rennes, deliveries are banned at night for all vehicles, and over the entire municipal territory.

Generally speaking, few municipalities have chosen an environmental parameter in their regulation. The city of La Rochelle, for example, has experimented a city distribution with electric vehicles (ELCIDIS) several years ago, without changing the city regulation access.

However, a survey - currently in progress by GART (in 2006) - shows that more and more cities are working on that field. Indeed, Montpellier, Toulouse, Paris, Lyon,… are thinking about the establishment of an environmental regulation.

In France there are discussions about the creation of a congestion charge to access to the inner city (like in London for i.e.), but it is not permitted currently. Only tolls to finance an infrastructure are given possible by the law. But, other kinds of restrictions exist, for example low emissions zones (Montpellier is experimenting the first one in France), which means that the inner city is accessible only for electric vehicles (see the chapter dealing with Montpellier). So, this is a restriction access without a paying toll.

In average, in 2000, the social costs due to lorries and light delivery vehicles was estimated at 10.9 Billion € (all kinds of roads included), the full costs 13.6 Billion €, while takings 9.9 BE. That difference comes from the fact roads are under priced. That observation can motivate local representatives to be more implicated in writing restriction access to the inner centre for fear an increase of social and environmental costs. However, a main part of them do not want to impose a congestion charge, estimating that creates imbalanced between the users of infrastructures and companies. It is a reason why they seem to have a better approach with low emissions zones.

Germany

The legal frame work to establish access restrictions is governed consistently on national level. Directives as the STVO (Directive for road traffic) describe the different measures that are possible. This includes low speed zones or blocking of roads for vehicles of a particular weight, size or kind. The implementation and enforcement is at the federal state side, where also the entity concerned (federal ministry) is determined.

With regard to urban freight measure it is to distinguish on the impact of the federal and national road network
system and the urban road network. Cities and city councils have mainly influence on (inner) city networks that are not of relevance for the federal and national network. Measures developed in the context of reducing traffic are fully at the city side while measures with influence on the intercity system are at the federal/national entities. Therefore, access restrictions for goods transport are mainly directed to inner city area. Measures on city level are:

- Access restrictions and bans (weight, size, time etc)
- Parking management
- Access and parking enforcement technologies
- Exemptions

General agreement has to be given with the federal authorities. With regard to intracity belongings, the influence of the federal authorities is usually limited to technical issues. However, in the case that measures have also influence on the federal network the federal authority is concerned.

Since the 1990ies further possibilities to block larger area of roads, especially for parts of the federal network are

- The directive on immissions standards (Bundesimmissionsschutzgesetz) and
- The introduction of the Lkw Maut in 2005

The directive on immission standards addresses particular thresholds for particulate, Nox, SO2 and lead to improve air quality. Cities are obliged to defined measures and an action plan for reducing particulate emissions. As diesel propelled vehicles and goods transport are pointed out as main polluter of particulate emissions the temporary blocking of (inner city) roads is a common measure proposed.

With the introduction of the Lkw Maut on German motorways a tendency on avoiding the Maut on particular routes was recognised. The national government provided the possibility to limit the access to roads for long distance trucks (up to a blocking of the roads) due to such avoiding traffic. Several roads are concerned in almost each federal state.

City access schemes are implemented in almost all major cities in Germany. Presently the discussion is to introduce a “low emission zone” in Berlin by 2008, Similar plannings are in other cities like Munich.

Main aims on the transport policy in German cities are:

- Improving the traffic flow in the city area and securing urban mobility
- Consolidation of transport flows into the city area
- Improving air quality (related to clean air plans)
- Strengthening the city as logistics site
- Traffic planning objectives such as reducing negative impact of HGV in residential area, channelling of traffic etc.

The usage of road is restricted by different means in German cities. Partly the usage of roads is prohibited for goods vehicles partly there are imperative advises to use or not use particular roads. Such imperative advises are provided e.g.

- On the traffic situation in cities, e.g. by information on construction sites or the congestions in inner city roads
- On particular roads, corridors or networks for lorries shown in a specific map.

A major motivation in the recent past was the introduction of clean air plans in German cities. In many cities the restriction of goods transport is a major measure proposed in these clean air plans. Duesseldorf for example prohibited in the context of the clean air plan transits traffic over the Corneliusstrasse. A general prohibition for transiting the city area for vehicles > 3.5 t is in force since 2005 and enforced on a daily basis.

Furthermore there are restriction prohibiting the delivery on specified roads, areas where only trucks up to 7.5t are allowed and area for trucks up to 30 t. In additions there are restrictions on the size of the vehicles.

Further activities, as described in the clean air plan are to implement a lorry guiding concept that guides lorries to drive in a wide range from the city centre. www.duesseldorf.de/verkehrsmanagement/pdf/lkwrest.pdf

In Stuttgart a prohibition for trucks transiting the Stuttgart city area was introduced in 2006. The prohibition was mainly justified with the high level of particulate (PM 10) emissions in Stuttgart. www.stadtklima-stuttgart.de/stadtklima_fielsestorage/download/Wirkung-von-lkw-durchfahrverboten.pdf
A further motivation for restricting access for goods transport is to increase mobility within the city. Following an approach for a fast reachability over all transport modes in the city is the basis for development plans in some German cities such as Hamm, Dortmund or Chemnitz. Regarding goods transport the channelling of heavy goods vehicles through and in the city is a major concern. Heavy goods vehicles should be guided safely and fast to the industrial and logistic sites in the city. The cities provide maps as well as information over the internet to the drivers.

www.hamm.de/pdf/maßnahmenkarte_mitte.pdf / www.chemnitz.de/de/flash.htm

**Greece**

Joint Decisions were taken by the Ministries of Development (MoD), Environment – Physical Planning & Public Works (MEPPPW) and Public Order (MPO) on the imposition of time restrictions on delivery services. These Decisions hold for supermarkets and commercial stores in Athens and Thessaloniki (Attica and Thessaloniki Prefecture respectively). In Athens lorries with payload over 4 tones are prohibited from entering the “ring-road” throughout the year between 7-10:30 am. A so called “Blue Zone” sets restrictions on truck traffic in central Athens. In particular, within an area that is part of the ring-road interior, trucks with payload over 4 tones are not allowed to enter between 7-14:30, while trucks with payload below 4 tones are only prohibited from some most central arterials and squares (but also not allowed to enter between 11-14:30). In case of other cities / towns, time windows for delivery services are determined by district councils at Prefecture level.

Heavy vehicles (e.g. over 3.5 t) are often banned from entering several cities’ central area. Similar examples are found in national road network, e.g. along some parts that have not been upgraded to motorway yet, lorries are treated as diverted traffic –i.e. they are not allowed to cross villages and other communities; they travel along bypassing stretches. During the past 15 years, in most major Greek cities industrial areas have been organised along ring roads that divert heavy traffic from residential areas. This process has been successfully implemented to a large extent.

**Hungary**

Existing measures in some Hungarian cities (as information is available):

- Ajka: The municipality hasn’t dealt with this theme yet.
- Dunaujvaros: Not regulated and not needed presently. In long time period it has to be considered and – as they mentioned – after the implementation significant improvement of the environmental- and transport conditions is expectable.
- Eger: restricted transport possibilities / time restrictions in the downtown regarding freight traffic.
- Erd: under implementation.
- Gyor: Trial phase, but the enforcement is problematic.
- Kaposvar: In the downtown area drive-in licences regulate the delivery time of the freight transport.
- Kecskemet: No local regulation regarding the times of the freight transport.
- Miskolc: During the night time some roads for the heavy duty vehicles are forbidden. At the granting of the noise emission limits for some establishments the transport activities are possible only during the day.
- Nyiregyhaza: Inside the Big-circus (Nagykörd) to make the drive-in restrictions more explicit – without modifying the existing area borders – the modification of the present system is planned: Instead of the total prohibition introduction of a 3,5 t full-weight restriction; Termination of the “exception transport” and “exception destination traffic” possibilities, instead of these 7:00-18:00 time window.
- Oroshaza: No rules for freight transport yet.
- Oszd: There is no this kind of intention and they don’t see any possibilities.
- Salgotarjan: Some kind of conception is planned, but at this time there is no regulation.
- Sopron: The goods transport occurs basically during the evening- and dawn period. To the resting and residential areas the trucks are able to drive in only with licences, regulating the peak and off-peak transport with this. Drive-in to the pedestrian areas - in case of goods transport - is possible only in the evening inspiring off-peak transport.
- Szeged: The traffic shields inspiring this but the enforcement is weak.
- Szekesfehervar: After the finish of the construction of the main road network the heavy truck traffic inside the bypass road will get a serious weight- and time restriction. The planning is underway.
- Szekszard: Time restriction for goods transport (during 2x2 hours) is only in one road that is partly closed from...
<table>
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<th>Country</th>
<th>Description</th>
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<tr>
<td>Ireland</td>
<td>There are political discussions about city access schemes in Ireland. Although the main reason for access schemes is improvement of accessibility by the prevention of congestion, environmental issues often have a supporting role in the argumentation of the scheme. Since Dublin is the main city in Ireland and the other cities are substantially smaller, the schemes developed for Dublin are often guiding for the rest of the country. Main reason for the city access scheme in Dublin was congestion. Although the benefits on the environmental level were also taken into consideration. Because the Dublin scheme is due to start there is no relevant data available yet.</td>
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<tr>
<td>Italy</td>
<td>The main recent important evolutions in Italy concerns the new regulations adopted by some Italian regions giving city access restrictions for LCV for the winter season 2006-2007. The main aim of such measures is to reduce pollutants emissions, particularly PM10. One important example of this concerns the Piedmont Region, where Euro 0 and 1, and from 2008 Euro 2 vehicles are not permitted from November to March. Similar measures are expected to be adopted in other Regions of north of Italy: Lombardia, Veneto, Trentino Alto Adige, Emilia Romagna, including the cities of Bolzano, Trento, Venezia – Mestre, Verona, Padova, Vicenza, Treviso, and Aosta, etc.. Stricter restrictions with respect to winter 2005-2006 are also expected in the main cities of the centre and south of Italy (Firenze, Roma, Napoli etc.). Another important evolution concerns some study about the adoption of “credits schemes” for urban distribution purposes. Into this context the Municipality of Genova is promoting a specific initiative; the study is in progress.</td>
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| Lithuania| The State Road Transport Inspectorate is not appointed to decide restrictions in urban areas since it is a municipalities’ matter. There is no specific regulation or rules on national level which foresee freight transport restrictions to access the city. The responsible institutions of municipalities are decision makers of legislation of restriction of any kind concerning transport in urban areas, including heavy vehicles. Streets, quarters or historical centres may be closed for lorries traffic by using road signs. These restrictions concern weight limitations, height limitations or a total lorry ban. The restrictions strongly depend on the local situation. Due to technical reasons the weight of vehicles may be restricted on some streets linked to viaducts or bridges. In some residential and historical city areas inhabitants call for freight transport restrictions or political decision are taken. The restriction decision for inhabitant’s claims is different in each situation and depends on human factor. The decision making scheme is the following: After the transport department of cities municipalities got a claim from inhabitants on noise or exhaust cause by freight traffic in a street or area, first of all the situation is evaluated. After a positive decision the department of Traffic Monitoring and Control of Supreme City Police Commissariat is asked for their opinion. The most important point here is whether there are possibilities for alternative roads for lorries traffic. In case the police accept the suggestions the decision to restrict could be taken by the transport department of the municipality. Restrictions are not initiated by official concepts or strategies. The political decisions to restrict freight transport in historical old towns strongly depend on existing alternatives. There are attempts to dired main freight flows around the city core using signposting. If possible, the heavy vehicle flows are routed around. The outputs of decisions are not monitored and evaluated either. There are no general concepts and strategies directly concerning the urban freight restrictions in national level. The concepts and strategies are oriented towards intermodal development and logistics centres.
development. The new logistics and intermodal concepts should change the freight flows. The transformation of freight flows should decrease the number of lorries in urban areas. There are no special heavy vehicle fees in urban areas. All kind of heavy vehicle fees is matter of rules of national level.

