

# Sustainable solutions for logistics and urban freight delivery in the Alpine region

Alpine Convention  
Working Group  
“Transport”  
Sub-group  
“Soft Mobility”





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## ACT OF TRANSMISSION

### SYNTHESIS REPORT “Sustainable solutions for logistics and urban freight delivery in the Alpine region”

The subgroup “Soft mobility” has agreed the final text of the synthesis report on “Sustainable solutions for logistics and urban freight delivery in the Alpine region”, on the basis of the Mandate given to the Working Group Transport of the Alpine Convention.

#### The following experts participated in the preparation of the document :

**Austria : Veronika Holzer** – Bundesministerium für Land-und Forstwirtschaft, Umwelt und Wasserwirtschaft (BLMFUW) – Federal Ministry of Agriculture, Forestry, Environment and Water Management ; **Ernst Lung, Grubert Wolfgang** – Bundesministerium für Verkehr, Innovation und Technologie (BMVIT) – Federal Ministry for Transport, Innovation and Technology; **Christian Rankl** – Amt der Vorarlberger Landesregierung – Office of the Vorarlberg State Government;

**France : Daniel Chemin (Coordinator)** – Ministère de l'Écologie, du Développement Durable et de l'Énergie (MEDDE) – Ministry of Ecology, Sustainable Development and Energy – France, **Céline Avril, Laura Clergue, Thomas Plantier** – Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement (CEREMA) – Centre for Expertise and Engineering on Risks, Urban and Country Planning, Environment and Mobility – France

**Germany : Inga Ahrens** – Bundesministerium für Verkehr, Bau und Stadtentwicklung (BMVBS)- Federal Ministry of Transport, Building und Urban Development ; **Harry Seybert** – Bayerisches Staatsministerium für Wirtschaft, Verkehr, Infrastruktur und Technologie (StMWIVT) – Bavarian State Ministry of Economic Affairs, Infrastructure, Transport and Technology ; **Stefan Marzelli, Claudia Schwarz** – Institut für Umweltplanung und Raumentwicklung (IFUPLAN) – Institute for Environmental Planning and Spatial Development ; **Karl Fischer, Nicola Neumeier** – LKZ Prien GmbH (LKZ) – Logistic Competence Center Prien.

**Italy : Paolo Angelini** – Ministero dell'Ambiente e della Tutela del Territorio e del Mare (MATM) – Ministry for the Environment, Land and Sea ; **Massimo Santori** – Centro Studi sui Sistemi di Trasporto (CSST), Transport Services Study Center ; **Raffaele Vergnani** – Accademia Europea di Bolzano (EURAC) – European Academy of Bolzano ;

**Slovenia : Zlatko Podgorski** – Ministrstvo za Infrastrukturo in Prostor (MZIP) – Ministry of Infrastructure and Spatial Planning –

**Switzerland : Ueli Balmer ; Franziska Borer Blindenbacher, Stefanie Pfändler** – Bundesamt für Raumentwicklung (ARE) – Federal Office for Spatial Development ;

## **1. Mandate given by the Standing Committee of the Alpine conference and conduct of the study**

During the 51st standing committee of the alpine convention, held in Milano on November 20th-21st, 2012, the mandate of the Transport Group for 2013-2014 was adopted.

The new mandate, to be accomplished before the 13th Alpine Conference, asked the Alpine delegations to further investigate on the issue of logistics and urban freight delivery, and to analyse actions, experiments and projects, in alpine towns, throughout the different countries, and to report measures and solutions adopted in the same realities, aiming at improving urban efficiency and quality of life for residents.

The text of the Mandate regarding the related point is here reported, as follows:

*“After completion of the ongoing work on local passenger transport, including its urban and interurban aspects, the issue of « Logistics and urban freight delivery » is next on the agenda. This specific discussion will explore, in particular, the measures taken or planned by Alpine towns to improve both urban efficiency and quality of life for residents.”*

The activities of the “Soft Mobility” subgroup, regarding logistics and urban freight delivery, started in occasion of the 26th meeting of the Working Group Transport (Feb 5th 2013, Paris). This meeting was the occasion to clarify the objectives, to set out the key stages in the study and to agree on the method to be used. During the second meeting, (May 29th 2013, Paris), the guidelines were approved and a general road-map was commonly agreed. It was decided to focus on examples from the Alpine area, but not to overlook other initiatives if they can be transferred. A consensus was found to exclude the long distance supply chains.

The third (Dec 12th 2013, Wien) and fourth (May 27th 2014, Paris) meetings were the occasion to present and discuss the case studies sent by the delegations of each country. During summer, each partner provided contributions to improve the conclusions and recommendations of the transnational report. The final draft was examined during the 30<sup>th</sup> meeting (Sept 8<sup>th</sup> 2014, Paris) of the Working Group Transport.

## 2. Introduction

Urban freight transport is becoming more and more important in Europe. On the one hand it has negative impacts on the environment and society and on the other hand it is getting more and more costly and less reliable.

The volume of freight transported in conurbations has risen sharply in recent decades. This is due to:

- Changes in household consumption behaviour, with the amount of household budgets assigned to consumption tripling in the last 50 years.
- Changes in management and distribution practices, such as reduced stock and tighter flow organisation.
- International division of manufacturing processes, with more specialised and polarised activities and outsourced production facilities.
- Increases in the number of individual consignments, with the average number of consignments per capita doubling between 1988 and 2004.
- The growth of e-commerce, with the total turnover of e-commerce businesses increasing more than five-fold between 2005 and 2012.

In urban areas, freight transport systems create a variety of negative economic, environmental and social impacts. These include:

- Economic impacts: congestion, inefficiency, and resource waste.
- Environmental impacts: pollutant emissions including the primary greenhouse gas carbon dioxide, the use of non-renewable fossil-fuel, land and aggregates, and waste products such as tyres, oil and other materials.
- Social impacts: the physical consequences of pollutant emissions on public health (death, illness, hazards, etc.), the injuries and death resulting from traffic accidents, noise, visual intrusion, and other quality of life issues (including the loss of Greenfield sites and open spaces in urban areas as a result of transport infrastructure developments)<sup>1</sup>.

The Alps are particularly affected by changes in climate. The Alpine ecosystem reacts sensitively to a warming climate hence the necessity to act on urban logistics. Traffic noise is increasing and mountainous region can affect and worsen noise propagation. The European environmental noise directive underline the importance to integrate the commercial transport into planning processes. The topographical conditions and the climate conditions in the Alps impede the scattering of local air pollution (CO, NOx, HC, particles).

Urban logistics is defined as "the art of transporting freight into, out of, and within a city in the most effective manner possible"<sup>2</sup>. This process involves a variety of stakeholders, often with opposing needs and objectives, such as public authorities, businesses, institutions and local residents. Urban logistics includes freight delivery, and also other activities such as the organisation of transport flows, within either a company or a given geographical area, and optimisation of these flows.

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<sup>1</sup> BESTUFS (2007) Good Practice Guide on Urban Freight Transport

<sup>2</sup> Laboratoire d'Economie des Transports (LET), Mesurer l'impact du transport de marchandises en ville, 2001

### 3. National framework

Knowing the legal framework and the organization of local authorities is a prerequisite to any comparative work and to any transposition to other towns.

#### 3.1. *Austria*

##### **Gesamtverkehrsplan für Österreich” (Mobility Plan for Austria):**

In Austria general objectives for freight transport are included in this document published by the federal ministry for transport, innovation and technology in December 2012.

The Austrian transport policy has a clear strategy of shifting freight transport from road to rail. In the year 2025 a share of 40% of freight transport (ton-km) should be transported on rail. This will be achieved by improving the rail infrastructure, specifically on the main axes. The truck tolls are organized in accordance with EU legal requirements.

An additional approach is promoting rail transport services, focused on forms of rail freight, which are exposed, due to their cost structure, to a strong competition to road haulage. The financial aid contributes to cover additional costs in rail freight, which do not occur on roads.

The European Commission has declared these by Austrian aid programs as compatible with the internal market. The actual funding agreements of the national government, represented by the ministry for transport, innovation and technology with the various railway companies last until the end of 2017 and include rail freight services in the single wagon-load traffic, unaccompanied combined transport and providing rolling road connections. A further important program is the support of the construction of railway sidings.

Especially direct rail connections to /from factories and freight distributions centres discharge urban streets from heavy freight traffic by trucks.

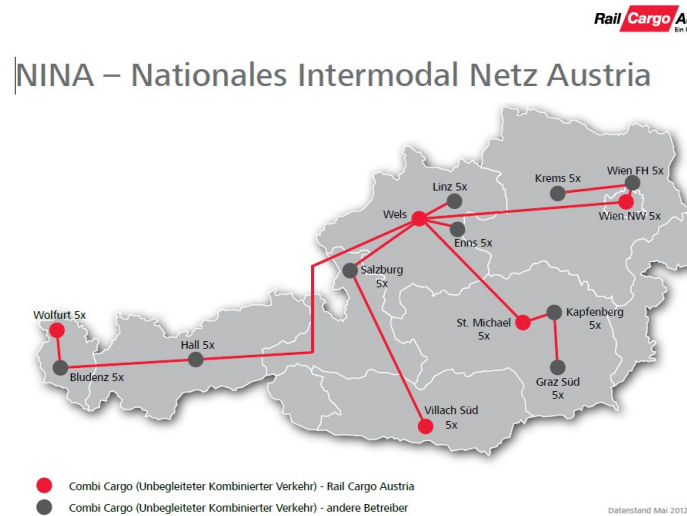
##### **Financial support programs for logistics**

An important approach to develop and to implement sustainable city logistic concepts in Austria are national (financial) support programs.

##### **Introduction : The current situation in Austria**

In Austria classic examples for city logistics with a central freight distribution centre, provided by municipalities or by private public partner ships are rather an exception (see case studies Klagenfurt, Cargo Center Graz), but on the level of companies, strategies and a lot measures to reduce costs and negative environmental impacts of freight transport in urban and suburban areas were already successfully implemented.

In Austria the rail freight company Rail Cargo Austria provides under the brand “EC Logistics” logistic centres in whole Austria, some of them are situated in the Alpine Convention territory and some others near to the Alps and service also Alpine regions (see map below):



### *Lager means storage*

Source: [http://www.ec-logistics.net/en/Customer\\_Service/Logistics\\_Center/index.jsp](http://www.ec-logistics.net/en/Customer_Service/Logistics_Center/index.jsp)

The logistic centres offer European-wide door-to-door universal services for transporting parcels, general cargo and part-load consignments. Numerous additional services, such as cash on delivery and weighing, are also available. Examples for services are the branches pharmaceuticals, food and other consumer goods, spare parts and wine<sup>3</sup>

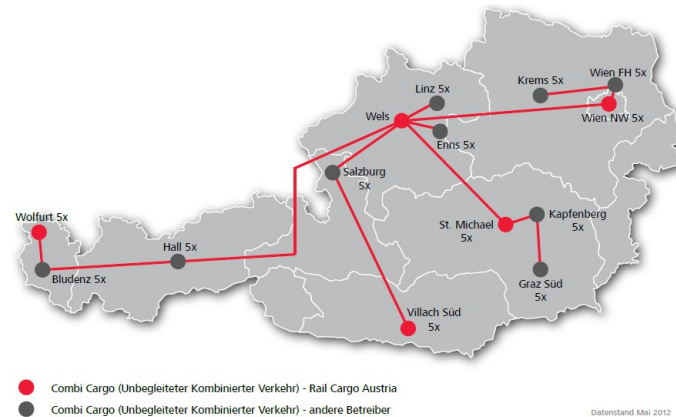
Moreover, some combined transport terminals have also an important function for urban and regional logistics (presented examples in this report: Hall in Tyrol and Cargo Center Graz).

Rail Cargo Austria provides the network of combined transport trains with daily services (most of the over-night) called NINA (National Intermodal Network Austria). The mentioned terminals, which are used by the food supplier chains are included in this network. The following map gives an overview to the combined transport network and the terminals in Austria:

<sup>3</sup> See at <http://www.ec-logistics.net/de/Branchen/index.jsp>.



## NINA – Nationales Intermodal Netz Austria



Source:

[http://www.railcargo.at/en/Logistics\\_services/Intermodal/Combi\\_Cargo/NINA/index.jsp](http://www.railcargo.at/en/Logistics_services/Intermodal/Combi_Cargo/NINA/index.jsp)

For the future development of efficient and environmentally sustainable development of urban and regional logistics, national supporting programs for research, development and implementation of measures are important. These programs contribute also to improve efficiency of urban and regional freight logistics.

### Klima:aktiv mobil

The successful program klima:aktiv mobil is financed by the Austrian Ministry for Environment. The program started in 2004 and has the main objective to reduce the greenhouse- gas emissions in Austria.

A main target group of the program are companies, especially in the construction sector and in transport.

Supported measures in the field of freight transport are e.g.:

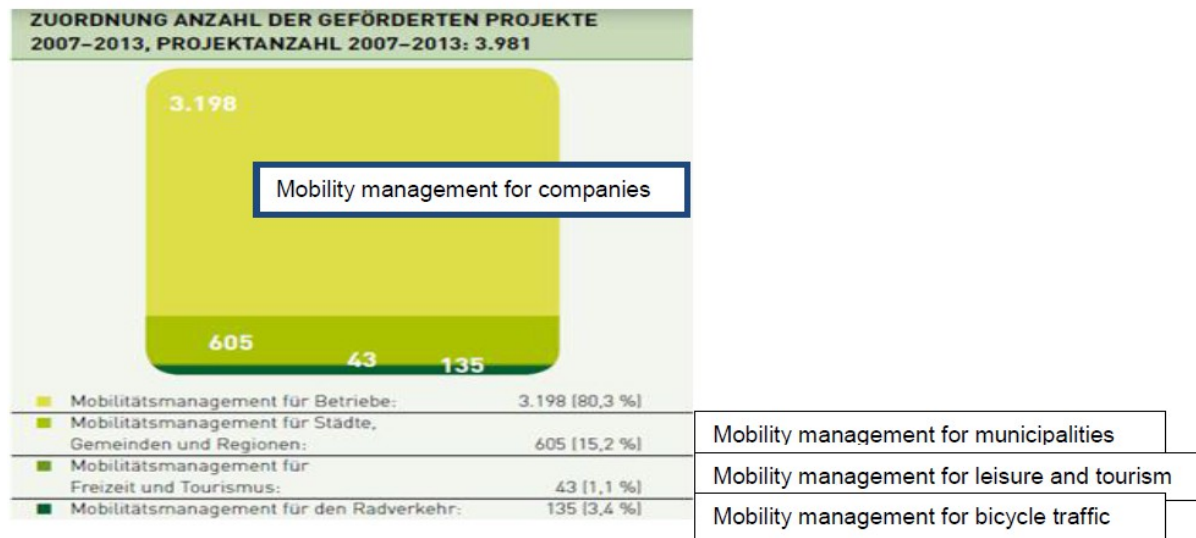
- Adaptation of duty vehicles for alternative (cleaner) fuel including supply facilities
- Implementation of IT-based traffic information and logistic systems
- IT-based systems to optimise delivery tours
- Replacement of diesel-powered transportation by electric powered freight cable cars or conveyor belts
- Optimising transport logistics for construction works to reduce greenhouse gas emissions
- Trainings for fuel saving driving for bus and truck drivers.

The program achieved in the period from 2004 until 2013:

- Approximately 4.900 klima:aktiv mobil projects were successfully implemented, thereof 3.500 by companies, especially in the fields transport and construction
- Around 570.000 tons of CO2 emissions yearly are avoided by all implemented measures (cumulated value for the year 2013)
- The whole support sum by the federal ministry for environment in the period from 2004 – 2013 was around 66.6 Mio. Euro and total investments of 495 Mio. € were induced.
- 5.600 “green jobs” were created or saved

- About 12.000 vehicles with alternative propulsion (thereof 10.000 electric powered) and more than 1.000 charging stations were supported in the klima:active.mobile program

### Supported projects in the klima:aktiv mobil program in the period 2007 – 2013



The most of mobility management projects supported by the klima:aktiv mobil program are focused on companies and many of them on freight logistics (3.198 projects and a share of more than 80%) Other supported projects were elaborated together with municipalities 605 (15,2%) and finally projects for leisure and tourism and for promoting cycling.

Source and further information: „Klima:aktiv mobil Förderungsprogramm, Leistungsbericht 2013 und neue Akzente; Vienna 2014<sup>4</sup>

Some of the supported measures address city logistic, further klima:aktiv mobile measures are not typical for city logistics, but they contribute to reductions of negative environmental impacts and improving efficiency of urban transport logistics. Selected measures with relevance for city logistics will be presented in this report.

### The research program “Future Mobility” of the Federal Ministry for Transport, Innovation and Technology

The Federal Ministry for Transport, Innovation and Technology addresses in its research programs also freight logistics. Most of the finished projects are focused on combined transport for longer distances and on transshipment technologies.

The research program “Future Mobility” focuses on the search for integrated solutions designed to help build the mobility system of the future, a system that must balance social, environmental and economic needs. This integrated approach helps create systems that

<sup>4</sup> Will be published soon at

[http://www.bmlfuw.gv.at/publikationen/umwelt/laerm\\_verkehr\\_mobilitaet.html](http://www.bmlfuw.gv.at/publikationen/umwelt/laerm_verkehr_mobilitaet.html)

contribute significantly to ensuring mobility while minimizing the negative impacts of transport. The program is established for the period 2012-2020, the annual budget is 13 - 19 million Euro, beneficiaries are universities and non-university research groups, companies, NGOs, public agencies including transport providers. Sustainable urban logistics is one main task of the Future Mobility Program.

**Project: Guidelines for ecologically sustainable urban freight logistics (acronym GöMoS)**

The objectives of this project are described below:

“The originally chosen city logistic approaches investigated and propagated isolated transport consolidations within freight transport centres. Today solutions have to focus on a much wider approach. GöMoS takes this into consideration by developing the method based on the 3 main action fields of a successful logistic for towns:

- the operators of projects (differentiated by branches),
- the towns where the projects are implemented and
- the projects it selves.

At the beginning the methodical framework and the project borders are defined in cooperation with the client and a possible project advisory board. After this the actual situation regarding freight transport in Austrian towns will be surveyed by the help of a primary inquiry. This is done with a questionnaire and an inquiry regarding operators and projects in Austrian towns conducted by the praxis partner of the GöMoS team and regarding the view of the towns with the support of the Austrian Städtebund (union of Austrian towns).

Transport problems in general, specific problems of freight transport in towns, projects regarding logistics in towns and sustainable freight transport in towns (in operation, planned, in concept, funded, failed), criteria for implementation and future requirements for logistic project in towns will be investigated.

It is possible to integrate the requirements of different branches and also of parcel services using the knowledge and background of the praxis partner.

Specifications for the future are developed based on the developed method and the analysis results of the inquiries (qualitative and quantitative). This enables the deduction of best practices, assessment criteria and indicators (benchmark and measurement) for the action fields operator (who), project (what) and city (where) by using a cross sectional analysis.

By doing so it is possible to prepare the input for a balanced scorecard per action field. This is the basis for the guidelines. These single considerations per field are linked together to one overall assessment scheme (guidelines). These guidelines are integrated in a handbook together with action options and recommendations. The handbook including guidelines enables the assessment of future urban logistics projects from a public as well as a private business view.”<sup>5</sup>

The handbook, which is elaborated in the project GöMoS will be a valuable input for a call of the Austrian Climate and Energy Funds to logistics in urban regions. This call should be launched at the end of 2014.<sup>6</sup>

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5 Source: <http://www2.ffg.at/verkehr/projekte.php?lang=de&id=&browse=programm&limit=-1&programm=50&ausschreibung=0&thema=0&keywords=Keywords&slimit=20&slimit=20>

6 See <http://www.klimafonds.gv.at/foerderungen/aktuelle-foerderungen/>

## **Project non-motorized shopping logistics:**

Current status and problem definition:

Due to escalating (sprawling) development of settlements and the concomitant traffic volumes in a globalised economy, distances of transport – and therefore energy use and emissions as well – have grown tremendously in all parts of the supply chain of goods and services. Last-mile transport plays a significant role as exemplified by the fact that shopping by car uses on average about 100 times more fuel per kg of goods and km than required for supplying a retailer by a truck. Here is, facing the challenges of finite resources and looming climate change, the starting point of the proposed project, to reduce energy consumption and emissions again. Shorter distances and more efficient means of transport will play a major role in this endeavour.

Aims and methods for achievement of objectives:

The main aim is to develop a system for non-motorized transport of goods and the associated creation of suitable components, for optimization of last-mile transport of goods to the customers' homes. For this new system of short-distance transport new concepts for innovative products (types of means of transport for pedestrians and cyclists), procedures (organisation of use) and services (delivery) are to be developed. The focus is on new types of shopping trolleys also suitable for transport of goods to the homes. For their use innovative organizational methods, aided by IT-systems, will be analysed, which ensure a cycle of shopping trolleys between retailers and homes (e.g. a rental system). This includes a corresponding infrastructure (places for leaving the innovative means of transport in public space as well as residential buildings).

New and improved products (shopping trolleys, walking frames, bike trailer, high-load bikes etc.) and services will be integrated into the system, to ensure suitable means of transport for every shopping need.

Requirements on settlement structures for a successful implementation of the new transport system will be analysed (e.g. retailers within short distances).

Following an analysis of needs, profiles of requirements will be specified, adequate solution statements (concepts) for the new types of means of transport as well as their use and their integration in the system of short distance transport will be developed, and the potential for their utilization will be assessed.

Expected results and findings:

A transport system useful for all people in the long term for the "last mile" of the transport chain in shopping, ensuring their supply in a sustainable manner. In detail:

- Design concepts for innovative types of means of transport (particularly shopping trolleys), partly for improvement of selected means of transport (e.g. high-load bikes)
- A concept for management of the system and organisation of the necessary infrastructure and settlement structure.<sup>7</sup>

## **Support of work sidings and terminals (« Anschlussbahn- und Terminalförderung »)**

A successful measure which is also valuable to improve city logistics is the support of the construction of work sidings of rails ("Anschlussbahnen") to factories and big trading places to stimulate a shift from road to rail. Moreover, towns can be discharged from truck traffic

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<sup>7</sup> Source: <http://www2.ffg.at/verkehr/projektpdf.php?id=1124&lang=en>

between origin / destination of the freight to rail cargo stations. In Austria more than 60 % of rail cargo has its origin or destination in work sidings.<sup>8</sup>

In the period from 2007 until 2012 55 work sidings and terminal projects in whole Austria were supported by the climate and energy funds with together 46 Mio.€ (financial contribution to the funds by the federal ministry for transport, innovation and technology). Currently the avoided CO<sub>2</sub> –emissions of these measures are around 922.000 tons yearly.<sup>9</sup>



Photo: bmvit

### **Regional transport conceptions**

In the most regional traffic conceptions environmentally sustainable freight logistics is mentioned as general objective. In the mobility conception for the country Salzburg (Landesmobilitätskonzept für Salzburg and in the masterplan traffic for Vienna (Masterplan Verkehr Wien 2003) specific projects on city logistics are briefly described (see chapter 4).

### **Traffic legislation concerning urban logistics**

As usual all over Europe the Austrian road traffic act includes regulation relevant for city logistics, e.g. weight or size limits for trucks and temporary traffic bans, especially in pedestrian zones, which are only open in the morning (until 11 a.m.) for good deliveries. Delivery zones can be reserved and for other vehicles in the delivery periods parking is forbidden.

The Austrian tax legislation provides advantages for owner of electric powered cars, they need not pay a tax for the fuel consumption as for combustion cars, when buying a new vehicle and also a tax calculated based on the motor performance is not levied for electric powered cars and light duty vehicles.

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8 Source: <http://www.gsv.co.at/wp-content/uploads/Bericht%20zum%20GSV%20Forum%20Trimodaler%20Verkehr.pdf>

9 Source: Jahresprogramm 2013 des Klima- und Energiefonds  
<http://www.klimafonds.gv.at/assets/Uploads/Jahresprogramme/jahresprogramm2013.korr.pdf>

### 3.2. *France*

The urban transport authority is responsible for preparing and managing the sustainable urban mobility plan. As such, it is in charge of drafting the freight element of the plan covering its urban transport area. However, it does not always have the necessary powers to take action.

Under French law, urban transport authorities are "authorities with the power to organise general urban public transport services. They also have the power to organise demand-responsive transport services." Within their specific urban transport area they organise road, river and maritime transport services, as well as rail and other rail-based transport services on the networks that their remit covers." In this sense, urban transport authorities are not responsible for road transport outside their urban transport area or rail transport on the national rail network. Urban transport authorities are able to organise services covering freight delivery or urban logistics if they can prove that it permits to reduce pollution and nuisances affecting the environment.

As of 1 January 2011, there were 296 urban transport authorities in France, with a variety of legal forms.

The simplest type of urban transport authority is the "commune". In practice, however, this structure is only used to set up transport networks in small urban areas. Beyond a certain population size, "communes" tend to join forces under a single, intercommunal structure which also acts as the transport authority. This type of intercommunal structure normally fulfils other functions in addition to urban transport organisation (urban policy, economic development, drainage, spatial development, etc.). In some rare cases, the urban transport authority may also be a joint management board ("syndicat mixte"), comprising different types of local authority (commune, intercommunal cooperation authority, department).

In 2011, the breakdown of urban transport authorities was as follows:

- 26% were "communes"
- 58% were communities (groups of "communes" with their own tax imposition powers and with responsibilities covering multiple sectors). This figure includes intercommunal authorities ("communautés de communes"), urban authorities ("communautés d'agglomération") (the most common type of urban transport authority, accounting for 41% of the total), and urban communities ("communautés urbaines").
- 6% were intercommunal authority boards ("syndicats intercommunaux") with sole responsibility for urban transport
- the remaining 10% were joint management boards ("syndicats mixtes") comprising different types of local authority.

Communes have police power for traffic and parking. As such, mayors have the authority to issue orders prohibiting access to certain roads in the conurbation at specific times, or to restrict such access to certain types of user or vehicle. Furthermore, the mayor has the power to regulate vehicle stopping and parking or to reserve certain spaces for delivery vehicles (loading and unloading)<sup>10</sup>. It is important to note, however, that "decisions taken by authorities with road and traffic policing powers that have an impact on transport in the urban

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10 Article L.2213 of the French General Local Authority Code ("Code Général des Collectivités")



transport area must be compatible, or must be made compatible, with the provisions of the urban transport plan."<sup>11</sup>

Given that conurbations include several communes, they often cover areas with disparate regulations introduced by local authorities on an ad-hoc basis in response to one-off requirements. Although these regulations are generally consistent within a given commune, this is very rarely the case between communes. As such, a single conurbation may have dozens of regulations and standards covering the weight and dimensions of delivery vehicles. Delivery companies therefore often face a wealth of inconsistent regulations that are difficult both to understand and to follow.

Another useful measure with respect to urban freight delivery is the introduction of loading zones on public roads. The commune or intercommunality has the power to take such measures (mandatory power of "communautés urbaine", optional power of "communautés de commune" or "communautés d'agglomération").

Economic development falls within the remit of the commune and, where applicable, the intercommunality when acting in community interests. In particular, authority for the development and management of business districts lies with the commune or intercommunality (mandatory power of "communautés d'agglomération", "communautés urbaines" and "communautés de commune", where these receive financial contributions from businesses).

As such, the same geographical location may feature:

- a "syndicat mixte" acting as the urban transport authority, with a range of powers including authority for the urban transport plan
- a "communauté urbaine", the remit of which covers economic development and the organisation of business districts
- several communes, each of which has police and traffic powers and which is normally responsible for road improvement and which issues building permits.

This vast array of institutional stakeholders makes the task of organising freight delivery considerably more complex, and renders it particularly difficult to take the necessary action. It is therefore essential to introduce good governance between stakeholders. It is important to remember, however, that the elected representatives at each level may be of different political persuasions. This, in turn, makes it difficult to ensure good relations.

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11 Article L.1214-6 of the French Transport Code (Code des Transports)

### 3.3. Germany

#### Legal framework

The legal framework for freight transport in Germany reflects the federal structures—the responsibilities are distributed to authorities on different spatial levels.

Ministries, authorities, administration level	Competence / responsibility <sup>12</sup>
Federal Ministry of Transport and Digital Infrastructure Federal Office for Goods Transport	Transport policy, federal laws on transport issues, federal infrastructure planning, national action plan freight transport, responsible for HGV toll and control
Bavarian Ministry of the Interior, Building and Transport	Transport policy, transport planning, international transport issues; public transport on rail and road; transport infrastructure – all transport means (road, rail, air and water); goods transport and freight villages;
District government / administration	Economic promotion / business development, promotion of research and technology projects; regional planning procedures for projects like freight villages
County administration, resp. administration of county-free towns	Permits for commercial goods transport, Permits for passenger transport, Planning of local / regional public transport
Municipalities	Traffic bans and restriction of urban traffic, low emission zones, parking management, municipal traffic control (parking, speed limits) of urban roads; re-routing schemes for trucks

Concerning freight traffic within the urban road network, the towns have the most relevant competences. They can compile a transport development plan and integrate goods transport, but this is not mandatory. The existing transport development plans address often more public transport issues than goods transport or urban logistic. But some towns intend to develop integrates transport plans or even sustainable urban mobility plans as the EU suggests.

#### Relevant planning documents

- **National Action Plan Freight Transport**

The National Action Plan Freight Transport dating from 2010 addresses objectives, measures and innovative approaches in five thematic fields, one of it (Reconciling transport growth and the protection of the environment and climate) addressing urban logistics in particular. In detail, the measure of a logistics initiative for urban areas<sup>13</sup> outlines the following objectives:

<sup>12</sup> Only the relevant competences for this report, not comprehensive

<sup>13</sup> For more details <http://www.bmvbs.de/SharedDocs/DE/Artikel/UI/initiative-logistik-im-staedtischen-raum.html?nn=35922>



- Distributing last-mile transport particularly in towns and agglomerations more smoothly and environmentally-friendly, e.g. by developing new logistic concepts.
- Broad application of innovative concepts in urban areas to better organize freight transport.
- Freight villages are logistical interfaces capable of restructuring freight transport in urban areas.
- Negative environmental and health effects should be reduced by these measures.

- **Federal Transport Infrastructure Plan**

The federal transport infrastructure plan (Bundesverkehrswegeplan – BVWP) is the most important conceptual instrument to plan transport infrastructure in responsibility of the federal state in the long term. These are highways and federal roads, railways and waterways. Airports, harbours and freight villages are not included, but the federal state is responsible to connect them to the federal transport network. The federal transport infrastructure plan is the frame and planning instrument, but includes no financial plan and has no legislative character. It is valid for 10 to 15 years until the next plan is completed. At the moment the BVWP from 2003 is still valid, a draft concept for the new plan, which is scheduled for 2015 is already available.

This draft concept suggests a system of hierarchically differentiated central points<sup>14</sup> as base for the analysis of accessibility deficits for goods transport comparable to the accessibility analysis which was done for individual passenger traffic, but not yet for transport logistic. Central points for goods transports are e.g. airports, harbours and terminals for combined transport or freight villages. As for economic reasons accessibility for goods transport gains relevance it is foreseen to develop a directive for an integrated network design for goods transport on roads and railroads based on such a hierarchical system of central points.