**Netherlands**

The national government creates a framework for urban freight transport policy leaving space for municipalities (and the regional government) to set their own regulations. Until 2002 the Platform Urban Distribution was funded to carry out pilot studies and to encourage cooperation between stakeholders. To reduce the negative effects of urban distribution, such as congestion, accidents, noise, road demolition (in historical centers and on canal streets) and air pollution, several forms of access schemes are implemented:

- Delivery windows. By using delivery windows the centre is only open for the delivery of freight between certain hours (usually in the morning).
- Restricted access. Some city centers have length/weight restrictions and are considering environmental zones. Amsterdam already has an environmental zone.

The lack of regional cooperation between cities regarding urban freight management are recognized to cause economic harm, unnecessary negative impacts on safety and the environment. In order to achieve this cooperation, the Ministry of Transport, Public Works and Water Management has set up the Commission Urban Distribution. The objective of this commission is stimulating the cooperation between local governments and public and private parties concerning urban distribution. Measures must balance the interests of the local economy, inhabitants and private sector. Regulations set up by municipalities must be aligned in the region to avoid problems with delivery time schemes and access regulations between different municipalities. In case regional discussions don’t lead to cooperation, the Commission has the power to mediate and force changes.

**Poland**

In Poland there are no restrictions for urban freight transport known, except one example from Wroclaw. Enforcement and control activities for freight transport are carried out on a general level that means the general observance of traffic regulations. The main regulations concerning freight transport are:

- State Ordinance of the Minister of Infrastructure containing regulations concerning the conditions of road traffic management and control (23th September 2003): The ordinance specifies the exact conditions of:
  - public road management and control
  - inhabited area management and control.
- Road Traffic Law (20th June 1997): The law regulates rules of public road and inhabited area traffic as well as requirements for vehicles and drivers. The rules are also applied to non-public roads in case it is necessary to avoid dangerous situations.
- Transport Law (15th November 1984): It regulates transport against payment of people and goods by hauliers, except for maritime and horse transport. The regulations are applied to international transport, unless there are some individual regulations that may be used.
- Local Government Law (8th March 1990)
- Public Roads Law (21th March 1985)
- State Ordinance of the Minister of Transport and Maritime Economy containing regulations concerning technical conditions and location of state roads (2th March 1999)
- State Ordinance of the Minister of Interior and Administration containing regulations concerning road signs and road signals (31th July 2002)

The abovementioned laws are related to public roads. The cities' transport policy and planning is build on the Transport Development Strategy for the years 2007 – 2013 (TDS) and the goals of the National Development Plan and aims at:

- Creating integrated city transport development plans.
- Extending and improving road infrastructure.
- Establishing integrated communication junctions.
- Establishing a body dealing only with city transport matters.
- Realizing projects connected with Intelligent Transport Systems including delivery cars management systems.

Below there are some examples of solutions connected with freight transport in the City of Wroclaw.
regulations are in force within the area of the Old City Centre:

- There are zones of limited traffic for cars with a tonnage of more than 3.5 tons.
- There are special zones of limited traffic for delivery cars, i.e. from 6.00 am to 9.00 am and from 6.00 pm to 10.00 pm.
- Charging a fee for entering a "no traffic zone".
- The places of loading/unloading operations are signed with special road signs with an information plate.

The abovementioned restrictions are enforced by municipal police. Main physical measures of enforcement are fines for drivers who don't abide by the regulations.

South-Africa

Many local governments across South Africa (SA) are facing increased requests from communities for permission to close off roads and erect boom gates to restrict access to residential areas. Local authorities have adopted different policies in this regard. The extent to which South Africans are exploring this option is evident from the fact that the fifth international conference on gated communities was hosted in South Africa by the CSIR in 2005. Attention is mostly focussed on the spatial development questions posed by enclosed communities and their implications for local government planning.

South African schemes to restrict vehicle access to urban areas includes initiatives such as the closure of Eeufees off-ramp for trucks and the restriction of vehicle access to Church Street in Pretoria; the Chapman’s peak drive boom-gate/toll road access restriction in Cape Town, as well as the restriction of heavy vehicles during peak hours (time restriction) on the Field’s Hill in Durban. These restrictions came to be because of the congestion, lack of parking space and environmental problems caused by different vehicles in those areas. Additionally there is the highly debated issue of enclosed neighbourhood (gated communities) in some urban areas of South African provinces.

In South Africa, access control is not limited to commercial developments, but is also common in residential and office land uses. Most of these access control systems make use of mechanical booms and sliding gates at a single access point to restrict access. In some instances access control is not enforced during peak periods to avoid excessive vehicle queuing.

Provincial legislature: Each of the nine provinces has its own Provincial legislature, responsible for making laws for the particular province in relation to matters listed in Schedule 5 part A of the Constitution (such as: provincial planning, provincial roads, traffic, and many others), which determine how the province is run.

Gauteng has most of the country’s enclosed neighbourhoods, including the controversial gated communities (using boom gates). The province is also ahead in its enactment of policy and legislation to regulate the restriction of access to public spaces for safety purposes (boom gates are installed across suburban streets as a traffic calming measure, preventing through traffic, while allowing authorised vehicles such as emergency services and buses to take advantage of the shorter and more direct route).

Current situation:

- As contemplated in the 2010 FIFA World Cup South Africa Special Measures Act, 2006 notice a peace officer must refuse a person permission to drive a vehicle into a traffic-free zone unless a prescribed notice authorising the presence of the vehicle in that zone is displayed on the vehicle in the prescribed manner.

- Enclosed neighbourhoods: ‘Restriction of access’ can be interpreted as meaning physically limiting the number of access points (or roads) to an area rather than limiting or restricting access of certain people or vehicles to an area. There appears to be a disjunction between what the legislation and policy allow and the expectations and motives of those who gate off their communities. Suffice it to say that the Gauteng legislation and concomitant City of Johannesburg policy specifically prohibit any form of exclusion. If the Johannesburg Roads Agency considers that a restriction of access appears to be warranted in terms of the policy, it will prepare a report to the Executive Director: Transportation Planning and Management, recommending approval of the proposed terms and the imposition of the access restrictions.

- Rationalisation of Local Government Affairs Act (10 of 1998) Where a resident’s association, business association or any other applicant seeks to restrict access to public places for safety and security purposes within a region (such as the City of Johannesburg), an application must be submitted to the relevant municipality. The Act requires that at least two thirds of those (residents) affected by the circumstances giving rise to the application (access restriction in the enclosed neighbourhoods), approve the application.
Road user charges – This issue has been hotly debated for a number of years but there has not been any final solution to the problem, which would result in a fair and cost-effective system. Claims that light motor vehicle users will subsidise the heavy freight operator have not been resolved yet. Cape Town Tolling plans: There were plans to implement toll roads within the economic catchment area of Cape Town, but this was strongly opposed by the Regional Chamber of Commerce and Industry. According to the Chamber this would lead to traffic using suburban roads as “rat runs” to access urban areas, bringing danger and noise into residential areas, in an attempt to avoid paying toll fees.

Slovakia

There is no special follow up of urban transport in the Slovak republic. Special legislative framework for urban transport is not available. For the whole area of road transport and for the whole country general acts, decrees and rules are in force. Certainly, where needed, local authorities can arrange some restrictions in co-operation with police. This is not a systematic approach. Country wide system of urban programs for city access schemes currently does not exists.

This problem emerges form the state of road infrastructure before 1989 when the number of car was in balance to state infrastructure. Road net and its capacity and admissibility were relatively balanced. After 1989 we can see huge increase in number of cars. This increasing was not in balance to road net in big towns (regional centres) mainly. The result was increase of traffic jams and overfilling of roads. This problem last till today as investment into infrastructure can be big and there is lack of money and the increase of no of cars is not regulated. Shortage of money limits municipal transport and this consecutively creates demand for individual transport and admissibility of streets is limited too.

Solution for road transport is divided into two institutional parts: First class roads and highways are designed and built up by state according to state strategy. There is long term strategic plan for motorway and highway development but this one was stopped in 1998-2002. Currently this plan was renewed with delay of 5 years. In this area there is certain plan for development and build up and for some projects for example bypass around Bratislava. Municipal transport is influenced only by decreasing of number of cars crossing town.

Other roads (II. and III. class), municipal infrastructure are under administration of higher regions (8 in Slovakia). VUC are responsible for development, construction and maintenance of roads. The problem is that financial questions and relation state-region were not solved till now. Better to say are being solved. This situation limits preparation of wider cope project or program for towns or regions. Country wide program for solution of this problem does not exist till now. Said problem is being solved with the help of international some funds. For example diversion of transport around Zvolen is done in project called Snowball. Some minor problems can be solved by regional budget.

The situation is currently open. The old legislative system is being used. This is absolutely unsatisfactory situation. Processes are too log from property rights point of view. Currently there is no initiative to change this situation at country level by a new program.

Existing solutions in some urban areas are limited to availability of local money and how urgent the situation is. Request for environmental solution is included into proposal of transport solutions and it is not a separate issue.

Slovenia

The laws and regulations managing enforcement in the freight transport in Slovenia may be divided into the acts adopted at the national level and municipal regulations.

Regulations adopted at the municipal level are developed by the municipal authorities. In order to control the transport in a specific city centre, the authorities usually issue their own decrees aiming at managing different fields, such as: Exceptions concerning entrance to the city centre by vehicles, delivery windows, weight restriction, entrance fees and penalties, etc.

In most Slovenian cities, the city centres are organized as pedestrian zones where no motorised traffic is allowed. However, shops, restaurants, other business premises, and apartments located in the city centre require entrance by vehicles into the city centre in order to provide for delivery of supplies and access to functional surfaces located within the pedestrian zones. Accordingly, there are exceptions established allowing entrance to the city centre for: Residents’ personal vehicles, Delivery vehicles, Disabled people’s vehicles, Intervention vehicles, Community service vehicles, etc.

The period allowing entrance to the city centres by vehicles varies among cities. Usually, the entry is possible during a couple of hours in the morning (2 – 3.5 hours) and/or a few hours in the afternoon (2 - 3 hours). In addition, there is a time limit established for stopping in the area for delivery purposes, which usually accounts
In all city centres, there are weight restrictions in vehicles, it is usually allowed to deliver by vehicles carrying up to 3.5 t. Exceptionally, upon special permit, entrance is allowed for vehicles exceeding this weight limit. Delivery vehicles are allowed to enter the city centre upon payment of the entrance fee. Other exceptions may enter free. There are differences in entrance fees for daily and yearly entrance and in fees for vehicles up to 3.5 t and exceeding 3.5 t. In the event a vehicle exceeds the time limit allowed for stopping in the centre for delivery purposes, it shall pay a fine.