- **Bavarian Spatial Development Plan**

The Bavarian Spatial Development Plan (2013) contains the following references to goods transport:

- "Goods transport should be optimised."
- "Optimising goods transport e.g. through measures of bundling urban goods transport considerably contributes to the reduction of negative impacts on agglomerations. To sustainably reduce impacts on roads and environment, road goods transport should be shifted to rail or waterways. Extending infrastructures for combined goods transport e.g. freight villages reduce transport volumes on roads and accelerate and increase service quality in goods transport. New technologies, particularly telematics, can contribute to the integration and better utilisation of transport capacities."

- **Regional plans in the perimeter of the Alpine Convention (Planning region 16, 17 and 18)**

Regional plans are generally derived from the Bavarian Spatial Development Plan and concretise it for a region which is formed of several counties resp. county free towns. They contain basic principles and aims for the regions. While regional plan 16 (Allgäu) does not mention freight transport, the regional plan 17 (Oberland) refers to goods transport with the general aim: "The possibility of goods transport by rail should be used where it is feasible."

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14 Comparable to the spatial planning concept of central places and axis connecting them

The regional plan 18 (South-east Upper Bavaria) dating from 2001 contains several references to goods transport. The named basic principles are:

- "Goods transport especially on long distances should be shifted to rail",
- "In Rosenheim, Mühldorf a. Inn, Traunstein and Freilassing freight centres resp. freight villages with handling plant for combined transport shall be provided."
- "Intercargo shall be improved in the region by development of the rail line Munich – Mühldorf a. Inn – Freilassing – Salzburg ..."
- "At the former highway border crossing Walserberg a cross-border City-logistic centre with rail access for the region as well as for Salzburg is aspired."

### **Relevant study for urban logistic**

- **Report "Effects of Freight villages in Germany"**

In 2010 a study examined the effects of the freight villages on the labour market, on transport in general, ecological effects, modal shift effects in combined transport and their relevance for urban logistic solutions. Concerning the last point the study analysed why most of the so-called City-Logistic solutions developed in the 90th– often in the context of pilot activities – failed. The study concluded as reasons for failing:

- They were only transport offers ;
- Varying transport volumes / varying demand ;
- High competition of partners / high costs for transactions ;
- Telematics interfaces were not unified and therefore problematic ;
- Collection of goods was time-consuming (waiting times at ramps), especially without freight villages ;
- Structural Weakness of retail ;
- Significant reduction of consignment sizes, enforced by significant growth of courier, express and parcel services which form a kind of own city-logistic with high efficiency ;
- Missing regulative privileges of city-logistic vehicles.

But as most of the few surviving city-logistic services are in urban areas with freight villages, it can be concluded that the existence of freight villages supports city-logistic. The study gives several recommendations for urban logistic:

- The location of freight villages is decisive to reach a remarkable relief of transport effects especially in urban regions. A location has to be selected, which allows a 24-hours service without limitations and the connection to the transport network has to be very good.
- The move from transport intense enterprises from inner-urban areas as well as the zoning of areas for industrial location within the freight village contributes significantly to the channelling and concentration of truck traffic in the periphery of towns and agglomerations. Synergistic effects by concentrating logistic services and their clients in the freight villages lead to further economization of transports (e.g. food distribution, automobile industry).

### **3.4. Italy**

The Italian legislative framework assigns to municipalities, through the Urban Mobility Plans (Piani Urbani della Mobilità, PUM) and the Urban Traffic Plan (Piani Urbani del Traffico, PUT) full autonomy with regard to mobility. On the basis of such authorization, in order to reduce the environmental impact of pollutant emissions and to reduce city traffic, the Mayors of several Italian municipalities introduced restrictions on traffic circulation, generally in the inner areas, establishing the ZTL (Limited Traffic Zones). These measures included the closure of freight traffic in urban areas, the introduction of driving bans, the limitation to goods delivery only for a few hours per day, the introduction of forms of payment for accessing “ZTL”. Sometimes, these measures were put in place without a proper comparison with transport operators.

In recent years there has been a significant increase of such measures. Despite the pursuing of the same objectives, municipalities adopted very heterogeneous measures on traffic regulation, creating a still more fragmented and confused framework for regulating access and transit in their central areas. This lack of homogeneity favoured regulatory uncertainty and created serious concerns to transport operators, intended as obstacles to the organization of their activities.

The Ministry for Transport and Infrastructure on 28th July 2010 published a document titled “First elements for the new National Plan on Logistics”, within which is included a report titled “Introductory note to the results emerging from the Autocarriers Board”, highlighting the need to introduce a more harmonized legislation on urban traffic. More specifically, it is reported that “within the Plan, a non secondary role will be covered by the topic of urban freight delivery, on which uniform rules shall be laid down. While respecting the specificities of the different urban centres, local authorities must comply with the above-mentioned rules in traffic regulation, recognizing the role of urban freight as fundamental to the well-being and quality of life of citizens”.

On this purpose relevant was the work made by the Advisory Council for the Road Transport and Logistics (deleted after the spending review implemented in 2012) in consultation with key economic players and administrations, notably municipalities and regions.

The Advisory Council, after signing a first agreement with ANCI (National Association of Italian Municipalities) has established a working group that led, after several meetings and an intense analysis of ongoing experiences at national and European level, to the preparation of an operational proposal to make the field of urban freight delivery a real market with specific contracts. The update of the National Logistics Plan and the subsequent Directive of the Ministry of Transport, Infrastructure Development Economic, identified the possible actions and policies aimed at strengthening the role of city logistics as a mean to relaunch Italian economy.

The agreement was the first step towards a shared platform for the study and development of the most significant experiences in the field of urban freight distribution. Afterwards, specific actions to collect most valuable studies and experiences will follow, considered as important inputs to apply solutions and effective regulations on urban freight delivery, starting from most important Italian towns.

Coming to more recent years, among the four measures of implementation of the Logistics Plan 2011-2020, formulated in May 2012 by former Advisory Council for Road Transport, now called Directorate General for road transport and intermodality, the second proposal considers urban freight delivery as a factor of development. According to the ministerial document, it is clear that urban freight delivery is a topic of major importance, since it represents a strategic sector for mobility in metropolitan areas, and considered as a prerequisite for the economic growth of towns. As a matter of fact, the amount of freight transport at urban/local level amounts, on an annual basis, to 606 million tons and 12.5 billion tons per kilometre, respectively accounting for 48.8% and 7.2% of the entire national road haulage. In addition, the economic output per year of this transport segment is estimated at 27.5 billion Euros, as reported in the ministerial document.

Between the guidelines, as concerns Urban Mobility Plans, the regulation already in force since 2000, is expanded by including the principles which should inspire it. Among these principles:

- The promotion of a coordination at regional level to elaborate scenarios compatible with the operational capability of enterprises;
- Balance the needs of the goods supply necessary to enhance the vitality of the economic and social fabric of the urban centres, with the objectives of reducing traffic congestion and air pollution;
- Regulate the activities of the urban freight delivery, according to the criteria reward or penalize according to the emission standards of vehicles engaged in the delivery of goods and modes more or less efficient use of such vehicles,
- Stimulate the gradual renewal of the vehicle fleet to the highest technological standards, in compliance with environmental sustainability and the principle of technological neutrality.

The Ministry of Transport is currently working together with the municipalities of Turin, Milan and Naples on a process of joint analysis about the implications of different and more innovative freight management policies, at urban level. The aim is to promote not only a first harmonization process between stakeholders, but a long-lasting sharing of experiences and know-how that municipalities should accrue under the actions of the agreement.

According to the above-mentioned, it is evident an urgent need to integrate policies for short-term traffic management with those of medium-long term, strengthening infrastructure and, more generally, promoting the use of vehicles with high environmental standards. Even if the area of applicability of city logistics is normally quite restricted (at urban or interurban scale), most of their impacts are reproduced at larger scale.

The implementation of these objectives cannot be achieved through the simple definition of exclusive intervention areas and responsibilities. On the contrary, in compliance with local authorities, it is needed a better coordination from different administration levels, starting from laws and regulations applied to the national territory until single municipal decrees. The ongoing efforts of the Italian legislation framework are addressed in this direction.

### **3.5. Switzerland**

In Switzerland there is no specific national regulation for urban transport. But infrastructure projects in urban areas can be co-funded with means from a specific fund, the so-called infrastructure fund. Main condition for such a co-funding is the integration of the projects in a program coordinating the different modes of transport and respecting the needs of sustainable transportation. The amount of subsidies varies from 30 to 50%, according to the quality of the program. In Switzerland, 55 urban areas are acknowledged as so-called "agglomerations" (or single towns) and have therefore the right to draft a program and to apply for subsidies. The Infrastructure Fund Act (IFA)<sup>15</sup> has been put into force in 2008. Since then, two programs have been launched for a period of four years each. The total sum of subsidies assured by the parliament for infrastructure projects in agglomerations amounts to 2,5 bio. €.

The focus of these programs for urban areas is clearly on passenger transport. But if a particular program proves to have positive effects on goods transport – or is reducing its negative effects - it will be awarded additional points and the amount of subsidies may be raised. To judge the added value of a program for goods transport or its capacity to reduce its negative aspects respectively, the following factors are being considered:

- Infrastructure (loading zones, etc.)
- Transport management (cooperation, information)
- Traffic management
- Legal measures and regulation (restrictions for use of roads).

Besides the specific measures of these programs, there are general regulations influencing goods transports and thus also freight delivery in urban areas. The two most important ones are aiming at heavy goods transport on the road (vehicles with a weight of more than 3.5 tons). The first is the so-called night ban, prohibiting the use of heavy goods vehicles during night hours between 10 p.m. and 5 a.m.. The second is the heavy goods vehicle fee. It is a performance- related fee, depending on the kilometres driven, the weight of the vehicles and the emissions exhausted. As the external costs of goods transport on the road are included in the calculation of the tariffs applied, the rate is relatively high. For a 40 ton vehicle, the fee amounts to about 80cts/km. Due to this, rail in Switzerland could maintain a high share of about 40% in goods transport. As urban towns situated within the frame of the Alpine Convention are also connected to the rail system, they can profit from this situation too.

The fact that there is no specific regulation for goods transport in urban areas is, among others, a consequence of the division of road authority between Confederation, cantons and municipalities. The Confederation is responsible for the national motorway network with an actual total length of 1'800 kilometres. The cantons account for their road network with a total length of about 20'000 kilo-meters. Construction, maintenance and operation of the

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15 Link IFA: [http://www.are.admin.ch/themen/verkehr/00250/00460/index.html?lang=en&download=NHZLpZeg7t.Inp6lONTU042l2Z6ln1ad1lZn4Z2qZpnO2Yuq2Z6gpJCDeIF\\_gmy m162epYbg2c\\_JjKbNoKSn6A--](http://www.are.admin.ch/themen/verkehr/00250/00460/index.html?lang=en&download=NHZLpZeg7t.Inp6lONTU042l2Z6ln1ad1lZn4Z2qZpnO2Yuq2Z6gpJCDeIF_gmy m162epYbg2c_JjKbNoKSn6A--)

remaining 50'000 kilometres is the duty of the municipalities. They have of course to respect a series of general regulations put in force by the Confederation and the cantons – so they are, due to a federal law guaranteeing the free use of the entire road network<sup>16</sup>, not allowed to raise fees or taxes for the use of their municipal roads. Nevertheless, they have a certain leeway concerning traffic regulation. They can limit access to specific roads, be it for specific times or in general. They also can limit the access for vehicles exceeding a specific weight limit, mainly the limit for heavy vehicles of 3.5 tons. It has to be considered that the general night ban for heavy vehicles is reducing the problem of disturbance of night's rest and is thus, at least during night time, limiting the need for regulation aiming at protecting people from traffic noise.

Another important field for urban freight delivery in which the municipalities have ample leeway is the parking policy. But as it can be seen from the examples mentioned in chapter 4.6, municipalities have so far made only little use of their possibilities in formulating a coherent policy for urban freight delivery. Another maybe even more important reason for this reluctance might be the concern that such concepts might cause follow-up costs for the municipalities.

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16 There are, however, two important exceptions to this general rule: The motorway sticker, a flat fee of 32€ p.a. for the use of the national motorway network, and the performance-related fee for heavy goods vehicles. As the general rule is written down in the constitution, these exceptions had to be mentioned on this level as well.

#### 4. Towns concerned by the study

The following map presents the towns concerned by the study:



More details are presented in appendix n°1 which indicates for each concerned city included in the alpine convention perimeter:

- an overview of the city,
- the issue of urban freight delivery in regional organisation
- the current freight delivery situation in the conurbation
- the actions, experiments and projects

## **5. Categories of measures**

Making a distinctive categorisation of measures is difficult since there are many interdependencies. The categories described were used in European reports on urban logistics such as COST321, BESTUFS or SUGAR.

The “Soft Mobility” Sub-group of the alpine convention has chosen for a categorisation into 8 topics:

- Governance and cooperation
- Regulation and organisation
- Infrastructure
- Urban planning
- Education and information
- Supply chain management
- Intelligent transport system
- Data acquisition and modelling tools



## **5.1. Governance and cooperation**

Before implementing a measure to improve the freight organization, it is often necessary to establish a governing body. Consultation processes with private stakeholders provide a better understanding of the constraints and obligations of each party and allow the development of concerted action programs. Any positive effect on the last mile deliveries needs the participation and commitment of professionals (producers, carriers, retailers) and of residents.

## **5.2. Regulation and organisation**

Regulation is the main tool that a city can use to ensure a more efficient last mile delivery. Cities are in charge of local traffic and parking regulations, including all regulations that relate to delivery vehicles. Historically, most of the traffic and parking regulation have aimed at solving punctual problems at the level of a street or a neighbourhood. Rules are generally very parochial and can be conflicting.

- The tool that towns uses in priority is truck access restrictions. These restrictions can be based on various criteria: time frames, weight, size, noise emission, air pollution, loading factor, type of goods.
- Time windows aim to keep designated streets or areas free of freight traffic during specific periods. Many towns have regulations on delivery time windows in city centres. Delivery time windows depend on the opening time of shops. As such, times windows often open in the morning (between 7:00 and 12:00). It doesn't mean that there are no freight vehicle the afternoon: carriers still use this period for pick-up activities and home deliveries.
- Night deliveries are often regulated and are controversial. Many towns consider this as a good strategy to decrease the number of trucks during daytime but the noise impact should be taken into account. One solution commonly used is to authorize vehicle operating under 60dB (PIEK certified vehicles for instance). The time windows are often 5:00 to 7:00 and 20:00 to 23:00 meaning deliveries aren't authorized between 23:00 and 5:00.
- Weight restriction are the most common regulation in Europe. Their main objective is to limit the physical damage that freight vehicle inflict on the infrastructure. It isn't the best criteria to regulate freight traffic. Restrictions based on dimension or surface areas of vehicle are better to limit the physical hindrance of freight traffic. Smaller vehicle are easier to operate in the urban environment. This type of regulation can be counterproductive: a heavy goods vehicle can be replaced by multiple light commercial vehicles which means a stronger impact on congestion level and environmental balance.
- Traffic regulations require enforcement to prevent drivers ignoring them. This is especially true of vehicle access and loading regulations, speeding regulations, and statutory lorry routes. However, enforcement of traffic regulations can require significant resources and can be very expensive. Enforcement bodies may not see it as their first priority because they lack information on this subject or training. When developing urban freight measures, it is a necessity to consider enforcement at the start as it plays a key role.

### 5.3. Infrastructure

New infrastructure can be built with a certain emphasis on urban goods transport. But new infrastructure might result in more transport. An effective infrastructure policy must therefore promote non-road transport modes and more generally encourage new patterns of infrastructure use that will result in a decrease of congestion and of the other negative effect on urban goods transports.

- The loading bay is the most widely used logistical tool in urban areas. The somewhat systematic development of loading bays in the majority of urban areas is linked to a combination of several factors such as the increasing business density in city centres, the road transportation of goods taking shape as a sector in its own right (the advent of professional courier services, in particular) as well as looking out for the interests of the various road system users when drawing up town planning policies. The fact that loading bays are still regarded as a viable solution to urban distribution issues is due mainly to its widespread, very local nature, when compared to other urban logistic facilities, and for the way in which it can be easily incorporated into a road system. They remain a public facility yet are made available for companies to use (business establishments and transport professionals). However, loading bays do not solve all of the issues. They are not suitable for vehicles which are larger or smaller than average or for deliveries which must be made as closely to the delivery address as possible so as not to break the cold chain, for example), given that it is impossible to increase the number of bays in front of each business. Loading bays facilitate the delivery of goods into urban centres. As such, they constitute a major challenge in maintaining the business dynamics of city centres which are faced with a growing number of business and retail hubs operating in the outskirts of towns.
- Urban logistic spaces are defined as *"interfaces designed to facilitate the relationship between shipments and deliveries, between roads and operating sites, and between the city and its inner and outer suburbs"*<sup>17</sup>. The purpose of these spaces is to break up and reorganise the flows that move through the city, for the benefit of some or all of the local economy's stakeholders.  
These logistic spaces deliver a number of benefits:
  - optimising delivery rounds and reducing "final-mile" distances by creating forced transfer points closer to the city or city centre
  - reorganising delivery rounds to reduce the number of vehicles on the road; when combined with the reduction in distance travelled, this can help to reduce congestion and improve road sharing
  - limiting greenhouse gas emissions: feedback has shown that these spaces deliver substantial environmental improvements, reducing polluting emissions by around 50%
  - helping to improve air quality, by reducing the total distance travelled, limiting the number of vehicles on the road or introducing environmentally friendly delivery systems.

ULSs are an effective response to demand for more designated logistics space from haulage and logistics companies.

There are 3 different types of ULS

- Urban Logistic Zones (ULZs). These are the main entry points for freight into the conurbation. These vast logistic spaces were introduced in the 1980s and tended to be located far from city centres (with the exception of ports, rail depots and certain markets designated as being of "national interest"). The benefit of having these types of space in urban areas is the creation of forced transfer points closer to towns, from where freight can be channelled more effectively to its final destination. Grouping several logistics companies together in the same location also helps to encourage productive collaboration. Example: Sogaris hubs in Arenc and Rungis
- Urban Distribution Centres (UDCs). These centres are designed to house freight that comes from, or is heading to, a problematic area of the city (restricted neighbourhood, city centre, etc.). They are used to optimise service to these areas by streamlining delivery routes. Urban distribution centres are normally operated by a service provider, which breaks up and reorganises incoming flows from several transport operators in a more efficient manner.

There are **two main types** of urban distribution centre in Europe:

- The first type to appear is based on the results of experiments and examples in other countries (Germany, Italy, the Netherlands, Japan, the UK, etc.) and relies on voluntary effort by the local authority. Under this model, the local authority introduces a "requirement" for all operations serving a problematic area to pass through the hub. This type of arrangement has been introduced in La Rochelle, as well as in towns abroad such as Monaco, Padua, Bristol and Yokohama. These hubs are often unpopular with haulage companies, however, as they entail additional costs and the vast majority of service providers wish to retain control of the delivery to the end customer. Moreover, the French legal system does not currently permit the creation of public service delegations for freight delivery.
  - The second type is based on coordination between private entities. Under this model, local authorities act as developers by ring-fencing land for logistic spaces, identifying real estate opportunities, acting as the link between project initiators and land owners or providing initial subsidies. There is no obligation for haulage companies to use this type of urban distribution centre. The urban distribution centre transport provider acts as a subcontractor of other transport companies, and is therefore in direct competition with other urban subcontractors.
- Local Logistic Spaces. These are small logistic spaces (150 to 300m<sup>2</sup>), normally run by a single operator. They are designed to provide a logistics facility located in close proximity to the businesses or individuals concerned, and thereby improve the efficiency of delivery rounds. Freight is delivered to the local

logistic spaces by heavy goods vehicle in the early hours of the morning (4 am or 5am), before congestion problems arise. This freight is then distributed to major retailers and supermarkets in the urban area in light vehicles from 6 am onwards, and to independent retailers between 10 am and noon. One of the benefits of these small sites lies in the fact that can be housed in existing buildings, selected on the basis of availability. Currently, the majority of these sites are installed on disused car parks, or on car parks looking to generate additional income.

#### **5.4. Urban planning**

Planning strategies for urban freight represent all policies and regulations using Master and Land Use Plans, as well as land use and building ordinances with a direct impact on freight deliveries.

Although the use of city planning measure is quite uncommon for towns implementing on urban freight transport policy, it seems however that it could prove to be an interesting solution today to achieve a more sustainable goods mobility in city centres.

The Urban mobility plan can be used to propose a more appropriate treatment of on-street delivery areas based on a set of actions combining information, prevention and enforcement if necessary. It can impose that main generator of freight (supermarket, warehouses, hotels, large office areas...) integrate delivery areas within their premises proportional to the freight volume they generate. This kind of measure can apply to new buildings or buildings subjected to important transformations or new activities.

It can be also used to impose storage areas to be accommodated for activities such as restaurant, bar and cafés. This is an original policy aiming at reducing the demand for transport and delivery by obliging those activities to store bottles for the use of several days, thereby reducing the need for frequent delivery.

Using city planning ordinance and building codes is an effective mean to limit the congestion on roads. However, a municipality that wishes to implement such measures must make sure that these regulations will not induce developers and shopkeepers to implement their businesses somewhere else, where no delivery parking provisions are required.<sup>18</sup>

#### **5.5. Education and information**

Urban authorities can provide information to freight transport companies and drivers by the provision of map or the use of real time information. It can be: lorry routes maps, web based information on traffic problems and road works, information boards...

Public authorities have a role in educating and training freight operator and towns' technical services.

## **5.6. Supply chain management**

The physical distribution of goods to the consumer is a critical factor in the success of the last mile business model.

Private stakeholders can modify their supply chain management in order to deliver goods more efficiently be it economically or environmentally.

- Designated lockers or locker-banks are groups of reception box units. They are similar to collection points as they are not sited at each customer's premises. They can be found in apartment blocks, work places, car parks, and railway stations... Lockers have electronic locks with a variable opening code, and can be used for different customers on different days. Customers may be notified by message about when their delivery has arrived, the box number and location, and the code to open the box. Locker-banks require the customer to make the final leg of the journey. However, locker-banks are located to make the deviation in customers' journeys as short as possible.
- The introduction of environmentally-friendly vehicles (EFV) into urban transport is most common in Western European countries at present. Public authorities have made resources and financial support available to encourage innovative freight transport and logistics concepts including EFV and new vehicle technologies in urban areas, by a mix of incentives and regulations. Main types of EFV include:
  - Alternative fuels including LPG, CNG, Bio-Fuels and Hydrogen-based-technology
  - Diesel and petrol including Euro engine emissions standards for goods vehicles
  - Electric and hybrid vehicles. Electric vehicles are especially suitable to reduce noise emissions and produce no exhaust emissions. Many municipal and national activities have started to encourage the use of EFV in urban freight transport.

## **5.7. Intelligent transport system (ITS)**

Various forms of ITS can be used can be used for urban freight including vehicle telematics, global positioning system (GPS), smart cards... ITS can be divided into:

- Freight transport management systems: fleet management systems or tracking and tracing systems which are mainly used by freight transport companies. Those systems can permit an efficient planning of vehicle loads and journeys (computerised vehicle routing and scheduling), allows communication between the driver and the company planner (in-cab communication system) or can be used to manage goods vehicle arrival at major sites (slot booking systems).
- Traffic management systems: access control systems, traffic management and information systems which are mainly used by public authorities. For instance, urban traffic management and control systems help to improve traffic flow, to reduce journey times and delays, and to improve road safety.

### ***5.8. Data acquisition and modelling tools***

To manage and control the urban freight transport it is very important to have models and tools to simulate the system. Freight demand models are one of the key components of transportation planning at the strategic, tactical and operational levels. Public agencies need to forecast future transport needs for both people and commodities in order to provide the infrastructure and human resources that make such movement possible. The private sector needs forecasts of demand for transportation services in order to anticipate future financial commitments, equipment acquisition and labour requirements

In France, a statistic-descriptive model, called Freturb©, was developed. It allows the number of vehicles attracted by each traffic zone to be obtained. This model, starting from the socio-economic data of each traffic zone of the study area and using the results of surveys carried out in French towns, allows us to obtain the vehicles required for restocking in each traffic zone.

In Germany in the towns of Berlin, Munich and Hamburg data acquisition and data analysis regarding urban freight transport were carried out to develop a tool for commercial traffic on roads for city planning calculation. The tool (WIVER©) provides the basis for different scenarios and measures and it recognises the complexity of trip chains for commercial freight traffic. In 2003, the WIVER© approach was transferred to a general framework backed up by a system theory and included in the software program VISEVA© at the Technical University of Dresden.<sup>19</sup>

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<sup>19</sup> A state of the art on urban freight distribution at European scale, Francesco Russo, Antonio Comi, University of Reggio Calabria – Italy – UE, 2004

## 6. Best practices

Within the area of the Alpine Convention, the following actions were presented and analysed: 1 out of 2 is about governance

- 1 out of 3 is about infrastructure, regulation and organisation or supply chain management
- 1 out of 4 is about urban planning or intelligent transport system
- 1 is about education and information.
- None is about data acquisition or modelling tools (but its because its generally a national initiative).

Austria – Project E-Log in Klagenfurt/ Carinthia – an ambitious project for electric powered freight mobility
Austria – Combined transport terminals as base for city logistics: Examples hall in Tyrol and Bludenz (Vorarlberg)
Austria – Project Innoversys (Innovative Verkehrssysteme für die Wirtschaft der Europaregion Salzburg) : shifting freight from road to rail by a more efficient use of existing rail infrastructure.
France – Grenoble sustainable logistics action plan
France – Sustainable urban mobility plan including freight
Germany – Freight hub Burghausen and Freight hub Traunstein
Germany – Regional Freight Transport Management Lake Chiemsee
Italy – the urban distribution centre of City Porto Aosta
Italy – Working Group on Freight Transport
Italy – Smart fusion Como: testing new technologies and innovative models for urban freight deliveries
Italy – PIE VERDE project
Switzerland – SpediThun
Switzerland – Strict restrictions mainly in pedestrian zones

The following best practices outside of the Alpine Convention area but applicable on Alpine towns were also presented and analysed:

- 1 out of 3 is about infrastructure or supply chain management
- 1 out of 5 is about governance and cooperation, urban planning or data acquisition and modelling tools
- 4 concern education and information or intelligent transport system
- 3 concern regulation and organisation.

Austria – Cargo Center Graz (CCG)
Austria – Project Cycle Logistics

Austria – Project Rumba (Vienna)Austria
Austria – Innovative bicycle-trailers Austria
Austria – Wastepaper logistics: collecting in Vienna and transport by train across the Alps to a paper factory in Frohnleiten (Styria)
Austria – It-based delivery tour planning system and fuel-saving driving training for truck-drivers in a big furniture delivery chain in Vienna
France – National guideline to developing loading bays : quantity, location and dimensions
France – Paris' Sustainable Urban Logistics Charter
France – Regulating freight delivery : the case of Lyon
France – Data collection modelling, Bordeaux
France – Simplycité: an urban distribution centre in Saint-Etienne
Germany – Bentobox
Germany – Environmental loading point for inner city delivery (Bremen)
Germany – CarGo Tram (Dresden)
Germany – Emissions-free parcel delivery (Nuremberg)
Germany – “Bring-Buddy”- Concept
Germany – Truck routing system (Bremen)
Germany – Environmentally oriented traffic control (Potsdam)
Germany – E-City-Logistics (Berlin)
Germany – Urban Retail Logistics (Ruhr region)
Italy – Cityporto Padova
Italy – CEDM:Centre for eco-friendly City Freight Distribution in Lucca
Italy – CityLog
Switzerland – Statistics: Main data on national level (GTS)
Switzerland – Cargotram in Zurich
Switzerland – Specific education of city planners, transport engineers and architects
Switzerland – UrbanZen
Switzerland – Establishment of priority areas for city logistics
Switzerland – Framework “Urban freight transport”
Slovenia – Local freight partnership development plan in Ljubljana
Slovenia – Promotion of sustainable freight logistics in Ljubljana

**Every good practise is described in appendix, with a general presentation, the action typology, the underlying issue (problem/needs addressed) and objectives, the specification, the implementation details, the supporting mechanism, the results / assessment, the conditions of success or failure, strong and weak points, transfer possibilities and contacts.**



The best practices described contain positive results but each case is very specific. It is important to adapt the organisation when transferring a solution to another city. Some conditions must be met for a successful transfer of best practices<sup>20</sup>:

- to take into account the city's economic situation and its evolution,
- to make an analysis before the implementation of the project,
- to take into account the global supply and transport chain,
- to detect and suppress the bias which can be introduced when making practice choices,
- to identify the constraints of scale of the project,
- to identify the project which can go along different types of innovation,
- to implement the follow up with permanent assessment surveys using relevant indicators in order to be able to draw comparisons between the ex-ante and ex-post situations and to assess the implemented measure impact.

**There is never a single optimal solution. One has to look for a combination of measures that is specifically aimed at achieving the desired result.**

## **7. Main findings**

There are six main conclusions:

- There is no major difference between the problems of urban logistics in alpine towns and other locations, except for the negative impacts.
- In most of the towns, there is a lack of statistics concerning urban freight transport. The data availability is poor compared to passenger transport.
- Transportation issues in towns are often focused on passenger transport. Urban freight is not taken into account locally. Also, a potential increase of home deliveries linked to ageing population and on the E-commerce growth seem never to be taken into account.
- Several actions show that coordinated freight transport has to be performed as a combination of positive incentives and restrictions.
- In some towns freight transport is perceived as a completely private issue where public administration is not involved. Freight transport is not on the agenda of policy and administration in small towns, as negative effects of freight transport are considered as a minor problem of transport in general (and compared to commuter and passenger transport effects). Cooperation with local public and private actors (retailers, shippers, transport operators) is a prerequisite for success.
- Some themes are well-known and thus well-implemented, and on the other hand some topics are really ignored. These left-aside themes are thus the ones this report is going to develop a bit further in its following recommendations.

## **8. Recommendations**

### **8.1. Develop public-private partnership and promote sustainable urban logistics charters**

Urban logistics is a complex field, involving a multitude of different institutional and professional stakeholders. Consultation is therefore crucial to the success of any project in this area, and ensures that regulations are both effective and efficient. Local authorities have an important part to play in developing and implementing sustainable distribution systems and practices.

In recent decades, there has been a rising trend in the use of consultation processes involving stakeholders which had previously had little contact with each other, i.e. haulage and delivery companies, and councillors and local authority departments (and shopkeepers). Although these discussions have not always delivered concrete results, they have provided both parties (i.e. not just public sector managers) with an opportunity to get to grips with the problems and inefficiencies of urban freight delivery.

An urban distribution charter would represent an opportunity to conduct more effective discussions. The transport sector in general, however, is highly fragmented and disparate in nature and any such discussions therefore need to consider the needs and requirements of all parties (small delivery companies, subcontractors, major clients, couriers, logistics providers, specialist distributors, etc.). However, the presence or absence of a particular retailer's association can either make or break a consultation process. There may also be some benefit in including other partners, such as large city-centre establishments that generate high delivery volumes (supermarkets, etc.) and representatives of river and rail infrastructure owners located within the urban area.

Many small haulage companies (often subcontractors of large groups) complain about the excessive demands placed upon them by recipients in urban areas (multiple deliveries per day, refusal to accept designated delivery times, making the delivery company wait, etc.). However, through fear of losing their traditional customer base or a lack of resources, these operators are afraid to take initiatives and offer the types of new service that would help to make urban freight delivery more efficient.