The cities are aware of the problems caused by the traffic in the city centres. Accordingly, there were several political discussions initiated on reduction of the traffic volume. These discussions resulted in closing of the city centres for motorised vehicles or in introduction of some city access schemes already existing in some other cities (the case of Maribor).

In Slovenia at the national level, there is only one form of the city centre access scheme and that is physical restriction of entering the city centres by means of sink cylinders. In this form of the city access schemes, there are several variations possible. For example, it can work in combination with the RFID card used for sinking the cylinder(s). In some cases, the cylinder may be in the “sunk” position during specific hours, during the day; outside this period, no entrance to the area is possible without permission (the concept of delivery windows).

In Slovenia, with respect to the size of cities, the biggest cities are faced with the biggest problems related to the freight transport in their centres. These cities are: Ljubljana (270,000 inhabitants), Maribor (120,000), Kranj (52,000), Celje (48,000). In 1996, Celje was the first city implementing the sink cylinders. After that, the same decision was adopted by Ljubljana and Kranj, in 2001, and by Maribor, in 2002. This scheme allows entrance to the city centre only for certain groups or during certain hours.

Spain

As general vision of the Spanish situation, the framework for the city access restrictions is relatively poor. In general, all the regulations define a chapter for the load and unload activities. Some cities have included in the traffic regulations specific section for the urban distribution. The first one (included in BESTUFS I) was the regulation for the city of Madrid, that was considered as a “revolution” in the transport sector. This was established in 1998. Lately, several cities consider the access in their regulations, bearing in mind limitations to the entrance to fixed areas for the cargo vehicles. The examples are: Alicante, Granada, Valencia, Bilbao. In these regulations, restrictions are oriented to an identification of fixed areas where the circulation is restricted for cargo vehicles according to the tonnage or volume. Also, some does not allow circulating transport up to a high tonnage or considers time windows for the access.

On basis on main three possibilities of access management schemes, the only way considered in Spain is the management of access permission of city centres depending of the area, time window, capacity, …

The main problem for all of them is the way to carry out. In this sense, the applied measures are based in control on entry within video and permit systems with police monitoring.

In the political scenario, in the last (2005) summer some socialist politicians have been considering the chance for including the road pricing in the political programs for the main Spanish cities. Due to this measure is not very friendly, all the parties in the opposition made use of that to get some advantage. As conclusion, the proposal was misestimated.

In national level, the Spanish Government introduced some modifications related to the driving license including a point system for driving offences.

The main motivation for the municipalities to introduce city access schemes are only the congestion in the city centres. The other reasons (environmental or cost related aspects) are, in these cases, not relevant. On the national level, there are not planned any kind of measure in order to regulate the access into the cities. Only the “murmur” about the introduction of the road pricing in the next socialist programmes for big cities could be heard in mind.

Switzerland

On a country wide basis there are several direct regulations that affect freight transport in urban areas as well:

- General prohibition for HGV to drive at night time on all roads (from 10PM to 5AM)
- total gross weight limit of 40t
- HGV toll on all roads (“LSVA”), affects urban freight the same as all interregional freight transport by
increased costs, but does not influence city access behaviour of forwarders. The toll is calculated by the
maximal allowed weight of the vehicle, the driven distance and the engine class (EURO 1 trucks have the
highest, EURO 5 the lowest rate). All HGV with more than 3.5 tons are affected.

On a regional/cantonal basis there are road related restrictions. The cantonal authorities can restrict traffic
according to the national air quality law.

The national legislation foresees just basic restrictions for city access schemes. Within this framework the
cantons are mainly free to implement schemes. Exceptional routes where no restrictions are possible are
defined by the national authorities for trough traffic routes.

The legal frame allows the cantons to delegate responsibilities for HGV restrictions to the municipalities. The
following restrictions are can be realised:

- time restrictions for loading/unloading for a given street/area
- weight restrictions for access to a given area / street
- pedestrian zones with restricted access for deliveries, in most cases this is time windows, weight limits i.e.
  no access for vehicles exceeding 3.5 tons
- general HGV ban in inner cities (e.g. for all HGV or for transit traffic only)

Many cities have access restrictions related to time and some also for size and weight. Usually the freight
transport related restrictions apply for zones with further restrictions for other traffic such as pedestrian areas
or, less strict schemes with mixed car/pedestrian streets. A typical example is Bern: In the central pedestrian
zone there is a ban for motorised vehicles. But loading and unloading is allowed without further permission
from 5.00 to 11.00 am and from 18.30 to 21.00 pm (this second time window serves mainly the needs of
restaurants and bars). Exempted from the scheme are taxi, hotel access and special permissions.

There are many small to larger cities with pedestrian zones where deliveries are restricted to a certain time
window. Weight and size limits are common as well. But there are only four smaller cities (Bulle, Zizers,
Arbon, Riehen) with general ban of HGV, either for all or for through traffic only. And due to the legal
framework there is not a single low emission schemes or access charge schemes what so ever.

Quality pricing or access charges are not regulated, and therefore such schemes are only feasible as a pilot at
the moment. There is no direct legal basis for permanent emission restriction schemes (PM10, NOx etc.) in
Switzerland either. No specific schemes, limiting the amount of exhaust and noise, apply today. The national
and cantonal legislation allows measures to be decreed by the cantons or municipalities when the air quality
exceeds certain limits. These are mainly temporary. In the nineties city logistic schemas have been discussed
in Zurich, Basel and Berne and have been partly implemented.

There have been no changes in the last few years concerning the legal situation for city access schemes.
Nevertheless there is a debate among experts and in politics about implementing new schemes:

- A city access charge in Zurich (basic ideas are discussed, there is no concrete plan for an implementation
  in the next few years)
- AScheme that limits the number of trips to and from a specific urban area. Such areas are mainly newly
  built or reused industrial brownfields or development areas. Such reuse projects mostly contain office and
  residential parts but also shopping and leisure facilities. The later cause a severe increase in the number
  of trips compared to the former industrial use of the area. First projects are in operation. But latest
  examples show that the scheme faces strong opposition from both residents and investors.
- HGV bans have been discussed as well, but were only implemented in a handful of very small cities
  (Bulle, Zizers, Arbon, Riehen)

There is a public discussion on access schemes for general traffic in cities. But there is no freight specific
scheme in development. Freight is still mainly treated on a national basis. On municipal level freight traffic is
mainly limited/restricted where other traffic is not wanted either, such as in pedestrian zones.

In winter seasons the discussion about particles (PM10) is raised. This problem is widely acknowledged as a
major problem for urban areas when the meteorological conditions do not allow the exchange of the air in
urban areas for many days running. So far, measures concerning this issue have only been temporary speed
reductions on motorways.

| United Kingdom | The main regulation for urban freight transport vehicle is the Road Traffic Act 1988 (sections 66 to Section
77). Under this act vehicle examiner is employed by the Secretary of State (for Department for Transport), |
Street parking in cities or towns is regulated nationally by the Road Traffic Regulation Act 1984 and 1991 and locally by orders made by local authorities. Police and traffic warden enforce the regulation. Some authorities use their own attendants. The Function of Traffic Wardens (amendment) Order 1993 allows traffic wardens to issue penalty tickets for offences such as pedestrian crossing parking, offences, causing unnecessary obstruction, and dangerous parking.

Local authorities in England and Wales can introduce such provisions as oneway road, truck load limit, particular bay for cargo loading and unloading, parking restrictions, vehicle clamping and removal in the city areas. The city access restriction schemes are taken by the local city councils to keep the city moving, congestion free and environment friendly. The restriction takes the form of time restriction (such as restriction of goods vehicle with certain dimensions can not enter between 9.30 am to 5.30 pm).

Regulations allow national and local government to introduce a range of access restrictions on goods vehicles in urban areas including:

- Access restrictions based on time, weight, or length of vehicle in a given area
- Loading/unloading time restrictions at specific sites
- Loading/unloading time restrictions on-street (also in connected with noise issues)
- Congestion charging schemes

The Road Traffic Regulation Act 1984 allows local highway authorities to prohibit or restrict specific classes of vehicles (including goods vehicles) in order to preserve or improve the amenities of their area. This is known as a Traffic Regulation Order (TRO). When an authority proposes to introduce a TRO it must consult the police and organisations representing people who will be affected by the TRO. The proposals are advertised in newspapers and at the site. If there are objections the authority must consider them, and in some situations, hold a public inquiry.

In many cities the street parking of lorries at night and at weekends in specified areas, zone entry and repeater signs are used. For example, in London, Lorries over five tonnes gvw are banned from street parking between 18.30 and 08.00.

Restrictions vary considerably from one city to another, particularly the hours at which loading bans apply and the maximum time allowed for loading and unloading. Where the weight or volume of a load makes it essential to stop at a banned kerb, prior to permission must be sought from the police, traffic warden or attendant on the spot.

On the other hand, the number you apply for the operating licence should take into account the number of vehicle you intend to use straight away and allow for some extra motor vehicles to cover increases in business and emergencies, such as breakdowns. The extra motor vehicles are commonly called ‘the margin’.

Most of the restrictions listed above are conveyed to goods vehicles drivers by the use of road signs and are enforced by police, parking attendants, and/or cameras. Some access restriction schemes involve the use of physical restraints to prevent vehicle access including pedestrianisation, width limits and barriers.

In addition, local authorities can also introduce advisory schemes to encourage drivers of goods vehicles to use suggested routes to reduce the impact of their vehicles on the communities they drive through. Information about advisory routes can be conveyed through the use of road signs and maps.

Other schemes that can affect city access by goods vehicles include Urban Consolidation Centre schemes (which can deter or prevent goods vehicles from delivering to the final receiver); and Low Emission Zones (one is proposed to be introduced in London in 2008) that fine vehicles that do not meet specified emissions criteria from entering the LEZ. This has the effect of discouraging these vehicles from entering the LEZ.

The city access schemes for urban freight transport is carried out with the aims of improved road safety, prevention of accident/ offences, reduced congestion and improved environment. Noise level and operation time limits in city areas are set by urban local authorities. Environmental Health Officers and Planning Department in the urban authority takes into consideration these factors for new development/ expansion or approval of a new business in the city area. The city authority applies spot checks to find out non-complaints based on complaints or as part of a regular/ occasional basis. In summary access restrictions are imposed on goods vehicles for several reasons including to:

- Reduce danger to pedestrians and other road users
- Prevent damage to buildings, roads and bridges
• Preserve the character, amenity and environment of an area
• Reduce and manage traffic levels on the roads
• Reduce noise disturbance and vehicle pollutant levels

National and local authorities conduct consultation and engagement with public, road users and other stakeholders before introducing any scheme or control measures. Also academic, research institutes and media such as newspaper, television, and radio discuss the issue every now and then.

A research project in the UK carried out by the University of Strathclyde in 2004 found that goods vehicles operators are mostly subject to time restrictions (41%), to road access restrictions (36%), vehicle specifications (10%), noise related restrictions (5.5%).
# ANNEX IV: Collected case studies (projects-level) – City access restriction schemes

Projects highlighted in grey are described in detail in the main part of the best practice handbook.