Local authorities often consult stakeholders when they develop their sustainable distribution strategy. An accurate consultation process would provide an opportunity for the development of joint solutions, encouraging professionals to coordinate their activities to deliver practical day-to-day improvements to delivery services.

An urban distribution charter can be a way, for local authorities, to formalise and consolidate the consultation processes established. The leader of the charter can be the local authority but each stakeholder can be in charge of a specific project. For instance, freight industry can be in charge of the development of silent deliveries, efficient vehicle utilisation, waterway and railway deliveries... while public authorities can take care of urban regulation, design of loading bays...

A charter should set out requirements for local authorities and freight delivery companies to promote – within their respective areas of responsibility – solutions that are beneficial to urban deliveries. These may include the use of environmentally friendly vehicles, the harmonisation of delivery times, or more efficient use of dedicated spaces.

Although the precise objectives may differ according to the type of charter concerned and the level of ambition shown by the local authority, it is important to remember that urban logistics involves more than just urban freight delivery. Firstly, freight delivery in urban areas (the so-called "final mile") is entirely dependent on the upstream logistics chain. Secondly, any attempt to achieve sustainable urban logistics will require action on existing urban logistics facilities and infrastructure (and in particular on forced transfer points such as urban logistic spaces, ports, rail depots and logistics hubs).

An urban distribution charter should be the result of local negotiations and its content should vary according to the partners (including individuals) involved, their objectives and their willingness to commit to the process. It is nevertheless a good idea, and in likelihood beneficial, to introduce formal procedures to guide the development of a "charter" type document. For instance, this type of formal document are developed in France and in England<sup>21</sup>. As such, a charter is both a binding contractual document between partners and a local and national communication resource.

## **8.2. Using regulation to develop carbon free deliveries**

Many alpine towns and their surroundings are very congested. Selective restrictions for heavy vehicles can be a very effective short-term instrument. The criteria applied include effective loads, noise emission and restricted time windows for deliveries. However, positive measures can be more effective than restrictions, such as greater time frames for electric vehicle deliveries.

In order to achieve stability in long-term policies as well as efficient urban goods transport systems, it is important that urban regulation are harmonised, standardised and easy to enforce.

## **8.3. Take into account deliveries in urban spaces design**

One of the problems of urban delivery is the space consumed by delivery vehicles. Security issues, and congestion problems are often due to lack of dedicated delivery areas (restricted time and space slots for loading areas; integration of loading areas in urban patterns or urban development measures).

While reserving spaces is complicated in existing streets because of the pressure of motorists or even storekeepers, it is easier to plan and reserve needed land during retrofitting of streets and neighbourhoods, or in new urban projects.

To know the number and location of spaces required for delivery, a study of the needs will be required in advance. This work should be done as early as possible.

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21 A guide on how to set up Freight Quality Partnership, Department for Transport, Feb 2010

[www.freightbestpractice.org.uk/freight-quality-partnerships-guide](http://www.freightbestpractice.org.uk/freight-quality-partnerships-guide)

Freight Quality Partnerships – Case Studies, Department for Transport, Dec 2006

<http://www.freightbestpractice.org.uk/freight-quality-partnerships-case-studies>

Local Authority Freight – Management Guide, Department for Transport, Jan 2007

[www.freightbestpractice.org.uk/local-authority-freight-management-guide](http://www.freightbestpractice.org.uk/local-authority-freight-management-guide)

#### **8.4. Carry out specific surveys to improve knowledge**

In terms of passenger travelling, a very important number of surveys and studies is conducted annually. On the contrary, for goods transportation, difficulties in uniting stakeholders and implementing actions is related to the fact that few data are available on number of freight movements, vehicle types, type of and amount of goods. The issue is misunderstood or unknown, as well as possible solutions.

Permanent or periodic surveys are needed as well as more investment in data collection and statistics on urban freight transport. Conducting studies is therefore a starting point for a sound analysis of the scope of urban freight transport (in particular in smaller towns) and the evaluation of potential improvements for health, environment and urban quality and finally for developing an efficient goods transport system.

#### **8.5. Preserve non-road infrastructures and promote their use**

Preservation of non-road infrastructure is mandatory if available, because even if they are not used today, it will perhaps be useful in the future. If it disappears, the idea of modal shift might also disappear, or it will cost even more to be reinstalled. It is therefore necessary to preserve rails, railway stations, ports and docks anytime possible.

#### **8.6. Develop the use of cargo bikes**

The cargo bike is a suitable transportation vehicle for the transport of goods, especially on the last mile. It can be used by carriers and retailers. Promoting the use of cargo bikes can be a solution to reduce the negative impact of freight transport in the inner city centre. The use of cargo bikes will be limited to shorter distances. However the use of electric bikes may extend the operating distance of cargo bikes. It is assumed that electricity for e-bikes is produced from regenerative sources to make it a sustainable mobility service.

#### **8.7. Prevent logistics' sprawl by preservation of the existing logistics lands**

The scattering of logistic activities induces many problems: land use, longer distances, road sharing and congestion. It should be ensured that logistics activities are strongly connected to the urban tissue to avoid the aforementioned negative external effects as much as possible. But the price of land in the town centre can be exuberant for logistics activities. This is the major challenge for the community: they can "block" the use of certain parts of wasteland areas for logistics purposes. Blocking or reservation of the land can be performed with planning documents.

## 9. Appendix n°1 Description of the context of the towns concerned by the study

### 9.1. France

#### 9.1.1. Grenoble

##### Overview

The Grenoble conurbation consists of 28 communes with a total population of 398,600 and covers an area of 326 km<sup>2</sup> (Insee, 2008). It has a high population density, with 1,280 inhabitants per km<sup>2</sup> across the conurbation as a whole, and 8,610 per km<sup>2</sup> in Grenoble city centre. This dynamic region has more jobs (210,400) than its economically active population (170,000). The conurbation features steep terrain. The city of Grenoble itself is located on a plain, at the confluence of the rivers Isère and Drac. The conurbation is surrounded by three mountain ranges: Belledonne, Chartreuse and Vercors.

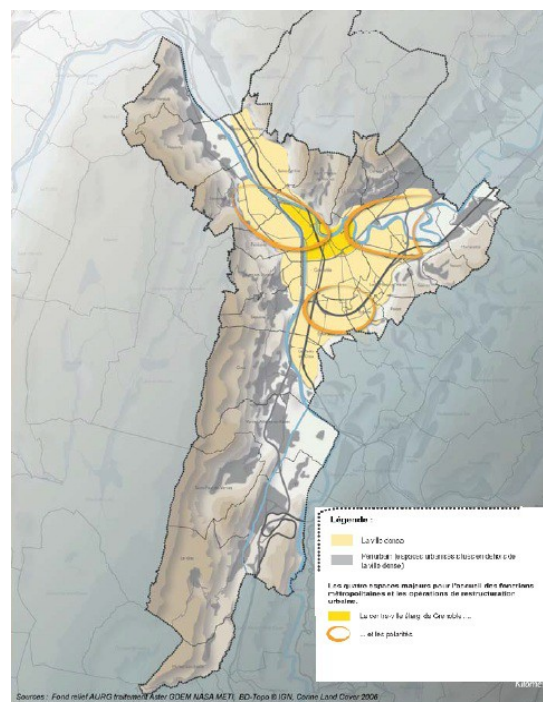
The region comprises three types of space:

- A dense urban space: Grenoble and its historic city centre, along with the adjoining areas, including the suburbs and the business, shopping and infrastructure districts located primarily around the motorways and the southern ring road. This area accounts for 85% of the conurbation's population and 95% of its jobs.
- Less dense periurban areas, dominated by residential housing and open spaces and farmland.

In terms of the region's economy, there are 15 sites of special interest ("sites d'intérêt communautaire"), representing approximately 230 hectares of industrial land.

Across the conurbation as a whole, there are 75 business districts that fall under the responsibility of the commune or intercommunality. These provide around 90,000 jobs, or 45% of the total number of jobs in the conurbation.

Outside the dense city centre, the business districts are located on the outskirts of the conurbation: to the north-east in the communes of Fontaine, Saint-Egrève and Sassenage; to the east in the communes of Meylan and Saint-Martin-d'Hères; and to the south in the communes of Echirolles, Eybens and Pont-de-Claix.



Grenoble and the surrounding areas experience regular pollution peaks that exceed the limits set by European regulations.

Freight delivery accounts for approximately 11% of total greenhouse gas emissions in the "Métro" area, with heavy goods vehicles and light utility vehicles representing only 5% to 8% of traffic on urban expressways and 2% to 8% of total traffic on all main roads in the conurbation.

In terms of particulate matter (PM): in 2007, 100% of the population living in the centre of the conurbation (more than 319,000 people) were subject to levels that exceeded the maximum limit of 35 polluted days.

The atmospheric protection plan (PPA) sets out targets to reduce particulate emissions by 30%, and NOx by 40%, between the reference year (2007) and the target year (2015). In order to achieve this goal, two complementary initiatives are required: to reduce transport-related emissions, and to reduce the population exposed to these emissions (through more effective town planning).

### **The issue of urban freight delivery in regional organisation**

The following authorities hold powers in the Grenoble region:

- the Syndicat Mixte des Transports Collectifs (SMTC), which organises public transport services within the Grenoble conurbation urban transport area (49 communes as at 1 January 2014) in conjunction with local partners, and which is responsible for developing the urban transport plan
- the Grenoble Alpes Métropole "communauté d'agglomération" (the "Métro"), which is responsible for economic development and supporting the local economy
- the Société d'Economie Mixte des Transports Publics de l'Agglomération Grenobloise (SEMITAG), which operates the passenger transport network
- the communes, which have traffic and parking police powers and are responsible for development via the local urban development plans (PLUs)
- the "établissement public du schéma de cohérence territoriale" (public regional integrated development plan agency), which develops the SCoT (regional integrated development plan).

Discussions are currently ongoing with regards to a future body covering the Grenoble Urban Region.

The guiding principle set out in the Grenoble region's regional integrated development plan (SCoT) with respect to freight delivery and logistics is to encourage the use of forms of transport other than roads:

- to manage the development of logistics hubs in a manner that prioritises local supply needs
- to encourage initiatives to transfer operations to rail and cable transport
- to ring-fence spaces suitable for the creation of new logistics infrastructure located close to railways
- to set out a regional strategy covering freight delivery and urban logistics

There are significant discrepancies between the regulations in each commune. These discrepancies concern tonnage in particular, with 60% of communes prohibiting access to heavy goods vehicles weighing more than 3.5 tonnes.

Time-related regulations are also in place in Grenoble city centre, with vehicles forbidden from travelling in the centre between 6:30 am and 11:30 am.

Loading zones, however, are not properly regulated at all. The "Métro" is apparently interested in introducing a delivery disc system, similar to the one used in Lyon.

As such, traffic and parking are not strictly regulated. There are designated loading zones and spaces, but neither light utility vehicles nor heavy goods vehicles use these properly. As the authorities themselves admit, these zones are poorly positioned and badly designed. They are often too narrow to accommodate heavy goods vehicles. An overhaul of these parking areas, and the corresponding regulations, will be addressed in future projects.

There are several pedestrian zones that are accessible to delivery vehicles, including one particular square in the very centre of Grenoble. Access to these zones is managed by retractable bollards, which are lowered between 6:30 am and 11:30 am and are raised to prevent vehicle access at other times of day. However, some deliveries are made after 11:30 am and in the afternoon, with delivery vehicles regularly using the tram lines, illegally, to enter and leave this regulated zone.

### **Current freight delivery situation in the conurbation**

The Grenoble conurbation benefits from its proximity to major transport routes (Rhône Valley, Lyon-Italy route, etc.) and national and European logistics hubs such as the Chesnes logistics hub. As such, the majority of the freight transported into the conurbation comes from logistics hubs located outside the Grenoble region, in Est-Lyonnais, Ain and Nord-Isère.

Local freight delivery and distribution businesses therefore focus primarily on supplying the Grenoble region and conurbation. The "Métro" area currently houses around 10,000 logistics jobs and 5,000 additional jobs in specialist companies in the freight delivery, logistics, warehousing, postal and courier sectors. The logistics hubs in the Grenoble region are located close to major motorway infrastructures, outside the conurbation itself (in the Voiron area in particular), with a polarised economic region around the Lyon outer ring and the Rhône Valley. In general, logistics facilities tend to be located ever further from the centre of the conurbation. Under increasing pressure for land, the majority of transport companies are now located on the north-western fringes of the conurbation, in the communes of Saint Martin le Vinoux, Saint Egrève, Fontanil and Fontaine. The consequence of this "distancing" of transport and logistics businesses is an increase in congestion and polluting emissions.

There are no "connected" hubs (rail or river) in the Grenoble region. In terms of transport provision for the Grenoble conurbation, rail has a modal share of less than 5%. There is limited use of forms of transport other than road, and where these alternatives do exist, they are limited to specific sectors such as the transport of hazardous materials. Nevertheless, road-based transport still accounts for almost 60% of hazardous materials by weight.

Accessing the centre of the Grenoble conurbation by road is difficult. The "distancing" of transport companies is leading to longer trips which, in turn, is increasing the amount of time that delivery vehicles spend in congestion on the outskirts of the conurbation. This is particularly true of the A48 and A480 motorways, which are highly congested during peak times each day. According to the "toll zone" survey conducted by the Conseil Général de l'Isère in 2010, heavy goods vehicles transporting freight account for 5% of total road traffic in the Grenoble conurbation. This low percentage is due to the fact that major national and European logistics flows pass mainly through the Rhône Valley (A7 motorway), with Lyon as



the primary focal point. This freight is then transported on connections towards Italy (A43) and northern and eastern France and the rest of Europe (A6, A42, A39, etc.).

HGV flows in the Grenoble region are highly polarised, with almost two thirds of such flows focused towards Nord Isère and the Lyon region. The majority of these flows are concentrated on the conurbation's motorways and expressways. The highest concentrations of HGV traffic are found on the A48 and A4802 motorways, with more than 6,000 vehicles per day.

In terms of urban flows, businesses located in the main communes of the Grenoble conurbation account for more than 185,000 delivery operations per week, or 37,000 operations per day for a five-day working week. These operations involve a total distance of around 750,000 km per week within the conurbation, or 150,000 km per day (for a five-day working week), 53% of which is travelled by utility vehicles weighing less than 3.5 tonnes. Vans and other light utility vehicles are responsible for a significant proportion of freight traffic within the Grenoble conurbation and region. These include vehicles belonging to small businesses and shopkeepers, small delivery vehicles designed to serve urban areas and postal delivery vans belonging to La Poste and courier companies.

Of all the communes in the conurbation, Grenoble is the source of the most freight "movements" (heavy goods vehicles and light utility vehicles). In total, 40% of all freight deliveries and pick-ups generated by the conurbation are performed in the commune of Grenoble.

The "Grenoble14" extended city centre currently accounts for around 50,000 delivery operations per week (approximately 10,000 operations per working day), i.e. more than a quarter of the estimated number of operations across the conurbation as a whole. This situation reflects the high density of small businesses and service-sector companies, as well as the high concentration of both population and jobs in this area.

This high density of delivery flows and activities in a restricted and limited space causes specific problems, which have been highlighted in interviews and workshops with stakeholders. These include problems accessing the city centre and wasted time caused by congestion on the roads, problems caused by certain narrow streets demanding the use of small vehicles, a lack of loading zones or the unavailability of these zones due to unauthorised parking by private vehicles, a lack of spaces for trades people to park their vehicles close to building sites, difficulties caused by pedestrian zones requiring deliveries to be made in a narrow window of time in the morning, etc.

It is also important to note that freight delivery is highly internalised within the Grenoble conurbation. Around three quarters of all jobs in the sector are provided by companies that handle their own transport and logistics services.

### **Actions, experiments and projects**

The Grenoble region's sustainable logistics action plan features four key areas and sets out 15 actions to deliver improvements in urban freight delivery. These actions are currently under discussion and the stakeholders responsible for managing and coordinating them are currently being appointed. Work will begin in 2014 and the initial results will be examined in 2015.

A number of private initiatives have already been undertaken, including:

- use of bicycles for final-mile deliveries (Velocité 2008), which produced extremely positive results. This initiative should be continued in the future. The company concerned is actively involved in all consultation bodies.
- La Poste now makes deliveries using electric vehicles, using subsidies from the ADEME fund and central government support to expand its fleet of electric vehicles.

### 9.1.2. Annecy

#### Overview

The Communauté d'Agglomération d'Annecy, in the Haute-Savoie department has a population of 144,000, and is located 40 km from Geneva and 40 km from Chambéry.

The A41 motorway, which runs from Chambéry to Geneva, passes through the region. An average of 33,800 vehicles pass through Annecy on the A41 each day, including approximately 2,200 heavy goods vehicles.

The RD3508 acts as the bypass for Annecy and provides access to the Epagny shopping district, to the north east of the conurbation.

In winter, vehicles weighing more than 7.5 tonnes are not permitted to travel on the Annecy bypass or on the A41 between Geneva and Chambéry between the hours of 7 am and 6 pm, on certain dates only. These restrictions are due to expected high volumes of traffic on these routes caused by holidaymakers.

The Annecy conurbation comprises 13 communes. The city of Annecy itself has a population of 50,254, or 35% of the population of the conurbation as a whole. As at 31 December 2008, there were a total of 80,720 jobs in the region. In 2011, the most dynamic sectors were construction (up 19%), retail and transport (up 15%) and administration and education (up 13%).

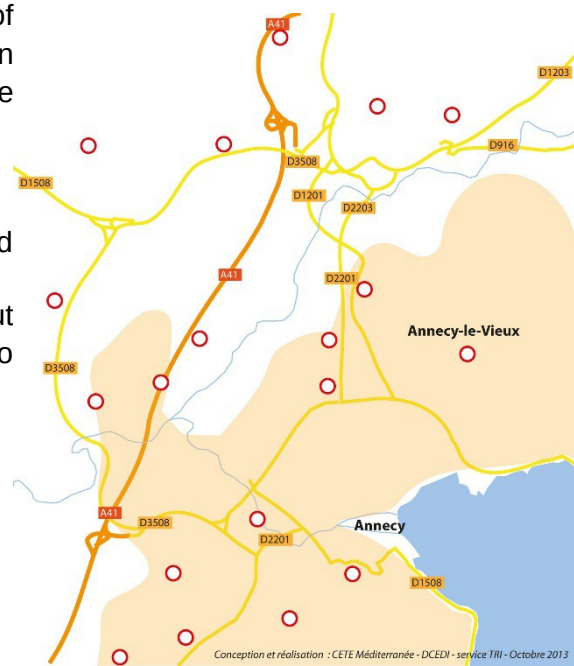
The Annecy conurbation's economy is driven by two business incubators and four excellence clusters, located at two business parks (64ha). A third business park (44ha) is currently being developed.

The main retail outlets are located to the west of the conurbation in Epagny (70 ha), to the south, in Seynod, (65 shops close to the A41) and in the city center.

#### Logistics

There are very few logistics hubs in Annecy and its conurbation.

Annecy's sustainable urban mobility plan sets out the area's major roads, but in practice no



regulations are applied and heavy goods vehicles are not required to use the designated transit routes.

The transport and logistics company location map shows that these businesses are located close to major transport routes, i.e. to the south of the conurbation. None of these businesses is located in the centre of the Annecy commune.

### **Relevant authorities on urban freight delivery**

The following authorities hold powers in the Annecy region:

- the Communauté d'Agglomération d'Annecy, which is responsible for transportation planning, preparation of the sustainable urban mobility plan and economic development
- the communes, which have traffic and parking police powers and are responsible for development via the local urban development plans (PLUs)
- the Syndicat Mixte du SCoT du Bassin Annécien, which is responsible for the regional integrated development plan (SCoT).

The political situation in the Annecy conurbation is complex. There is no will to revise the sustainable urban mobility plan, even though it was due for revision two years ago, as this revision would be likely to cause tension between councillors. In terms of urban logistics, an initiative was launched in 2011 to introduce an urban distribution centre. This initiative led to broad consensus between councillors on this topic. However, no consultation body or working group has yet been formed on the matter of urban logistics.

The 2001 sustainable urban mobility plan contains a paragraph about urban freight delivery, in which it confirms the idea that HGV routes must be consistent across the entire region covered by the "communauté d'agglomération". It proposes "an improvement to delivery conditions in the centre and a reduction in the inconvenience that this causes".

The proposed actions are:

- to create loading zones
- to introduce harmonised time regulations and to enforce compliance with regulations
- to introduce a consultation process involving all stakeholders (technical departments, shopkeepers and haulage companies).

Although discussed only in brief, the subject was nevertheless identified as a major issue and the initial areas for action were consistent with the ministry's proposals at the time.

Nevertheless, 12 years later, none of these actions has been fully implemented.

For example, there are discrepancies between the regulations in each commune. The sustainable urban mobility plan sets out a requirement to harmonise time-related regulations, but this has not been implemented.

The Annecy basin regional integrated development plan (SCoT du Bassin Annécien) was formally passed on 31 July 2013 and sets out seven actions relating to urban logistics:

- create Urban Logistic Spaces
- incorporate logistics into public space development and planning processes
- "include, in all significant commercial, service-sector, hotel and hospital projects, a requirement to provide sufficient space for deliveries and delivery vehicle parking"
- create a logistics hub on the immediate outskirts of the conurbation's centre
- modernise and rationalise city-centre deliveries, including the use of environmentally friendly vehicles, upstream/downstream pooling of the logistics chain, etc.
- "prepare a plan of urban logistics facilities across the conurbation"

- "consider the development of e-commerce"

The provisions of the SCoT therefore explicitly include the creation of the urban distribution centre.

### Local issues

The Annecy commune generates total emissions of 334,000 tonnes of carbon dioxide equivalent, of which 12% is generated by freight delivery.<sup>22</sup> Freight delivery by heavy goods vehicles causes both noise and pollution.

The basin-shaped topography of the Savoie and Haute-Savoie departments causes air masses to stagnate over the region, with the surrounding mountains preventing the wind from dispersing particulate matter. The air quality in Annecy is therefore between average and very poor for 145 days (or 39%) of the year. Improving air quality is therefore a major challenge, and reducing the harm caused by heavy goods vehicles is a major factor in delivering this improvement.

### Actions, experiments and projects

A number of experiments have been conducted in the area, driven by private initiatives. These cover urban freight delivery using environmentally friendly modes of transport, including :

**Ecolocolis:** a two-person company which delivers documents and parcels ranging from standard packages to bunches of flowers.

**Logydine and Fnac:** Logydine is a logistics company. Fnac organises daily shuttle transport services between its warehouses in Annecy, using a 25 m<sup>3</sup> electric lorry. Fnac is a major player in the search for new, innovative solutions in the Annecy conurbation. For example, the company is involved in the european project Urbanecy/LIFE+.

#### **Experiments: Urbanecy / LIFE+**

The LIFE programme is a European Union financial instrument designed to support all types of environmental project. In 2012, the Logistic Cluster Rhône-Alpes responded to a call for projects with an urban distribution centre project. The aim of the project is to create an integrated urban logistics hub to manage the circulation of freight. The project, located in Annecy, involves:

- creating an operation and management plan
- driving sustainable economic growth within the urban distribution centre by creating a separate legal entity that reflects the interests of all stakeholders and delivery companies that wish to invest
- investigating the possibility of introducing suitable regulations and improving parking conditions for delivery vehicles
- developing a software interface that is compatible with existing haulage company software programs and the hub's operating system
- deploying environmentally friendly vehicles and electrically assisted bicycles to improve the delivery service
- conducting an environmental impact analysis to promote the project both locally and on a wider scale.<sup>23</sup>

22 Source: PCET Ville d'Annecy, bilan carbone 2009

23 Source: Logistic Cluster Rhône-Alpes

This project involves a range of different stakeholders: the Logistic Cluster Rhône-Alpes (economic cluster), which acts as the main coordinator and facilitator; Logidyne, a logistics company, which is the initiator of the project; Interface Transport, a consulting firm which provides technical consulting services; Renault Trucks, which provides transport solutions; Tri-Vallées, a company specialising in waste management, cleaning and environmental services, which designs electrically assisted bicycles.

### 9.1.3. Chambéry

#### Overview

##### Location and access

Chambéry Métropole is a conurbation of 122,000 people located in the Savoie department, 110 km from Lyon, 60 km from Grenoble and 40 km from Annecy. It is situated in a wide valley, enclosed by the Bauges Mountains to the east, the Chartreuse Mountains and the Belledonne Mountains to the south, the Chaîne de l'Épine to the west and Lake Bourget to the north.

It is connect to Lyon by the A43 motorway, and to Annecy and Grenoble by the A41 motorway. An urban expressway runs through the conurbation. Chambéry is located on a major transit route both to and from Italy, and between 5,000 and 6,000 heavy goods vehicles use the urban expressway each day.



##### Demographics and economy

Chambéry Métropole comprises 24 communes. The city of Chambéry itself has a population of 54,470, or 45% of the population of the conurbation as a whole.

As at 31 December 2008, there were a total of 37,644 jobs in the region. There are an estimated 41,500 freight movements in the conurbation (28,500 deliveries and 13,000 pick-ups).

The most dynamic sectors are construction (4,400 jobs in 2009), public administration, education and health (2,635 jobs,) and retail, transport and services (27,918 jobs).

The economy of Chambéry Métropole is based on five main sectors:

- public services (prefecture, courts, university, hospitals, etc.)
- traditional manufacturing and service sectors, such as food processing (Alpina, Coppelia, etc.), mechanical engineering (OCV, Opinel, Transrol, etc.), building materials (Placoplâtre, Vicat, etc.), well-being and spas, tourism and transport (Exapaq, GEFCO, Pedretti, etc.)
- innovation, which has led to the emergence of new sectors such as renewable energy, industrial ecology, waste enhancement and high-tech industries (optics, imaging, etc.)
- education and training (university, engineering school, Savoie Technolac, etc.)
- research.

The conurbation has a total of nine business parks, the majority of which are located along the urban expressway.

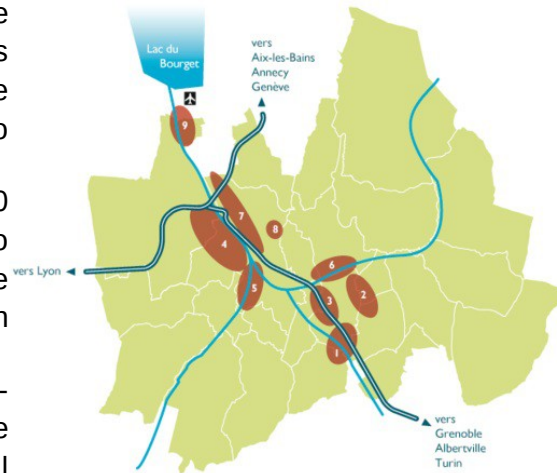


## Logistics

The Chambéry conurbation does not have an urban distribution centre, nor does it have specific loading zones. There are few logistics hubs in the conurbation, and its haulage companies are located in the industrial areas to the north of the conurbation.

Those businesses that generate HGV traffic (100 heavy goods vehicles per day at the most) do not pose major local traffic problems, since the majority of this traffic appears to use the urban expressway.

Despite recent closures, there are still a few rail-connected hubs, and some companies still have access to railway infrastructure for internal service within industrial sites. Placoplatre, for example, still has the facility to use the railway network for both supply and delivery purposes.



## Urban freight delivery in regional organization

The following authorities hold powers in the Chambéry region:

- Chambéry Métropole, which is responsible for transportation planning, preparation of the sustainable urban mobility plan, operation of the passenger transport network and economic development
- the communes, which have traffic and parking police powers and are responsible for development via the local urban development plans (PLUs)
- the Syndicat Mixte Métropole Savoie, which is responsible for preparing the SCoT.

Chambéry Métropole is responsible for the freight element of the sustainable urban mobility plan. The analysis was conducted in 2003, in conjunction with the CCI and shopkeepers. The main guideline of the sustainable urban mobility plan was to incorporate freight delivery into urban development and planning processes. The aim is to "facilitate activity to boost the performance of haulage companies", to "limit harm and conflicts between users caused by this traffic" and to "help to make the city centre economy more dynamic".

A total of 14 actions were identified in 2003: move businesses that generate HGV traffic close to the urban expressway; encourage the use of alternative forms of transport for journeys towards Italy (combined transport) to reduce through traffic; create a road haulage centre with a guarded HGV car park; introduce a statutory requirement for delivery zones and parking areas for new hypermarket and supermarket projects; pool costs ; create an urban logistics support centre; rationalise delivery rounds; harmonise regulations; take steps to favour the introduction of a home delivery system; encourage shopkeepers to collect freight from haulage company premises; enforce compliance with regulations; differentiate between uses of loading/unloading points; manage delivery vehicle access times in pedestrian zones; streamline the La Motte-Servolex business park.

But the body has remained inactive since then. Once new discussions are launched, it may be possible to reinstate this consultation process with the relevant stakeholders.

The Mayor of Chambéry, is also the Associate Chair of the "Centre-Ville en Mouvement" association. The association's aims are to "inject fresh impetus into city centres" and "promote innovation to deliver sustainable city centres". It publishes a range of documents, including the "boite du dernier kilomètre de livraison" (final-mile delivery box), which contains 30 innovation factsheets covering urban logistics. This presupposes that councillors in the Chambéry region are well-informed on the subject.

The conurbation's local climate and energy plan (PCET) drawn up by Chambéry city council includes plans to "initiate a debate on the creation of an urban logistics hub, under the LIFE programme, in conjunction with local stakeholders and in partnership with the Annecy conurbation, to address the issues surrounding urban deliveries."

Chambéry city council has introduced a policy to restrict access to the city centre in the mornings, especially for delivery vehicles. It has also introduced new measures to enforce compliance with parking space restrictions, and to limit noise and other harm caused by deliveries. As such, regional stakeholders do not see the need for a urban distribution centre-type facility.

There are discrepancies between the regulations in each commune. In Chambéry, there are designated delivery spaces. However these are not suited to large HGV vehicles. City-centre access is regulated, with access to city-centre shops in the pedestrian zone by special authorisation only (mostly in the mornings). Access is restricted by bollards. In general, the delivery spaces are broadly respected. There are no specific provisions for HGV parking overnight.

### **Local issues**

The carbon analysis conducted in 2009 shows that the road transport sector generates 275,000 tonnes of carbon dioxide equivalent. HGV freight delivery accounts for an estimated 27% of road transport emissions. Concerning air pollution, the ATMO index is between average and very poor on 39% of days.

### **Actions, experiments and projects**

A number of experiments have been conducted in the area, driven by private initiatives. These cover urban freight delivery using environmentally friendly modes of transport.

- **Cycl'aubaine, Tri-Vallées** : Cycl'aubaine was the first company to introduce an electrically assisted bicycle parcel delivery service in a mountainous region. The business has since been taken over by Tri-Vallées, a company based in Albertville which has two light utility vehicles, one tricycle and one cargo bike and delivers around 40 parcels a day, making an average of five daily delivery rounds. Between 2011 and 2013, it has delivered more than 2,500 parcels per month to individual customers.
- **Tonton Livraison** : A self-employed individual has also set up a business known as "Tonton Livraison".



## 9.2. Germany

City-logistic solutions are the more effective the larger the urban area is they are applied to or the more sensitive the city is to negative effects of goods transport. The largest towns in terms of residents in the German Alpine Convention area are Kempten, Rosenheim and Kaufbeuren.