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<tr>
<th>Code</th>
<th>City/Region</th>
<th>Name of concept</th>
<th>Description of concept</th>
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<td>AT – 01</td>
<td>(12 Austrian cities)</td>
<td>Implementation of bollards in centres in various cities</td>
<td>The concept is the implementation of bollards at the entrances of pedestrian of historical sensible areas which open at specified time windows for goods delivery. (source: <a href="http://www.pilomat.at">www.pilomat.at</a>) Various preferred user groups have private access authorisation, which are realized by various technologies: keys, radio communication, GSM, RFID, etc. (source: <a href="http://www.pilomat.at">www.pilomat.at</a>) Example: City of Mödling: The city administration has implemented 6 bollards on the entrances to the historic city centre. The bollards are open from 06.00h – 10.00h, 14.00h – 15.00h, 18.00h – 20.00h. The entrance in this zone in general is only allowed for vehicles up to 7,5t. Some interest groups (local residents, taxis, doctors, pharmacies, fire brigade, etc.) have special permission to enter the zone any time. The new approach is to use various technological solutions for activating the bollards, and the overall strategy of controlling the entrance to a whole city area without having high implementation or maintenance costs. The objective of the city access scheme is to ban all transit traffic going through the area, all freight delivery traffic within specified time windows and all private traffic which has no special entrance permission.</td>
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<td>BE – 01</td>
<td>Brussels</td>
<td>Brussels Confort Zone</td>
<td>In 2006 the city of Brussels has developed a ‘confort zone’ in the city centre around the “Grand place” to reduce road traffic pressure in the area. The development of the ‘confort’ zone is a global mobility project. Measures included in the implementation of the ‘confort zone’ are:&lt;br&gt;• New traffic directions in some streets to prevent transit traffic;&lt;br&gt;• Speed limited at 30 km/h in some streets;&lt;br&gt;• Traffic banned in streets rendered pedestrian: in these streets traffic is limited to safety services (firemen), access to garages, persons with reduced mobility and deliveries;&lt;br&gt;• On-street parking reserved for residents in the area, persons with reduced mobility, police and taxis.&lt;br&gt;In streets where traffic is limited to 30 km/h, deliveries are to be carried out between 8 a.m. and 7 p.m. on zones specifically reserved for deliveries. Outside this timeframe, these zones are reserved for parking by residents. In pedestrian streets, deliveries are to be carried out between 6 a.m. and 11 a.m. Vehicles of more than 3.5 are banned in the area unless they are carrying out local deliveries. The idea is to reduce traffic of large vehicles without however endangering the important commercial activities of the neighbourhoods. It should be noted that the change in direction of traffic in some streets has led to the limitation of tonnage by a dissuasion effect (traffic of large vehicles has been rendered difficult because it is difficult to turn from one street into another). To allow shop clients and visitors to park, a system of red zones (parking to be paid for, limited to 2 hours) will be developed in a few month in the streets Midi and Lombard. Shop clients and visitors are also encouraged to park in the off-street parking (to be paid for) around the area.&lt;br&gt;Freight traffic is only a minor part in the scheme. The objective of the ‘confort zone’ is to reduce traffic pressure in the historic centre and to provides facilities for “soft” modes and pedestrians.&lt;br&gt;The decision for implementation has been adopted in the form of a resolution by the College of the city Mayor and councillors. Measures are globally well respected. In the first weeks of implementation, the police was present in the area to ensure that the implementation ran smoothly. Some of the streets are still closed by police barriers outside of delivery windows. There are no permanent (non removable) system that block (permanent barrier) or regulate (electronic access system) entries into the zone besides the removable police barriers.</td>
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Based on the study of experiences carried out in different European cities and a reflection regarding the specificities of Brussels, it appeared that an exclusively pedestrian zone could have led to a commercial mono-functionality difficult to control and created unfavourable conditions to the development of housing. This is why the choice of project has led to a system which valorises pedestrian and bicycle access while at the same time maintaining accessibility by car under certain conditions.

To inform people of the new measures, the city has informed the main shopkeepers’ associations in the area and has published letters and indicative maps for drivers carrying out deliveries in the area. Each shopkeeper has thus been able to inform the drivers making deliveries to his shop of the new measures so that they were able to adapt.

A monitoring committee has been developed where residents of the area, resident associations and/or shopkeepers regularly meet since the first week of implementation of the “confort zone”. This committee also invites policemen and people from the service for street works so as to respond as rapidly as possible to remarks and requests of participants. In some streets, remarks have been communicated to the city by shopkeepers. These remarks have been taken into account via small adaptations. There are, today, no more problems regarding deliveries related to the implementation of the “confort zone”. The system functions well and shopkeepers (initially opposed to the project) are now asking for an extension. The long process of participation carried out has notably allowed for a change of mentalities.

### BE – 02 Namur Deliveries in the pedestrian zone

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<td>BE – 02</td>
<td>Namur</td>
<td>Deliveries in the pedestrian zone</td>
<td>Two types of restrictions have been developed by the municipality with regards to heavy vehicles’ access to the city centre:</td>
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<td>• Access to the city centre is not allowed to vehicles longer than 12 m except for the Rogier-Brabant axis and the roads located north of this axis.</td>
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<td>• Access to the city centre is not allowed to vehicles of more than 3,5 tons, during the week between 11h30 and 17h30.</td>
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<td>Delivery of freight is free if it is carried out in a delivery zone during authorised delivering times (between 7.30 and 11.30 in the morning) as long as it is effectively active. If the delivery is not active, then normal parking procedures are in application (for example payment of the parking). There are 28 delivery zones in the city centre. Outside this time window, parking of other vehicles is authorised in these zones and must be paid for.</td>
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<td>The Parking Plan of the city has been developed to ensure rotation in the use of parking space where parking needs are most important. In the pedestrian zones, deliveries are authorised : between 5h30 and 7h30; between 9h00 and 11h00 and between 17h30 and 20h00.</td>
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<td>The objectives of the restriction scheme are to preserve the historic city centre of Namur (the streets in the centre are often very narrow), to reduce congestion especially during rush hours and to ensure safety and conviviality to pedestrians.</td>
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<td>A leaflet on freight transport and deliveries has been published by the municipality to the attention of transporters carrying out deliveries in Namur. It summarises the regulations in place and provides a map that highlights the location of the delivery zones.</td>
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|       |             |                                       | Access to the pedestrian area is controlled by way of bollards that may be automatically moved down. Drivers making regular deliveries to the city centre of Namur are advised to use the on-board individual parcometer Smart Park. This device is made up of a box and of electronic cards programmed and charged with parking units in function of the tariffs of the different parking zones. When the driver inserts the electronic card, units begin to be removed from the card. The driver stops the removal of units when he comes back to the
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| BE – 03 | Brugge | Parking of freight vehicles and delivery windows | **Delivery windows:**
In the commercial streets, time windows are in application for the loading and unloading of goods. Since April 1st, these delivery windows have been harmonised to the following times: 6 a.m. to 11 a.m. and 7 p.m. to 8 p.m.
In a number of streets in the city centre, access is banned for vehicles exceeding specific tonnages or length. The tonnage and length limits vary according to the street.

**Restrictions regarding parking of freight vehicles according to weight:**
There were public complaints regarding parking of freight vehicles and its impacts in terms of visual nuisances, noise, difficulties created in traffic, parking and safety issues due to lack of visibility. In the framework of the Mobility plan, a new regulation for the parking of freight vehicles is of application since the 1st of June 2006. According to the regulation, vehicles of more than 5 tons are not allowed to park in residential areas. Alternatives of specifically dedicated parkings have been developed. The objective of the measure is to restrict freight vehicles parking to only the companies/business’ grounds or to parking areas that are specifically dedicated to this type of vehicles. In the city centre, the local parking ban for freight vehicles of more than 3,5 tons (dating from 1992) remains of application. This regulation only concerns parking. The vehicles targeted by the regulation can still stop shortly in these areas to load and unload goods. |
| CH – 01 | Basel | Lorry Check-In, Messe Basel | Since 1997 all trucks with a delivery to the exhibition centre have to go to a check-in point with waiting area first. There the trucks are on stand by until a loading bay is available. A dispatcher observes the loading bays by a video camera and provides the truck driver with the available bay number (ticket). Loading and unloading is only allowed with a ticket (enforcement). The trucks are sent to the loading bay in order of arrival, which guarantees the fairness and therefore the acceptance of the scheme. The operation of the system costs about 1 Mio Swiss francs per year and is paid by the privately owned exhibition centre.
Exhibitions in the Basel exhibition centre cause a huge amount of trucks in a very short timeframe just before and after an exhibition. Most forwarders and companies want to build up their stand short time before the exhibition starts and tear it down right after the end. The capacity of the loading bays is insufficient. Before the new scheme was introduced this caused serious congestion around the exhibition centre area. The acceptance of the frequently exhibitions in the neighbourhood was decreasing. The exhibitors could not plan the building up of their exhibition booth very well. The same was the case for the forwarders in charge of the delivery and pick up of the material.
The technique used is low tech: a waiting area, camera surveillance and paper tickets. The system had to be very simple and easy for the user as the exhibitors from all over Europe are not familiar with the scheme. A system based on bookings was evaluated, but considered too complex for the given problem.
The scheme works very well and has been in operation for nearly a decade. The acceptance is very high among all stakeholders. There was no need for a major information campaign as the scheme is very simple. The new implemented system fits very well in existing |
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<td>CZ – 01</td>
<td>Prague</td>
<td>Trendsetter</td>
<td>Before Trendsetter, the City of Prague had an access restriction zone for vehicles over 3.5 tons in the inner city centre, and a larger outer zone with access restriction for vehicles over 6 tons. In the central area exceptions are made for delivery vehicles and buses to centrally located hotels. Because the experience with environmental zones has proven successful in Prague and due to a need to curb the negative environmental impact from traffic, the city decided to widen the zone prohibition for vehicles over 6 tons. Trendsetter in Prague focuses on&lt;br&gt;• The shift in modal split from private car transport to public means of transport with emphasis on improving public bus service transport (using new and alternative approaches) to the same high level of service as other means of transport (underground, tramways) in the City&lt;br&gt;• A reduction of heavy freight transport (over 6 tonnes) in certain areas of the City; and therefore reduction of traffic strain in those areas experiencing the final stages of city ring road construction&lt;br&gt;The objectives are: To obtain the greatest possible protection of the historical city centre. Heavy vehicles, vehicles with large dimensions and buses have restricted access to the city centre, especially in peak hours on work days. To create better conditions for fluent traffic on surface roads, especially for public transport. To set parameters for delivery time windows in the city centre. The Trendsetter measure included:&lt;br&gt;• a feasibility study to determine the optimal area for the environmental zone&lt;br&gt;• information campaigns to ensure support within the concerned districts of the city&lt;br&gt;• actualization of the new environmental zones&lt;br&gt;• measurement of the traffic situation before and after the extension&lt;br&gt;The environmental zone for vehicles over 6 t in Prague was extended to include almost the twice the previous area. This measure has successfully resulted in lighter traffic (in some places a substantial decrease of 85%), and thus less pollution and road deterioration. The traffic has moved onto the transit roads in the inner parts of the city. The evaluation of the extended zones shows significant reductions of energy use and emissions of CO2, NOx and particles, as well as reduction of noise levels. The compliance level in the new part of the zone is roughly 50 %. It was successful because environment considerations were the driving elements behind this concept. The restricted zones were widened at the same time as new parts of the city beltway were opened. The new infrastructure was needed to absorb the traffic that was no longer allowed throw the restricted zones.</td>
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<td>CZ – 02</td>
<td>Ceske Budejovice</td>
<td>Access restriction in the central city zone</td>
<td>City access restriction for vehicles over 6 tons brought a significant reduction of heavy freight transport in the restricted zone. The access for vehicles over 6 tons is only possible with the permission issued by the municipal authority. The objectives are: To allow carriers stepwise transition towards smaller vehicles and, in future, to protect the city centre completely from the heavy freight transport. The municipal authority addressed the companies concerned with the planned changes (the companies which have their place of business in the restricted zone) and allowed them to express their positions. The municipal authority took into account the remarks</td>
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A public meeting took place in order to discuss possible problems with public and to explain and answer all questions and objections. A traffic survey was carried out before and after the implementation of the restricted zone. It showed:

- 11% increase of passenger cars
- 5% decrease of freight vehicles up to 10t
- 22% decrease of freight vehicles over 10t
- 72% decrease of freight semi-trailer units

The measure described has successfully resulted in lighter traffic and thus less pollution, noise and road deterioration. Transport safety improved in the zone. A secondary effect: a peaceable attempt

- to push the companies operating in the central zone to purchase more environment friendly vehicles
- to coordinate the deliveries in the central zone
- to influence the establishment of logistical centres

Future plan involves next stage of the regulation of freight transport. The city access will be charged for vehicles over 6t. Changes in legal rules will be needed before implementation.

DE – 01  Bremen  Lorry guiding network  Main objective of the approach for a lorry guiding network is the bundling of heavy goods vehicles to appropriate roads using a signing system. The lorry guiding network aims to provide targets transport operators and forwarders as well as all delivery transport assistance in finding the best way either through Bremen or to destinations in Bremen. Goods transport should be channelled away from minor residential roads towards major roads. The lorry guiding network is part of the Bremen traffic concept and aims to provide imperative advise to transport operators.

In the meantime there is the third issue of the lorry guiding network which became also part of the clean air act in Bremen. 5000 copies of the lorry map for Bremen have been printed and distributed to forwarding companies and transport operators. New is the electronic version. The presentation of the lorry guiding map shows all major restrictions and advises in Bremen. The roads considered in the approach comprise all categories.

The scheme is developed by the Senator for construction and environment. The Senate is the entity of the federal government of Bremen. The approach was developed in co-operation over all regional authorities (city districts etc.)

The lorry guiding scheme is under permanent development of the Senate. Due to lacking acceptance of single network parts, some streets have been taken out of the network. As accompanying measure driving ban – especially for night hours - for particular roads have be established.

Overall the scheme is implemented since 1997, with continuous development in the approach as well as in the presentation.

DE – 02  Berlin  Full electronic supply and disposal system - Berliner Ver- und...
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<td>Entsorgungszentrum DaimlerChrysler Immobilien GmbH</td>
<td>streets at Potsdamer Platz are free from delivering transport. The supply and disposal centre on the Daimler Chrysler area at Potsdamer Platz is located 15 m underneath Marlene-Dietrich-Platz. The centre is operated by Schenker and the waste logistics operator Alba. For the delivery of goods DaimlerChrysler has a direct access from the Tiergarten tunnel (a newly build city artery). The enforcement concept is that a truck entering the delivery center receives a chip card and operates autonomously within the delivery center. This includes that a gate is selected from the truck driver (no reservation – the gate that is free can be used) as well as the unloading of the trucks. The consignments can be further transported to a cross docking point or to elevators bringing the consignments into the shopping area. Access is provided to these installations again by the chip card. The whole area is observed by video cameras tracking all movements by the truck driver. So the Alba-headquarter, who is managing the centre, can locate the trucks at any time and knows on the status of the delivery. Leaving the delivery center the truck driver turns back the chip card. The delivery center is operated by the Albaserv GmbH, specialised on building management. Delivery hours are from 5:00 to 21:30, overall 170 to 180 trucks enter the delivery area per day. The maximum capacity is at about 260 trucks per day. On the other side the Potsdamer Platz area is free from delivery traffic. An exemption are express services that are still possible on the surface ground. About 180 trucks deliver goods in the underground system every day. Alba disposals 222 tones per month of 22 different sorts of waste. The trucks arrive from 5 a.m. to 9:30 p.m. and are allowed to load or unload for 30 minutes. A complex traffic management with extensive traffic lights controls the traffic. Alba invested round about 400.000 euro and a know how development of two man years in this logistic concept.</td>
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<td>DK – 01 Copenhagen City goods project</td>
<td>The general concept is build on the idea of decreasing the congestion in the medieval city (a zone in the inner city comprising of an area of 1x1 kilometres) and to increase the cargo utilization percent of the heavy vehicles. Furthermore the experiment should help increasing the passability on the roads, by making an city access scheme, where transports, which have a total weight above 2.500 kg, have to fulfil certain regulations in order to obtain access to the inner city. The approach followed consists of these regulations: Transport lorries and vans must be at least 60 % full. The engine in the trucks must be maximum 8 years old; Lorries where only allowed to stop in the medieval city if they had brought a certificate (for which they had to apply for). The city access scheme was build in a way where it was possible to buy three different certificates dependent on the following stats: The Green Certificate: A capacity use of 60% on average should be obtained during a period of three months; The engine in the trucks should be no more than eight years; The use of capacity should be reported to the municipality every three months. The trucks with a green certificate had an exclusive right to use the established loading zones; The price of the green certificate was 325 Dkr (43 €). This certificate was applicable for all of the two year period that the city access scheme lasted. The Yellow Certificate: The yellow certificate worked as a dispensation for those who could not fulfil the demands of the green certificate; The price of the yellow certificate was also 325 Dkr (43 €). This certificate was applicable for six months; The yellow certificate was made in order to give the lorry drivers time to adjust to the standards of the green certificate. The Red Certificate: An option for those who rarely travels to the inner city of Copenhagen; No application had to be fulfilled in order to get the red certificate. The certificate could be bought at petrol stations close to the inner-city area; The price of the red certificate was</td>
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| ES – 01 | Alicante | Traffic Regulation of pedestrians and vehicles | The law establishes: division of the city in areas, classification of the routes, limitations to the circulation and certain activities in the public thoroughfare, regulation of the transport of dangerous merchandise, etc. The basis of the concept implies six different kind of areas (from A to F) for the traffic movement, parking and loading/unloading zones. The zones denominated with letter of later alphabetical order include to the denominated ones with letter of previous alphabetical order or previous. B includes A, C includes A and B, etc. To divide the city in defined areas, establishing time restrictions, loading capacity restrictions and sanctions by the breach of the law. 

The general objective of this regulation is to improve the accessibility and the movement in the city. There is a constant increase of vehicles in the city (of residents, neighbouring towns and other due ones to the tourism) that implies traffic fluency problems. 

There is no evaluation of the concept available yet. |
| ES – 02 | Granada | Controller regulation for loading and unloading activities | This regulation establishes that the activities of loading and unloading must be made by vehicles dedicated to merchandise transport, or those that are properly authorized for it, within the zones reserved for it, and during the schedule established and reflected in the corresponding traffic signals. Vehicles from transport of 12.5 Tm are excluded, these will have to obtain an special authorization.

The municipal council has divided the city in four areas: Zone 1, Zone 2, Zone 3, Zone 4. The authorized maximum limit for each operation of loading/unloading will be of thirty minutes.

The objective of this regulation is to control the activities of load and unloading of all kind of merchandise distribution vehicles, in Granada city. The objective is to reduce the traffic congestion through the reduction of the freight distribution.

Last years, the increase of commercial activities has caused problems of traffic, furthermore, the number of vehicles in the city has increased. This affects particular vehicles and pedestrian traffic, and public traffic. |
| ES – 03 | Valencia | Traffic regulation | What is the general city access concept? How does it function in general?

A perimeter is defined, from 7:00 a.m. to 22:00 p.m. the circulation of trucks with 6 Tm or more is forbidden by all the streets included in the area delimited by the mentioned perimeter.

The companies that need to accede with vehicles of 6 Tm or more into the perimeter will have to present a request with certain |
### Collected case studies – City access restriction schemes

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<td>Documentation. These vehicles will be only authorized if the origin and/or destiny are in the scope of the prohibition application. This by-law establishes a lot of type of permissions and authorizations. New to the concept is the division of the city in defined areas, establishing time restrictions, loading capacity restrictions, loading/unloading places and sanctions by the breach of the law. The objective of this regulation is to control the circulation of certain vehicles and the use conditions of loading/unloading places located in urban routes with the aim of reducing the traffic congestion through the reduction of the freight distribution. Last years, the increase of commercial activities has caused problems of traffic, furthermore, the number of vehicles in the city has increased. This affects particular vehicles and pedestrian traffic, and public traffic.</td>
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<td>ES – 04</td>
<td>Bilbao</td>
<td>Municipal Traffic Regulation</td>
<td>A peripheral belt is defined, by all the streets included in the area delimited by the mentioned peripheral belt, the circulation of trucks with 9.5 Tm or more, it is forbidden. The City council will qualify a schedule of 7:00 a.m. to 11:00 a.m. for the circulation, loading/unloading of merchandise within the peripheral belt, for those vehicles between the 9.5 Tm and the 15 Tm. The circulation of trucks of more than 15 Tm will be made, in nocturnal schedule of 23:00 p.m. to 6:00 a.m. In the authorization will be appear the concrete itinerary and schedules. The object of the present regulation is the regulation of the use of the urban public routes, making the motorized uses compatible pedestrians, rationalizing the use of the parkings, and trying to assure an equitable use such.</td>
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<td>FR – 01</td>
<td>City of Paris (Ile-de-France region)</td>
<td>&quot;Urban delivering&quot; charter</td>
<td>The city of Paris has signed in June 2006 a Charter between local authorities (Paris and the Region Ile-de-France), associations of stakeholders, transporters, shopkeepers,… Started in 2002, that charter has been written in order to simplify the delivery regulation. Before that one, there was time restrictions and size limit (vehicles of more 24 m² could not circulate in the city centre, which made complex the circulation of refrigerated lorries and Post vehicles). That Charter will take effect from January 1st 2007. That new regulation is based on a unique size restriction. Moreover, it integrates an environmental factor. That project has been decided with the possibility for clean vehicles to circulate in a specific time window. The originality of that project is that it offers new ways of thinking by a partnership between public and private actors with a long consultation proceeding. Moreover, a parking disc could be experimented. That one could be a useful to enforce the regulation, in so far as deliveries have to be done in a maximum time of 30 minutes. Specific delivery areas will be adapted and improved for clean vehicles. The time window is composed with 3 periods : - from 7 am to 5 pm, vehicles &lt; 29 m², &gt; 29 m² and &lt; 43 m² (with permanent derogations) are permitted - from 7 am to 10 pm, all trucks &gt; 29 m² and &lt; 43 m² are prohibited - an exception is done for clean vehicles &lt; 29 m² from 5 pm to 10 pm which are the only ones to be able to access to the city centre. &quot;Clean vehicles&quot; include: electric, gas, hybrid vehicles and Euro vehicles defined by the Charter. That project is a new concept of urban freight management. Indeed, although the possibility to restrict access belongs to the Mayor, the new regulation has been written after a large consultation between private and public actors. The new regulation also includes a noise parameter. Indeed, in three years, night deliveries will be only possible for companies having contracted the Charter, so respecting norms. Currently, night deliveries are free for vehicles which size is minor than 43 m².</td>
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Another way for Paris consists in improving enforcement. For the moment, there is no specific technology, just the use of a time-disc. Indeed in 2004, the City of Paris made a survey which shows that delivering areas are used for freight movements just for 6% of the time, while the same area is used as an illicit parking for 47% of the time. Those observations have promoted the municipality to impose a limited period to load and unload: 30 minutes. The time for delivering (30 minutes) corresponds to the time used by deliverymen. If a deliveryman is operating for long-term or sporadic deliveries, he allows to position many times his time-disc. That new equipment would be distributed to transporters and shopkeepers via their representatives. In a second time, the time-disc would be distributed with a charge for admission. The disc will be an excellent key to communicate the in-place regulation (written on its back), and a part of it will dedicated to indicate the Euro norm of vehicle or its propulsion mode.