Particularly sensitive to transport-related emissions are towns that promote themselves as climatic spas. Several towns of different sizes in the German Alpine Convention area hold this label. The two largest of them – Bad Reichenhall and Garmisch-Partenkirchen - will therefore also be analysed, together with the only city that is required to carry out a Clean Air Quality Action Plan, Lindau.

### 9.2.1. Rosenheim

#### Overview

Rosenheim lies between the city of Munich (ca. 70km) and the towns of Salzburg (ca. 90 km) and Innsbruck (ca. 110 km) of neighbouring Austria. It is referred to as „Gateway to the South“because of its proximity and good connection to Austria, Italy and Eastern Europe. The urban municipality Rosenheim covers an area of 37.52 km<sup>2</sup>. The town has 59.329 inhabitants. The population has increased by about 3 percent within the last 10 years and a further increase until 2028 is forecasted.<sup>24</sup> The surrounding administrative district Rosenheim counts 244.257 inhabitants.<sup>25</sup> The town is situated in the alpine upland of southeast Upper Bavaria, embedded in a landscape of high recreational value. The Alps, lakes (e.g. Chiemsee) and rivers are close-by. In terms of regional planning Rosenheim serves as a regional metropolis for the region 18 South-East Upper Bavaria and is an important economic centre for a population of about 800.000. (Stadt Rosenheim 2011, p.6). Rosenheim is famous as „shopping town“with a diversified retail industry in the city centre and big boxes (e.g. Aicher park) in the surroundings. It serves as an important location for educational (e.g. Hochschule Rosenheim), cultural (e.g. Kultur- und- Kongresszentrum) and administrative (e.g. Landratsamt) facilities. This is also shown in numbers as 70% of the 32.370 workplaces can be found in the tertiary sector (Stadt Rosenheim 2012a). And with 30% of all workplaces in industry (Stadt Rosenheim 2012b), among them world market leaders (e.g. Kathrein) Rosenheim has a robust economic structure.

The federal road B15 transits Rosenheim through the heart of the city from north to south. In Pfraundorf (ca. 7km from centre) it connects Rosenheim very well to the motorway to Austria (A8, A93) and to Munich (A8). Several country roads run from the surroundings to and through Rosenheim. In a transport development plan that is currently elaborated for Rosenheim, first results show that the road network is used to full capacity (see Figure 7 and Figure 8). More specific data for freight traffic will be available in 2014 (Stadt Rosenheim 2012a). In a recent survey about quality of life in Rosenheim (Stadt Rosenheim 2012b) the traffic situation was evaluated quite bad. The traffic routing in and around Rosenheim and the availability of parking spaces in the city centre were the two main issues that need to be improved. The general accessibility of the city centre by bike, car and public transport was evaluated as satisfactory. In another survey to the future development of Rosenheim in 2025

24 <http://www.rosenheim.de/wirtschaft/wirtschaftsstandort/daten-und-fakten.html>, 20.08.2013

25 <https://ergebnisse.zensus2011.de>, 22.08.2013

(Stadt Rosenheim 2012b) improvement of bike acceptance and public transport were the main wishes. Both studies regarding traffic focused on passenger transport only. Only when the possibility to open answers was given, „no/less heavy duty vehicles in the city were mentioned“(Stadt Rosenheim 2012b, p.30).

Within the municipality and the surrounding district (except for one distribution centre of DHL in the town Kolbermoor) no major freight centres do exist.

Rosenheim lies on two important railway axes (see Figure 9), the TEN-T priority project PP1 Berlin-Palermo and the axis Munich-Salzburg. Therefore it is excellent connected by regional, national and international railway passenger transport (e.g. in peak hours about every 10-20 minutes is a connection to Munich).

On these main transport axes freight transport plays a major role by both road and rail. By connecting Germany/Northern Europe to Italy and Eastern Europe huge amounts of goods transport pass by Rosenheim on road and rail. There is no data available about freight transport by rail in Rosenheim. Some companies have private side tracks (e.g. Inntal Metallverwertung GmbH) but no major logistic platforms exist. The closest terminals for combined transport can be found in Munich (Düss-Terminal München-Riem), Salzburg (Container Terminal Salzburg – CTS) and Wörgl (Rolling Road-ROLA) of neighboring Austria.

### **Environmental diagnostics**

In 2001 the transport sector in Rosenheim produced 132.600 t CO<sub>2</sub>. Freight traffic caused almost a third of all transport emissions, in numbers 45.000 t CO<sub>2</sub> per year. Thereof about 85% are generated by local transport or transport where origin or destination are lying within town.

It is estimated that through the introduction of a city logistics concept the originating and terminating traffic could be reduced by about 50% for heavy-duty vehicles, by about 30% for trucks and by about 10% for delivery vehicles. Only local transport with delivery vehicles might double for the reduction of transport with heavy-duty vehicles and trucks that causes higher emissions and is more consumption intensive (Stadt Rosenheim 2012, p. 23). Actual data to air quality doesn't exist. It is not foreseen to develop a Clean Air Plan or similar.

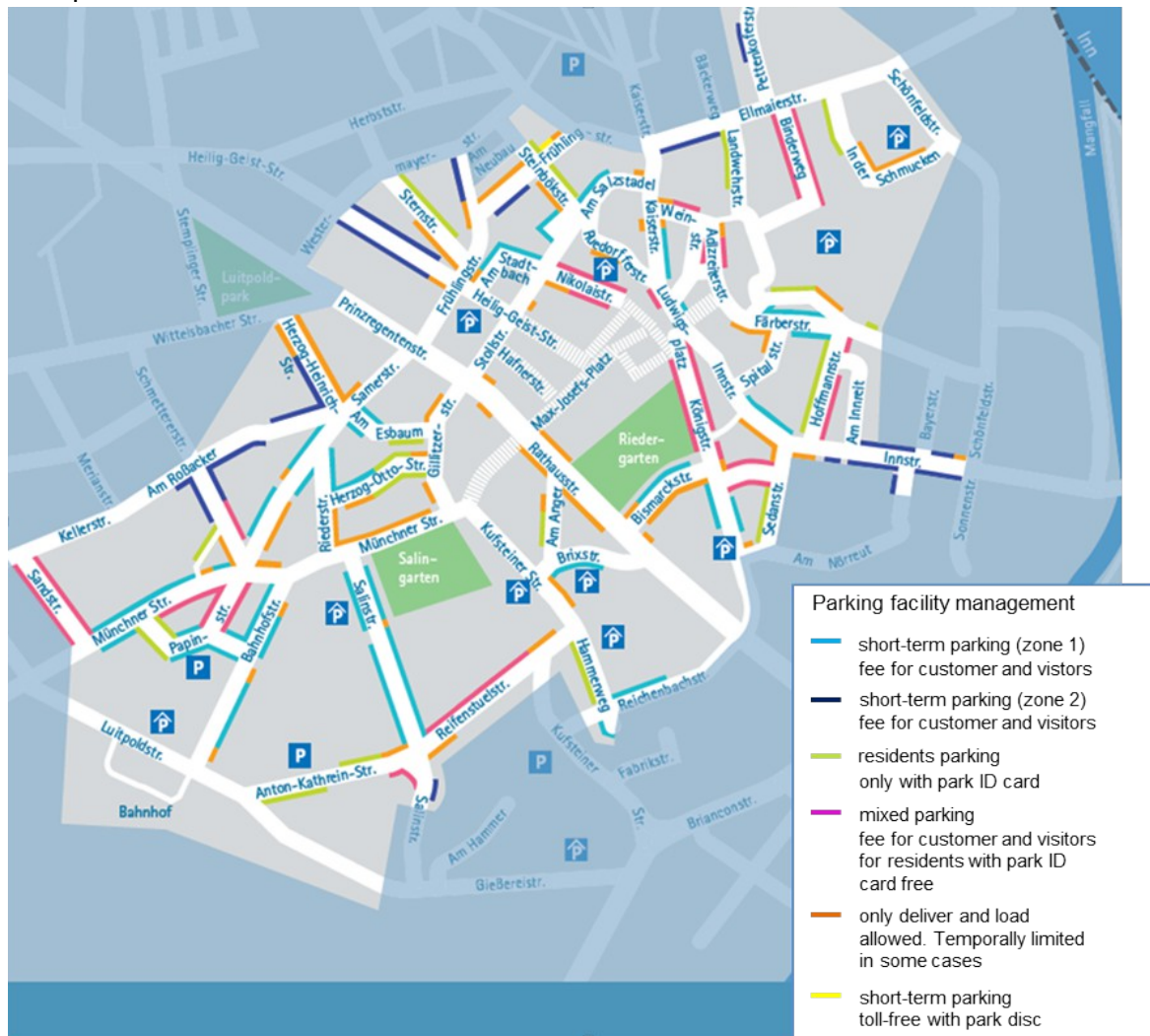
In Rosenheim 700 residents are affected by road traffic noise during day with a value LDEN > 67 dB(A) and 700 residents affected during night with a value LDEN > 57 dB(A). Following roads are concerned: B15, L2010, L2362, L2095, L2078.<sup>26</sup> Hot spots known to be caused by heavy-duty vehicles are the B15 and the L2362 (around „Brückenberg“-area). The exceedance of noise limit values is especially problematic close to residential areas. One example is the „Hubertusstraße“(see Figure 12 and 13) that is used as a shortcut through town by many vehicles (e.g. in 2010 16.600 cars and 1.400 trucks were counted on this road within 24 hours).

Townpeople living along this road are exposed to high noise and emission levels and have filed a lawsuit. An agreement could be reached by a 2 year-running pilot project that includes a speed limit of 30 km/h, measurements of noise and air quality as well as traffic counting (see Figure 12). Currently the prosecutors don't ask for the development of a Clean Air or Noise Action Plan as the time period for doing so is assessed too long. But depending on the measurement results the prosecutors will ask for further actions.<sup>27</sup> No special limitations for freight traffic (e.g. night driving ban, exclusion zones) are currently in force (except for truck

26 [http://www.lfu.bayern.de/laerm/eg\\_umgebungsplaemrichtlinie/kartierung/doc/betroffene\\_je\\_gemeinde\\_gt67\\_u\\_gt57\\_gerundet.pdf](http://www.lfu.bayern.de/laerm/eg_umgebungsplaemrichtlinie/kartierung/doc/betroffene_je_gemeinde_gt67_u_gt57_gerundet.pdf), p.3, 22.09.2013

27 <http://www.ovb-online.de/rosenheim/rosenheim-stadt/tempo-hubertusstrasse-2812411.html> (of 21.03.2013), 13.11.2013

exclusion in the Gießenbachstraße). The main reason for that is that no alternative routes are available. But it is foreseen to develop a Noise Action Plan in the near future.<sup>28</sup> In the city centre of Rosenheim few loading and delivering zones exist<sup>29</sup>. After having more results of the currently elaborated Transport Development Plan the future handling of freight transport will be discussed.



Loading and delivering zones in Rosenheim city centre (Source: City of Rosenheim, 2013)

## Governance

The city of Rosenheim is currently elaborating a sustainable urban development concept „Rosenheim 2025- City in Future“. In this process an intensive public participation (surveys, expert hearings, workshops) and several technical expertise are included. In the 3 expert hearings, one<sup>30</sup> referring to „Urban Development, Transport, Energy and Environment“ mobility, transport and traffic infrastructure and the needs of improvement were discussed. But the focus was on person transport, freight transport and logistics weren't mentioned at all. With two surveys the public could participate in the urban development process. One was asking for the current quality of life in Rosenheim, the other for wishes for Rosenheim 2025. Need for improvement was seen in traffic management and infrastructure and public transport, always related to person transport. Only when the possibility to open answers was

28 Expert interview, 07.11.2013

29 Flyer Parkraummanagement; City of Rosenheim, 2013 (Parking space management)

30 <http://www.rosenheim.de/stadt-und-buerger/planen-und-bauen/rosenheim-2025/3-experten-hearing.html>, 26.08.2013

given, „no/less heavy duty vehicles in the city were mentioned“ (Stadt Rosenheim 2012b, p.30). Among the technical expertise an integrated concept for energy, climate and environmental protection<sup>31</sup> has been elaborated<sup>32</sup>. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety funded this study in the context of its Climate Protection Initiative. Within this study GHG emissions and energy consumption of different transport sectors in the year 2001 were analyzed. It was shown that freight traffic causes almost a third of all transport emissions in Rosenheim (see Figure 10). Although the positive effects through the introduction of a city logistic concept are clearly shown in the study, it cannot be found among the proposed measures for implementation. The city council Rosenheim has agreed to the results of the study in September 2012. In the approved „WP4 Implementation Scenario 2025 with catalogue of measures“ no measure regarding freight transport are included. The impression that there is no focus on freight transport/city logistic from the politics' and administration's point of view was confirmed by the expert interview: Politics, administration and economy see no need for action regarding urban freight transport, but concerned inhabitants do what is e.g. discussed in open councils.

### **Experiments**

In the past ten years two attempts were made to develop approaches for urban logistics. One was made by the shipping company Günther Splitter of Rosenheim for a city logistic concept. Additionally the city administration wanted to develop a mobility management (e.g. for hospital, public works department). Due to lack of financing/subsidies the plans were never realized.<sup>33</sup>

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31 <http://www.rosenheim.de/news/einzelansicht/archive/2013/Januar/eintrag/1343.html>, 23.08.2013

32 <http://www.rosenheim.de/stadt-und-buerger/planen-und-bauen/rosenheim-2025.html>, 26.08.2013

33 Expert interview, 07.11.2013

## 9.2.2. Bad Reichenhall

### Overview

The town Bad Reichenhall covers an area of 39,44 km<sup>2</sup> of which 5,7 km<sup>2</sup> are used for settlement and traffic. It consists of the 3 parts Kernstadt, Marzoll and Karlstein which altogether have 16.830 inhabitants. The administrative district Berchtesgadener Land in which the town Bad Reichenhall lies, counts 100.830 inhabitants. Bad Reichenhall is situated in a basin encircled by the Alps in southeast Upper Bavaria, directly on the border to Austria. It has a historic and long tradition of salt production and is nowadays a climatic spa (Alpine salt-water spa). Tourism is one main economic sector with 101.957 arrivals and 592.568 nights in 2011. The average stay lasted 5.81 days (Bayerisches Staatsbad 2012, p. 4ff). The number of arrivals increased in the last 5 years, the number of nights decreased with an outlier in 2010. Since several years Bad Reichenhall fosters sustainable tourism and is a member of the Alpine Pearls. Around 81% of the 8.010 workplaces are in the tertiary sector and 17% in the secondary sector. Among Bad Reichenhall's industry (world) famous companies as e.g. Reber (famous for „Mozartkugeln“) and Südsalz („Bad Reichenhaller Markensalz“) can be found. Moreover Bad Reichenhall serves traditionally as location for the German Federal Armed Forces (Hochstufen-Kaserne). In 2001 Bad Reichenhall has been awarded the title „Alpine Town of the Year“ for its particular commitment to the implementation of the Alpine Convention.

Bad Reichenhall lies on the border to Austria, with a distance of 22 km to the city of Salzburg, of 76 km to Rosenheim and of 133 km to Munich.

The federal roads B20 and B21 connect in Bad Reichenhall and run on the same route in/around Bad Reichenhall. Shortly after town they split again. This route is one of the heaviest traffic burdened routes in South East Upper Bavaria. Heavy-duty vehicles play a major role as this route is chosen for transnational transport by transport and shipping companies who want to avoid paying toll in neighbouring Austria (Stadt Bad Reichenhall 2013, p.3). To disburden this route and detour some of the traffic a traffic planning concept for a tunnel („Kirchholztunnel“) has been developed (see Figure 13). But in April 2013 a narrow public decision (50,2%) against tunnelling this route was taken. Both federal roads connect Bad Reichenhall to the motorway A8 Munich-Salzburg; from the B20 there are driveways to both directions in Piding (ca. 6 km), from the B21 there is only a driveway (after ca. 6 km) to the direction of Munich.