**Evaluation:** The big consultation in Paris was a very good occasion for private and public partners to work together. However, the municipality met difficulties to find good criteria to restrict the city access. Indeed, since several years, there was a size limit with a time-window not enough adapted, the size limit was not so important which limited the access of a lot of trucks, multiplying the circulation of small vehicles. The decision to impose a 43 m² limit was the object of another consultation between transport operators and the city. The weak point is in the difficulty to apply some rules. Indeed, the new regulation stipulates that only Euro 3 vehicles will be able to access to the city centre from January 1st 2007, Euro 4 from January 1st 2009, Euro 5 from January 1st 2010. That requirement makes complex the renewal of fleets insofar as the lifespan of a vehicle is nearly 7 years.

### Montpellier (Region Midi-Pyrenees)

**City of Montpellier – New regulation access**

On May 2006, the city of Montpellier voted a new freight access regulation for the city-centre. For the first time a local regulation – of a city of more than 100,000 inhabitants - stipulates that the pedestrian precinct is forbidden to access for non-electric vehicles for two periods by day. Indeed the environmental parameter is based on the use of electric vehicle to load and unload in the city-centre. All kinds of vehicles can access to pedestrian precinct from 4.00 am to 9 am, and after 9.00 (and before 10), the access is regulated. Deliverymen have to take a ticket-access to the pay and display machine which is situated at the entrance of the pedestrian precinct and can load and unload till 10.00 am. There is not weight or size limit for that period.

After that one, only electric commercial vehicles (length < 3.50m and width < 1.60m) allow to access from 9.00 am to 12 am and from 2.00 pm to 7 pm. By the fact, as unloading are often organized in the afternoon, only electric vehicles can operate, which creates a specific market for transporters.

The technology used to access is quite easy. Pay and display machines with an intercom are located at the main entrances of the pedestrian areas and deliverymen have to take a ticket to that points. By the fact, it gets easier the control by the municipal police. No specific freight squad is planned, but the municipality wants to improve communication and increase police agents’ awareness of urban freight to improve enforcement.

The novelty / originality of the experience of Montpellier is in the integration of an environmental parameter in the regulation for a specific area (quite equivalent with law emissions zones). Those new rules apply to all vehicles with an engine, two-wheeled vehicles included inside that area.

### Athens

**Blue Zone**

“Blue Zone” is a research program investigating the impacts of truck traffic in central Athens area (Attica). The existing access restriction schemes for truck traffic in central Athens were reviewed. Alternative scenarios on the layout of the Blue Zone were formed and compared, considering all large-scale interventions planned for the study area. All alternatives were based on the time restrictions of...
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<td>holding legislation; their differentiation concerned the boundaries of the Zone and the percentage of heavy vehicles entering it. Scenario 0 represents present situation (with observed moderate enforcement and up to 50 violations per hour in peak times). All new scenarios assume strict enforcement of proposed boundaries. Scenarios were compared based on traffic (average speed for all traffic, delivery times, improvement of network level) and air pollution criteria, making use of a simulation software (SATURN). Scenario 1: new boundaries; Blue Zone smaller than today, triangular perimeter defined by large, central streets, easily memorised by drivers and easily enforced by traffic police. Scenario 2: new boundaries; Blue Zone larger than today, representative of the wider centre of Athens, including areas adversely influenced by truck traffic (e.g. Pagrati at the southeast). Scenario 3: existing boundaries, but with much more intense and effective surveillance of trucks moving towards the Zone. Scenario 4: removal of the Blue Zone. The selection of the most appropriate scenario is not solely based on quantitative terms. Apart from absolute figures or percentages, traffic and environmental concerns should be related to the readiness of society to accept stricter rules. This is why the study eventually proposes Scenario 1 instead of 2, although the latter exhibits more promising performance in speed increase and air pollution reduction in the wider area. Of course, Scenario 1 (if properly applied) should also lead to notable improvement.</td>
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<tr>
<td>HUN – 01</td>
<td>Budapest</td>
<td>Truck total-weight restriction zone</td>
<td>The zone-system introduced in the eighties has the task to regulate the dispersion of freight traffic in time and space, decreasing (and in several critical places even terminating) transit freight transport. Total truck weight restrictions implemented in the zone-system push heavy truck traffic to the low traffic hours in order to establish a possible undisturbed daytime movement on roads. Since 1996 there is a new total truck-weight-limit system regulating goods transport. It consists of a combination of time windows and weight limitations varying between the city districts. Full drive-in restrictions, except with permission, Taxi, buses of the Budapest Transport Limited. The distribution of goods inside these areas is possible only with drive-in licenses. On a joint loading space, the loading is possible during max. 20 minutes. The time set on a special loading disc shows the beginning of the loading. The issuing of the drive-in licences is managed by the Freight Transport Consultancy Office of Budapest (FSzT) on behalf of the Municipality of Budapest. <strong>Experiences:</strong> The zone-system generally functioning well. A general zone-system for the whole city, managed by the Municipality of Budapest would be useful, avoiding the incompatibilities, which sometimes arising because of some restrictions introduced by the districts without a common framework. To the proper function of the formed areas the consequent control activity is essential. Another problem is the loading. Loading places are signed with suitable boards, but the effectiveness of these boards is poor; parking cars occupy the free place frequently. Because of this, loading is carried out using the traffic lane, disturbing the traffic significantly. <strong>Outlook:</strong> The present zone system of the full weight-restriction areas have to be modernised in a phased approach connecting to the development of the ongoing road- and area developments.</td>
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<tr>
<td>IE – 01</td>
<td>Dublin</td>
<td>Commercial Vehicle Delivery Strategy</td>
<td>On the 1st of March 2004, Dublin City Council launched a pilot scheme to improve traffic flow and road safety. The scheme involves the imposition of restrictions on allowable delivery times in the city centre. The restrictions involved the introduction of 9 1/2 hour clearways on strategic routes within in city centre. The clearway hours mean that no on-street deliveries are permitted on the streets highlighted between 7:00 am and 10:00 am and between 12:30 pm and 19:00 pm, except if there are indented loading bays and/or paid parking. Normal deliveries are permitted.</td>
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between 19:00 pm and 7:00 am and between 10:00 am and 12:30 pm Monday to Saturday and all day Sunday. These restrictions were established with the intention to move deliveries to the off peak and early morning.

Businesses receiving goods in a restricted zone may be forced to co-ordinate out of hours deliveries with their distributors and this may involve incurring additional costs to have staff available to receive goods and to ensure adequate security. The additional costs to a small shop that does not usually function between normal opening hours is estimated at €4,400 yearly. This is based on a scenario involving a shop required to receive out of hours deliveries twice a week and to pay the additional overtime wages for staff.

The success of any system based on time restrictions depends on the number of premises willing to receive deliveries after hours. It is relevant to note that 24% of food deliveries within the canals now occur in the early morning and that this trend is likely to grow.

IT – 01 Piedmont

PM10 measures

The main recent important evolutions in Italy concerns the new regulations adopted by some Italian regions giving city access restrictions for LCV for the winter season 2006-2007. The main aim of such measures is to reduce pollutants emissions, particularly PM10.

One important example of the above concerns the Piedmont Region; the table below resume the regulations adopted by the Piedmont Region and published in the "Aggiornamento del piano regionale per il risanamento e la tutela della qualità dell’aria":

<table>
<thead>
<tr>
<th>Type of vehicle</th>
<th>Geographic Area</th>
<th>Period</th>
<th>Time</th>
<th>Further restrictions</th>
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<tbody>
<tr>
<td>LCV (Bz/Ds Euro 0 + Ds Euro 1)</td>
<td>All the region (residents)</td>
<td>From Monday to Friday</td>
<td>8.00 – 12.00</td>
<td>1 Sunday traffic ban in the ZTL</td>
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Similar measures are expected to be adopted in other Regions of north of Italy: Lombardia, Veneto, Trentino Alto Adige, Emilia Romagna, including the cities of Bolzano, Trento, Venezia – Mestre, Verona, Padova, Vicenza, Treviso, Aosta, etc..

NL – 01 Enschede

Access restriction

The inner city of Enschede - including the shopping area - is closed for all traffic between 11 am - 7 am. These opening times are enforced by a bollard system. This system functions with an access pass system combined with license plate identification (by video).

This method of identification is used solely for trucks and taxi cabs.

The municipality of Enschede is using a bollard system to close the city centre for all traffic. Within the delivery window there is no control of the traffic. But to visit the city centre outside the delivery window an access pass is needed. Such exceptions are catering deliveries and operators with more than 15 daily deliveries. These can buy a pass at the local government offices. This pass will be linked to a firm name or license plate number and can only used once per 30 minutes to enter the restricted area. Road signs at the edge of the city centre combined with warning signs next to the bollards inform drivers about the access restriction scheme.

The first results of this relatively new scheme are promising. In the old situation the city centre was closed for all traffic between 6 pm and 7 am. On a normal day about 600 vehicles travelled through the inner city. With the introduction of the bollard system this amount was reduced by 40%. Outside the delivery window the city centre of Enschede is almost free from vehicles. The coordination of delivery time windows and systems between neighbouring cities were a crucial success factor for the operators.

NL – 02

On the 24th of March 2006 the national government, a number of major municipalities and transport associations signed a national
covenant concerning environmental zones. This covenant should lead to reduced air pollution and traffic noise within the city (centres). One of the means to achieve this goal is the creation of environmental zones. New in this approach is that the national and local government are working together with transport associations to create a framework for implementing the environmental zones. This approach is similar to the approach used in Sweden. Like in Sweden the basic requirement for entering the Environmental Zones are:
- heavy-duty diesel vehicles should be younger than 8 years (determined by the vehicle registration).
- Vehicles older than 8 years, depending on their age, can be either exempted from the regulations or banned in the Environmental Zones.
- Vehicles of a certain age have to be retrofitted with an approved emission control device in order to receive an exemption and to be allowed to travel in Environmental Zones.

For this moment no data about the effects of environmental zones in the Netherlands are available yet.

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<th>Code</th>
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<th>Name of concept</th>
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<tr>
<td>PL – 01</td>
<td>Warsaw</td>
<td>Strategy of development of the City of Warsaw till 2020, Program 1.6.4. Improvement of road traffic safety and organisation</td>
<td>The strategy assumes realization of 3 strategic goals which will contribute to improvement of living conditions in Warsaw. Among many activities to be realized within the strategy, there is one connected directly with city access restrictions in freight transport: The following actions will be taken to decrease the burdensomeness of freight transport: Special parking zones for delivery cars; No-truck-traffic zones; Limiting pollution, noise and vibrations. The strategy is not finally developed and needs a higher degree of detailing. It is foreseen to be put into practice until 2020.</td>
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<tr>
<td>PL – 02</td>
<td>Warsaw</td>
<td>Integrated System of Traffic Management</td>
<td>The Integrated System of Traffic Management (ISTM) is defined as a collection of methods and means of operative influence on traffic on the basis of information on actual state of traffic and environment. The aim of the ISTM aims an optimal flow of goods and people. Means: traffic control, information system about traffic situation – changeable signs, weather information, weather station and tables, monitoring and traffic control in tunnels, priorities for public transport, priorities for special vehicles, data archivization. There is no city access specific technical system for freight transport planned.</td>
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</table>
| PL – 03 | Wroclaw | Access scheme | There are some examples of solutions connected with freight transport in the City of Wroclaw. The Old Centre is a closed area. Reduction of traffic within the zone is meant to prevent he centre from being damaged by heavy vehicles and to make it more friendly for inhabitants. These regulations are in force within the area of the Old City Centre:  
  ▪ There are zones of limited traffic for cars with a tonnage of more than 3.5 tons.  
  ▪ There are special zones of limited traffic for delivery cars, i.e. from 6.00 am to 9.00 am and from 6.00 pm to 10.00 pm.  
  ▪ Charging a fee for entering a “no traffic zone”.  
  ▪ The places of loading/unloading operations are signed with special road signs with an information plate.  
  The abovementioned restrictions are enforced by municipal police. The Old City Centre in Wroclaw is controlled by City Guards in two ways. Firstly, it is Video Enforcement which uses pictures as a piece of evidence in case of offences against existing regulations. There are patrols of at least two City Guards walking round the area and controlling it directly. There are also fees charged for entering the “no traffic zone”. Vehicles willing to have access to the Old City Centre are obliged to |
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<tr>
<td>SLO – 01</td>
<td>Maribor</td>
<td>Management of Pedestrian Zone</td>
<td>The main driving factors for the new concept were:</td>
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<td>A large number of vehicles driving through the city centre, Low safety in pedestrians (warnings made by the traffic experts), Residents were not satisfied with the old system, A large number of vehicles with no entry permit in the city centre (human factor), A large number of vehicles parked on public surfaces.</td>
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<td>In general the city access concept is based on physical restriction. A valid RFID card has to be introduced to the card reader. The card reader is placed on a pillar next to the sink cylinder. The cylinders are connected through a computer network, which checks validity of the card. If the card is valid, the cylinder will sink and the user can pass the entry-exit spot.</td>
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<td>The concept works based on the delivery windows, which are scheduled from Monday to Friday between 6 and 9 a.m., and 7 and 10 p.m. Delivery windows on Saturdays, Sundays and holidays are scheduled between 1 and 3 p.m.</td>
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<td>In addition, the concept includes a limitation of weight for freight transport. Since the maximum allowed weight of the vehicle entering the city zone is 3.5 tonnes, all vehicles exceeding that limit may enter the zone only by a special permit. The main reason for introduction of the weight limit for heavy duty vehicles was their negative impact on buildings and pavement in the city centre.</td>
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<td>Entry to the city centre is free for vehicles used by residents, intervention vehicles and disabled people’s vehicles. All other vehicles have to pay an entrance fee. In Maribor, the entrance fees are set as follows: (EUR)</td>
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<td>Yearly entrance fee; vehicles up to 3.5 t (perishable goods)</td>
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<td>Daily entrance fee; vehicles exceeding 3.5 t</td>
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<td>Daily entrance fee; personal cars</td>
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<td></td>
<td>Daily entrance fee; vehicles up to 3.5 t, without regular delivery permit</td>
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<td>FINE (by a commenced hour exceeding permitted 40 minutes)</td>
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<td>Under the new concept, there are three entry-exit spots created and equipped by the sink cylinders. Therefore, vehicles may enter and exit only through the nearest entry-exit spot, which enables achievement of the concept of the minimum possible vehicle-kilometres driven through the city centre. There has been some public pressure to change the existing situation.</td>
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<td>When observing the general benefits, a conclusion may be made that the shop owners and service providers have not sufficiently benefited from the concept. They still have problems with the limited time access to their premises. However, they have benefited from the new concept to some extent, since it provides them with them faster deliveries. The main beneficiaries seem to be the pedestrians in the city centre since the amount of traffic is reduced and they enjoyed better safety.</td>
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<td>Code</td>
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| SLO – 02 | Ljubljana    | Management of City Zone             | The main objective of the city access concept was: To decrease a large volume of traffic (traffic jams) in the city centre; To decrease the related negative effects (air and noise pollution).  

The entry to the city zone in Ljubljana is protected by sink cylinders. The concept of the sink cylinders is combined with the concept of the delivery window where the cylinder is sunk (between 6 and 9:30 am). The entry to the city centre any time outside the delivery window is possible only for exceptions (residents, intervention vehicles, etc.) with a special allowance granted by the city Traffic Office and the use of a valid RFID card. (see Project SLO-01, Maribor)  

The concept is also combined with a weight restriction for delivery vehicles up to 3.5 t. For vehicles exceeding 3.5 t, a special permit has to be granted (by the Traffic Office).  

Any entry outside the regular delivery window is possible upon payment of the entrance fees: (EUR)  
Annual entrance fee; vehicles up to 3.5 t (within delivery window: 6 - 9:30 a.m.) 84  
Annual entrance fee; vehicles up to 3.5 t (outside delivery window) 415  
Annual entrance fee; vehicles between 3.5 and 5.0 t 290  
Annual entrance fee; vehicles between 5.0 and 10.0 t 415  
Annual entrance fee; vehicles exceeding 10 t 830  
Daily entrance fee; personal cars 21  

The most important results include reduced volume of traffic, air and noise pollution that may be observed in the city centre. The concept has brought no benefit for the shop-owners and service providers. They usually complain about restricted access to their premises. Some are concerned that this restriction might have significant negative effects (it could lead even to stagnation of the city zone). Benefits for the residents include: reduced volume of traffic, air and noise pollution and an increased level of pedestrian safety. |
| UK – 01 | London       | London Lorry Control Scheme         | The London Lorry Control Scheme is an environmental measure from 1989 to protect Londoners against the disturbance caused by lorries over 18 tonnes at night and at weekends. It minimises the impact of lorries especially on residential areas and minimises through traffic but does so in a way that allows London’s economic activity to continue.  

**Hours of operation** - lorries are banned during the most environmentally sensitive times. The “controlled hours” run from 9pm to 7am from Monday to Saturday and from 1pm Saturday through to 7am Monday.  

**Ban area** - the Scheme applies to the whole of the Greater London area so that all non-London traffic is diverted onto the M25. There is an “exempt road network” which is outside the ban. This consists of the North and South Circular Roads, major radials leading to the above, and some continuing further towards central London.  

**Weight limits** - the lorry weight limit for the ban is set at over 18 tonnes and is intended to cover the heaviest and noisiest lorries whilst taking into account recent legislation.  

**Exemptions** - exemptions are provided for those lorries, which have essential business in London during the controlled hours. Lorry operators have to apply for a permit setting out the circumstances for the exemption. Some 55,000 permits are issued annually for  |
UK – 02 London London Congestion Charging System

A congestion charging scheme was introduced in central London in February 2003. The priority of this scheme is to reduce traffic congestion and the related environmental impacts. Any surplus revenues generated are invested in transport in London. The zone includes the whole of the City of London (London’s financial district, and the West End (the city’s main commercial and entertainment centre). The size of the area covered by the scheme is approximately eight square miles (approximately 21 square kilometres).

All drivers entering the charging zone were initially charged £5 (approx. 7.50 Euro) a day to drive within the zone between 07.00 and 18.00, on Mondays to Fridays. This was increased to £8 (approx. 12 Euro) in 2005. There is no charge at weekends or on public holidays. Several exemptions and special tariffs are available for special transport vehicles.

Drivers or vehicle operators pay to register their vehicle registration number on a database for journeys within the charging zone during charging hours for single or multiple charging days. Receipts (or receipt numbers) are available and on occasion are vital for proving payment of the charge for the correct vehicle on the date of travel. The drivers are not required to display a licence. The registration numbers of these vehicles are entered into a database. The number plates of vehicles entering or moving within the central zone are observed by a network of 700 fixed and mobile cameras with Automated Number Plate Recognition systems (ANPR). There are no toll booths, gantries or barriers; drivers do not have to stop. The number plates collected by the cameras are then be checked against the registration numbers of those who have paid. The registered keeper of any vehicle identified within the charging zone without the congestion charge having been paid (unless exempt/discounted) is liable to a penalty charge.

Failure to pay the congestion charge or pay or register correctly for a discount results in a PCN of £100 (approximately 160 euros) being issued to the registered keeper of the vehicle as supplied by the DVLA. This amount is reduced by 50% for prompt payment within 14 days. Failure to pay the PCN within 28 days results in the amount due being increased to £150 (approximately 240 euros).

Every recipient of a PCN has the right to challenge its issue through a written representation to TfL. A representation must be made within 28 days of the date of receipt of the PCN.

**Evaluation:** Since the introduction of the congestion charging scheme, the total volume of traffic entering the charging zone during charging hours has fallen by approximately 18% against pre-charging levels in 2002.

TfL has calculated that there has been a 30% reduction to delays inside the charging zone during charging hours compared to pre-charging conditions in 2002. Bus patronage has increased sharply since the scheme was introduced.

Typical delay values in the charging zone in 2005 were 1.8 minutes per kilometre, compared with 1.6 minutes per kilometre previously reported and 2.3 minutes per kilometre for representative conditions before the introduction of charging in 2002.

Results from TfL research suggest that congestion charging has had a broadly neutral impact on overall business performance in the
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<tr>
<td>UK – 03</td>
<td>London</td>
<td>Low Emission Zone</td>
<td>To improve air quality in London - which is currently among the worst in Europe - the Mayor is proposing to designate Greater London as a Low Emission Zone (LEZ). A LEZ would aim to reduce air pollution by discouraging the most polluting vehicles from driving in Greater London. These are generally older, diesel-engined lorries over 3.5 tonnes, and buses and coaches. The Mayor is considering including the heavier, more polluting light goods vehicles (LGVs) from 2010. Cars would not be included in the LEZ. The emission standards for the LEZ should reasonably encourage the upgrade or replacement of diesel-engined heavy vehicles to Euro III for PM10 by 2008 and to Euro IV for PM10 by 2012. The hours of operation are proposed to be all times. The Mayor will need to publish Revisions to his Transport and Air Quality Strategies in order to introduce the LEZ. Operators wishing to bring vehicles into the Zone that did not meet the specified emissions standards for the LEZ would be required to pay a substantial charge. Operators that do not pay the daily charge and whose vehicles are identified as not meeting the proposed emission standards would have to pay a penalty charge. Vehicles which meet the proposed emission standards would be able to operate in the LEZ without paying the charge. The charge would be set at such a level as to encourage operators to modify or replace their vehicles to comply with the proposed LEZ standards. To encourage compliance, the level of the charge and associated penalties would need to be set at a far higher level than that for the Central London Congestion Charging Scheme. It is proposed that the LEZ would be enforced using Automatic Number Plate Recognition (ANPR) cameras. The estimated cost of the LEZ scheme to TfL is between £125 million and £130 million, from development of the scheme until 2015/16. This range reflects different scenarios around how operators would respond to the proposed LEZ, and the scope and cost of services from DfT. There would also be costs to operators from complying with the LEZ. The costs to operators of the core LEZ scheme are estimated as being between £195 million and £270 million (approximately 310 – 430 million euros) for the period to 2015/16. The proposed LEZ is not designed to be a revenue generating scheme and the revenues would not offset the costs of implementing and operating the scheme. Air quality improvements would be maximised by high levels of operator compliance. There would, however, be some revenues from the LEZ through charge and penalty charge payments. Outlook: The Mayor has considered the results of Transport for London’s public consultation (which took place at the beginning of 2006) and has agreed to make the recommended changes to his Transport and Air Quality Strategies to allow for the scheme to be established. The next step will be a further consultation later this year (2006) on a draft scheme order which would set out the details of a proposed Low Emission Zone. As a result of the public consultation the Mayor is considering delaying the introduction of the standard of Euro IV for PM10 in 2012 rather than in 2010.</td>
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<tr>
<td>UK – 04</td>
<td>London</td>
<td>Parking and loading enforcement in London</td>
<td>Loading and parking has become a fundamental transport problem in London in recent years. The main reason for its rise in importance is that the demand for loading and parking provision exceeds the supply. This has resulted in growing competition between road users</td>
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<td>Code</td>
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<td>by local authorities</td>
<td>for loading and parking space, as well as illegal loading and parking activity causing traffic flow disruption. The parking attendants issue penalty charge notices (PCNs) when parking and loading offences have been committed. A person receiving a PCN has two options: either to pay the fine or to challenge the PCN. Parking and loading enforcement is also carried out with the use of closed circuit television (CCTV). Evaluation: Many companies carrying out goods and service vehicle operations in London have been highly critical of the quantity of Penalty Charge Notices (PCNs) issued to their vehicles when working in London in recent years. In some cases they argue that the PCNs have been issued to vehicles loading/unloading legally; in other cases they argue that it was not possible to load/unload legally given the lack of on-street loading provision. Such restrictions can result in: • Goods vehicle drivers having to park a long way from the point of delivery and then take longer to carry out the delivery • Freight companies receiving substantial fines when there is no alternative but to deliver at the time required by the receiver • Goods vehicle operators having to change the times at which to deliver in order to fit in with the loading/unloading time restrictions in force. Several actions have now taken place as a result of the problems caused to freight transport companies by the level of PCNs being handed out by parking attendants for loading and unloading offences:</td>
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<td>UK – 05</td>
<td>Windsor</td>
<td>Windsor Heavy Commercial Vehicle Cordon Scheme</td>
<td>The Windsor Cordon was introduced in 1979 and is a major scheme controlling the routes which lorries can use in the Windsor Area. It applies to vehicles which have a gross weight exceeding 17 tonnes. The scheme is made up of 13 separate prohibitions on roads in Windsor. If these different prohibitions are joined by an imaginary line it forms a cordon, which gives the scheme its name. Each prohibition is approximately 50 metres in length and applies to vehicles travelling in both directions. Operators who frequently make local deliveries in the Windsor area may apply for exemption permits for their vehicles if no suitable and reliable routes are available which avoid crossing the cordon. Some types of vehicle are exempt from the scheme and do not require a permit. These include: tankers constructed or adapted for transporting petroleum spirit, fuel oil or milk, agricultural tractors, trailers and all vehicles directly associated with the agricultural industry, breakdown vehicles, and vehicles constructed for transporting ready mix concrete. Weight restrictions can be imposed for structural or for environmental reasons. It is a legal control on vehicle over certain weights or width, primarily goods vehicles, on certain roads and routes. The restriction prevents large vehicles from using inappropriate roads, routes and areas. The Windsor Cordon was introduced for environmental, safety and structural reasons. The council has put in place a strategic and local lorry route network that provides specific routes to and from lorry destinations and generators throughout the Borough. Enforcement of the scheme is a Police responsibility. However, the Police have limited resources to enforce this type of restriction. Restrictions on goods vehicles cannot be used if there is no suitable alternative route for displaced goods vehicle traffic.</td>
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<tr>
<td>UK – 06</td>
<td>Heathrow Airport London</td>
<td>Heathrow Retail Consolidation Centre</td>
<td>This scheme provides a retail operation for supplying all shops at Terminals 1, 2, 3 &amp; 4. All deliveries (except newspapers and high value / high insurance items) are made to a consolidation centre outside the airport perimeter where inbound deliveries are security checked (scanned) and sorted by delivery address into sealed roll cages and then delivered to a regular schedule. Some low value</td>
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### Code | City/Region | Name of concept | Description of concept
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UK – 07 | Westminster | Restriction of Goods Vehicles Traffic Order | A length restriction prohibits vehicles over 40 feet (12.2 metres) in length from using the central area of London, bounded in Westminster by the Inner Ring Road, the river and Westminster’s eastern boundary. No goods vehicles can enter the restricted area at any time if the overall length of the vehicle and the forward or rearward projection of its load exceeds 40 feet (12.2 metres). Police and the local authority can give permission for vehicles exceeding 40 feet to enter the area. Vehicles over 40 feet can still enter the area for the purpose of loading and unloading at sites in the restricted area that are not accessible in any other way. Emergency and street servicing (e.g. street cleaning and street lighting) vehicles are exempt from the restriction. The restriction is shown on road signs at entry points to the restricted area. The scheme has resulted in a reduction in the number of heavy goods vehicles over 40 feet in length in the restricted area. Westminster Council has continued applying this restriction as one of the its traffic policy measures to improve air quality, reduce the emission of greenhouse gases and to minimise noise disturbance to residents and workers. However, data about the size of this reduction in vehicle trips is not available.

ZA – 01 | Pretoria/Gauteng | Central Business District | The Tourism Route is a project initiated by the City of Tshwane together with the City Improvement District (CID – a body that represents business owners). It is a pedestrian route situated in the inner historical city, on a section of the old main street of Pretoria (Church Street), up to the old main square (Church Square). The route is managed by a contracted security company, whose security personnel control the chain gates and are assisted by the use of CCTV. No through-fare is allowed, only vehicles with access cards and authorised vehicles, such as official vehicles (e.g. CID, SA/Metro Police, Municipality cars) are permitted access to the restricted area. (Unauthorised parked vehicles are towed away and get fined.) Business owners and workers with private vehicles make use of basement parking, while shoppers who need to pick up heavy items have to produce a receipt of purchase to security personnel. For deliveries to informal traders within the area, access cards have
General objectives of the initiative are: To reduce congestion in the area; To provide an atmosphere that is attractive for tourists and shoppers. The municipality and business owners of the area realised that customers where opting for new malls outside the central city and decided to introduce this project in order to re-attract customers back to this area, where also an increased crime rate was observed.

The strategy was initiated by the LED of the City of Tshwane together with the business owners around the restricted area.

The experience gained is that when unnecessary vehicles (including delivery vehicles) are kept away from the route, the turnaround time of delivery vehicles increase, which results in improvements in supply chain performance. Unnecessary vehicles cause congestion, which results in delays. Increased number of customers and tourists was observed. Delivery is easier and faster and delays due to congestion are minimised. Free movement and reduced fear of being robbed, due to the presence of the security guards controlling access to the area.

### ZA – 02 Pine Town/Durban

**Restricted access to HGV in morning peak**

- **Description of concept**: 6-8 km before Field’s Hill at St Helier, from 06:30 all heavy trucks (exceeding 25t GMV) are parked to the left in a special lane; and then released back into the traffic in batches after 08:00. Additionally, the necessary warning signposting and appropriate policing has been implemented. It is a Kwa Zulu Natal (KZN) provincial Department of Transport (DOT) concept and traffic policing is handled by Ethekwini Metropolitan Municipality Transport Authority.

- **Objective of the 2005 implemented concept**: to reduce congestion and delays caused by heavy vehicles during peak hours and to reduce accidents caused by trucks going downhill. With the recent growth experienced in the Pinetown area, many additional vehicles are accessing the roads, and consequently traffic volumes are now approaching saturation.

- **Experiences**: Traffic still does slow down to approximately 20km per hour at times, but seldom to a stand-still as had often happened previously. Some public expectation persists that traffic flow should not slow down during peak hours, however, due to the fact that the road is flowing at capacity – even without the trucks – delays must be expected. A third lane needs to be added to the Durban bound carriageway (as has been done to the up bound carriageway) otherwise the level of service will deteriorate with time. The delays which were caused by heavy trucks have been reduced, resulting in decreased travel time.

### ZA Pretoria

**Road Safety Project**

- **Description of concept**: The project entails regulating large freight vehicles to use the specially designed heavy vehicle entrances to the Pretoria Central Business District (CBD) namely:
  - via the Ben Schoeman freeway into Potgieter Street - a major street carrying large volumes of traffic from areas in the south such
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<th>Code</th>
<th>City/Region</th>
<th>Name of concept</th>
<th>Description of concept</th>
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<td>as Johannesburg and Centurion to the Pretoria CBD,</td>
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<td>• Via the N1 and N4 highways into Boom Street - carrying large volumes of traffic from other provinces such as Limpopo and the North West.</td>
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<td>Firstly, a compulsory truck stop has been built in the north at the top of Potgieter Street; the purpose of which is to force trucks to decelerate and to help drivers to determine if the brakes are functional before entering the inner city.</td>
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<td>Secondly, a height restriction barrier was implemented in the road next to the truck stop to force trucks into truck stop. The barrier consists of a gantry with chain hanging down so that trucks attempting to pass in the wrong lane would be damaged without risk to other vehicles.</td>
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<td>Thirdly, the introduction of a speed reduction for heavy vehicles from 60 km/h to 40km/h to prevent overheating brakes and runaway trucks.</td>
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<td>Fourthly, the introduction of speed monitoring cameras for both heavy and light vehicles at the top of Potgieter Street to encourage drivers to adhere to road rules.</td>
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<td>The aim of the project is to keep other entrances to Pretoria completely free of heavy vehicles, to alleviate other streets from heavy vehicle traffic (congestion) and to avoid catastrophic accidents caused by runaway trucks (supervision of freight transport and safety)</td>
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<td>The introduction of dedicated city entrances for heavy vehicles in combination with the related policies and implementation measures, resulted in decreased heavy vehicles accidents and fewer road closures to clear accident scenes, which in turn lead to better traffic flow and therefore fewer delivery delays for business. For service providers the measures mean fewer vehicle accidents and speedier turnaround times, due to the use of dedicated trucks lanes.</td>
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