Regarding railway connection, Bad Reichenhall lies on a secondary line of the main line Munich-Salzburg. This line connects Freilassing with Berchtesgaden. In doing so, there is a connection to Berchtesgaden about every 45 min., one to Salzburg about every hour and to Munich about every 30 min. with one change in Freilassing or Salzburg. It takes around 30 min. to Berchtesgaden, 30 min. to Salzburg and 2:20h to Munich by train.<sup>34</sup>

Regarding freight transport by rail a loading ramp exists in the station of Bad Reichenhall. But that is only partly used by the Federal Armed Forces.<sup>35</sup> The closest terminal for combined transport are the Container Terminal Salzburg (CTS)<sup>36</sup>, the RoLa-Terminal (Rolling Road)<sup>37</sup> in Wörgl and the Container Terminal in Munich (Duss-Terminal München-Riem<sup>38</sup>)

34 [www.bahn.de](http://www.bahn.de), 09.09.2013

35 Expert Interview, 30.09.2013

36 [www.ct-sbg.at](http://www.ct-sbg.at), 09.09.2013

37 [www.rola.at](http://www.rola.at), 09.09.2013

38 [www.dbnetze.com/duss-terminal](http://www.dbnetze.com/duss-terminal), 09.09.2013



that is used by local companies e.g. Dolomitwerk (that has in peak periods 50 containers per day).

### **Environmental diagnostics**

Levels of nitrogen oxide and ozone had been measured but no critical limits were exceeded. Measurements of particulate matters had not been performed. The rating as climatic spa is not in danger.<sup>39</sup> There are no data for GHG emissions.

In Bad Reichenhall 100 residents are affected by road traffic noise during day with a value  $L_{DEN} > 67$  dB(A) and 100 residents affected during night with a value  $L_{Night} > 57$  dB(A). Following roads are concerned: A8, B21, B20.<sup>40</sup> On B20 and B21 a ban on driving between 10pm-6am exists for trucks with a gross vehicle weight over 7,5t.

Neither a noise action plan nor a clean air plan does exist, as there is currently no need for it.

### **Governance**

The city of Bad Reichenhall belongs to the administrative district Berchtesgadener Land. Within the city the traffic department is responsible for district, state and federal roads. Public transport is organized by municipal utilities. In the administrative district a traffic manager is responsible for transport planning.

Bad Reichenhall fosters natural gas transport by organizing public transport with natural gas buses, by using commercial vehicles powered by natural gas and subsidizing the purchase of natural gas passenger cars.

Urban freight traffic has been reduced through the introduction of exclusion zones in the late 1980s. Further approaches or activities for controlling urban freight transport don't exist, as currently there is no need for them. The public is invited to discuss any concerns in public consultation hours.

The traffic-planning concept "Kirchholztunnel" aims to disburden the federal roads B20 and B21 and would also shift freight traffic into the tunnel.

### **Actions and experiments**

As a climatic spa Bad Reichenhall is particularly sensitive to transport-related emissions. It is member of the "Autofreie Kur- und Fremdenverkehrsorte (IAKF)" (Car-free spa and tourism towns) in Bavaria and has fostered sustainable public transport with different concepts since the 1980s.<sup>41</sup> To minimize transport-related emissions in the city center and spa area the City of Bad Reichenhall has introduced exclusion zones for cars, motorbikes and trucks.<sup>42</sup> Below is shown the truck exclusion map. In the major part of the city center (in pink) conventional trucks are excluded. Only silent trucks are permitted in this area. As silent trucks are considered vehicles that are classified with a noise level G1 („Geräuschklasse G1“) in the vehicle registration certificate. Different models are imaginable in this category but the majorities are trucks with closed motor powered by diesel. As the focus lies on noise reduction Bad Reichenhall subsidizes local companies with 1000€/vehicle for buying silent vehicles. In the pedestrian area (in green) delivery vehicles have access before 11am and after 5pm.

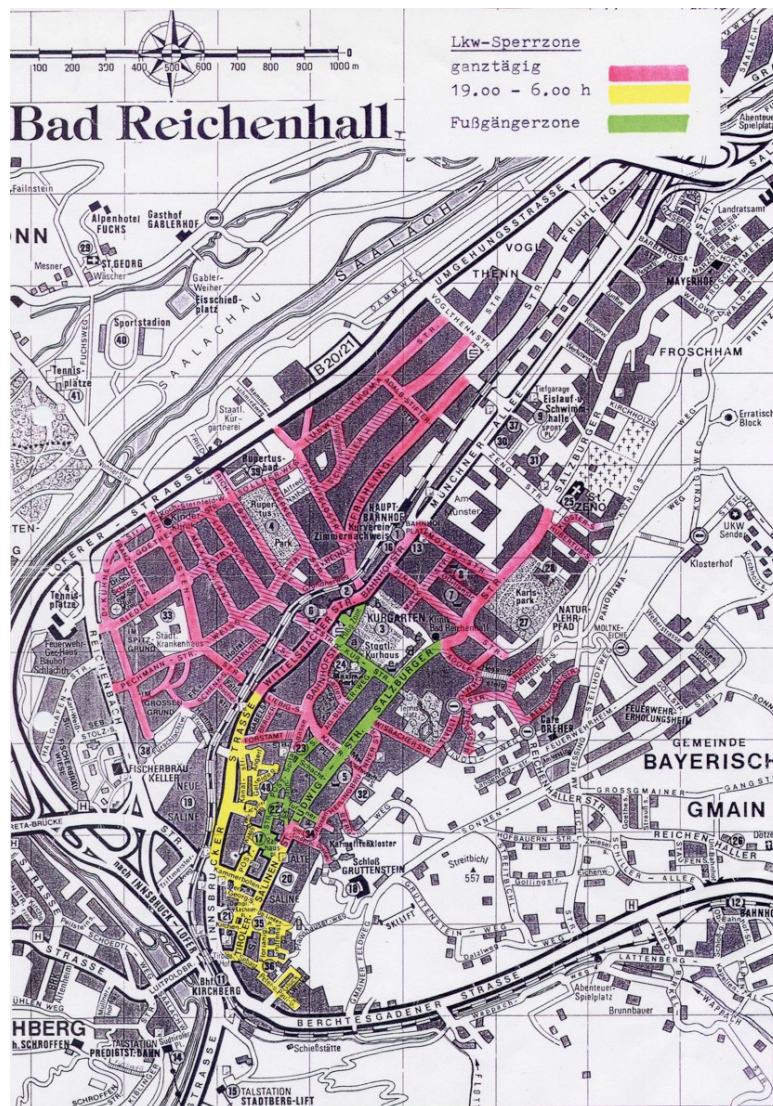
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39 Expert interview, 30.09.2013

40 [http://www.lfu.bayern.de/laerm/eg\\_umgebungsplaemrichtlinie/kartierung/doc/betroffene\\_je\\_gemeinde\\_gt67\\_u\\_gt57\\_gerundet.pdf](http://www.lfu.bayern.de/laerm/eg_umgebungsplaemrichtlinie/kartierung/doc/betroffene_je_gemeinde_gt67_u_gt57_gerundet.pdf), p.1, 22.09.2013

41 [www.iakf.de/](http://www.iakf.de/), 18.09.2013

42 <http://www.stadt-bad-reichenhall.de/de/verkehr/sperrzonen/>, 06.09.2013



**Truck exclusion zone (Source: City of Bad Reichenhalla)**

Further Bad Reichenhalla is a pilot city for natural gas powered vehicles. It organizes public and commercial transport by natural gas powered vehicles to reduce emissions. Recently the Bad Reichenhalla got an invitation to join the project “Minniemoobil”<sup>43</sup> which aims to develop freight bicycles. No decision regarding participation has been taken so far.<sup>44</sup>

43 <http://minniemoobil.com>, 13.11.2013

44 Expert interview, 30.09.2013

### 9.2.3. Garmisch-Partenkirchen

#### Overview

Garmisch-Partenkirchen (GAP), district capital of the district of the same name, lies in an Alpine surrounding at 708 m a.s.l. and covers an area of 205.67 km<sup>2</sup><sup>45</sup>. The town Garmisch-Partenkirchen consists of two settlements, Garmisch and Partenkirchen, which have merged to one municipality in 1935. Garmisch-Partenkirchen has 25,581 residents (Census 9th May 2011)<sup>46</sup> and a population density of about 127 residents per km<sup>2</sup><sup>47</sup>, which is very low due to the high Alpine share of the municipality area. Garmisch-Partenkirchen is the seat of the administrative district of the same name with 84,046 residents.

In the year 2012 Garmisch-Partenkirchen had about 10,300 regular workplaces<sup>48</sup> and a positive commuter balance of 1,685 persons. About one third of the workplaces is in the trade, transport and tourism sector, as Garmisch-Partenkirchen is one of the main tourist destinations for day tourism as well as for overnight stays in the German Alpine area. Furthermore Garmisch-Partenkirchen is the district's administrative center and has many workplaces in services providing enterprises (e.g. like waste disposal). For this reasons almost 9,000 work places are in the tertiary sector<sup>49</sup>. No major enterprise is settled in GAP, most enterprises are concentrated on the local and regional market.

Garmisch-Partenkirchen lies at the federal road B2 Munich – Mittenwald and the federal road B23 Augsburg - Garmisch-Partenkirchen. From the north the town is accessible via the motorway A95, which ends in Eschenlohe (about 10 km from Garmisch-Partenkirchen) and flows into the federal road B2. This extends the travel time because the village of Oberau has to be passed with only one lane per direction. Therefore in peak times congestions on the way to Garmisch-Partenkirchen and in Garmisch-Partenkirchen are not rare and the accessibility by road traffic is hindered. This affects not only tourism, but also goods transport, what is seen as a disadvantage for business.

Coming from the south (Inn valley) the topography hinders road transport as well, the road is not accessible for heavy duty vehicles above 7.5 t. Present local bypasses are planned to improve this situation.

Concerning accessibility via rail Garmisch-Partenkirchen has a good accessibility for passengers (connected to Munich every hour, in peak times two trains per hour, travel time about 90 min). A part of the line has only one track – an obstacle for an increase in speed. A railway connection to Austria (Innsbruck) has also a regular service (9-10 times a day). Garmisch-Partenkirchen has no major public logistic platform.

#### Environmental diagnostic

As a climatic spa Garmisch-Partenkirchen is particularly sensitive to transport-related emissions. In spite of the congestions at both of the federal roads (B23 and B2), air pollution in Garmisch-Partenkirchen did not yet exceed the legal limit values.

The strategic noise map, compiled by the Bavarian Environment Agency for Garmisch-Partenkirchen shows the noise emissions LDEN.

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45 Source: Statistik kommunal 2012

46 Source: <https://ergebnisse.zensus2011.de/#Home>:

47 Source: INKA online (loaded August 2013)

48 regular employees paying social insurance, self-employed persons, freelance and low-wage workers are not included

49 Source: INKA online (loaded August 2013)



The number of residents affected by road traffic noise (rounded on 50) shows in Garmisch-Partenkirchen 400 residents affected by LDEN > 67 dB(A) and 500 residents affected by LNight > 57 dB(A). Noise caused by railroad traffic is no issue in Garmisch-Partenkirchen.

### **Governance**

Within the administration there is no position explicitly responsible for urban freight transport issues. Competences are determined for issues like traffic supervision and spatial planning / local building / infrastructure planning. For local and regional public transport planning a planning document is giving guidance and the municipal transport service company is providing the service. The contacts to the administration showed that urban freight transport and logistics is not an issue perceived as field of action. The only exception are regulations regarding deliveries in pedestrian zones.

### **Experiments**

Garmisch-Partenkirchen is a model community for electro mobility. But all activities in this context are focused on passenger mobility, car-sharing for tourists and bikes, but – at least at the moment – not in urban freight transport.

## **9.2.4. Kaufbeuren**

### **Overview**

The county-free city of Kaufbeuren lies outside the geomorphological Alpine bow at 678 m a.s.l. and covers an area of about 40 km<sup>2</sup>. Kaufbeuren has 41,550 residents (Census 2011) and a population density of about 1,040 residents per km<sup>2</sup>.

In the year 2011 Kaufbeuren had about 15,500 regular workplaces and a small positive commuter balance of 621 employees. About 4,000 workplaces were in the second sector, about 6,000 in public or private service providers, about 5,500 also in the tertiary sector (trade, tourism, transport and others). This means that Kaufbeuren features a strong economic emphasize on the tertiary sector.

Kaufbeuren has two important parts: the historical town and quarter established after WW II for displaced persons, called Neu-Gablonz. Today more than 1/3 of Kaufbeuren's residents live in Neu-Gablonz and many enterprises are concentrated in this quarter.

Concerning road transport, Kaufbeuren is connected to two federal roads (B12 and B 16) but has no direct highway connection. The next highway (near Buchloe) A96 is about 20 km away from Kaufbeuren and can be reached by federal road B12.

Kaufbeuren has a good accessibility for passengers being serviced half-hourly through the railway lines Munich-Lindau and Augsburg-Füssen for regional services and one Intercity a day coming from northern Germany and going to Oberstdorf. The lines are not yet completely electrified. There is no goods dispatch at the railway station.

Concerning goods transport Kaufbeuren had a transport volume of about 3 Mio tons per year (2007/2010) which is predicted to increase to 4 Mio tons in the year 2020. All the goods are transported on roads, as there is no railway infrastructure for freight transport.

Kaufbeuren has no major public logistic platform and no public freight hub. A regional retailer (V-Markt) maintains a hub for its enterprise. Additionally several international shipping companies maintain logistic centres / depots in Kaufbeuren, where they provide logistic services for their clients:

Webopac-logistics maintains a logistic centre equipped with advanced storage technology, a high rack warehouse and back end for online shops;

Transport Logistic Allgaeu maintains a 700 m<sup>2</sup>-centre for stock turnover; Several industry-/commercial zones are located directly at the federal road B12, so many industry-related freights don't have to pass through the city centre.

### **Environmental diagnostic**

There are no exceedances of air pollution caused by transport in Kaufbeuren.

Road traffic noise along the state roads St 2014, St 2055 and the federal roads B12 and B16 (rounded on 50) affect in Kaufbeuren 100 residents by LDEN > 67 dB(A) and 200 residents by LNight > 57 dB(A). Noise caused by railroad traffic is no issue in Kaufbeuren.

There is only one road where inhabitants perceived freight traffic as disturbing. But after about 30 years of planning a new road connection which is no more passing through housing areas, was built.

### **Governance and experiments**

Concerning transport issues the city administration focuses more on optimizing public transport, than on urban logistics. They match the inner-urban bus lines to the arrival/departure times of the trains to improve the travel chain of commuters. A special bus line was installed to connect the commercial/industrial zones to the train station.

Due to the fact, that urban freight transport is not perceived as a greater disturbance neither elected officials nor the city administration pursue a local policy on urban logistics.

Restrictions for freight transport vehicles are only valid for the pedestrian zone in the city centre.

### **9.2.5. Kempten**

#### **Overview**

The county-free city of Kempten lies at the northern rim of the Alpine bow at 674 m a.s.l. and covers an area of about 65 km<sup>2</sup>. Kempten has 64,078 residents (Census 2011) and a population density of about 983 residents per km<sup>2</sup>.

In the year 2011 Kempten had about 33,100 regular workplaces and a high positive commuter balance of 10,200 employees. About 6,300 workplaces were in the second sector, about 12,500 in public or private service providers, about 14,300 also in the tertiary sector (trade, tourism, transport and others). Kempten has a university of applied sciences with about 5,000 students.

Kempten lies at the highway A 7 and at the federal roads B12, B19 and B309. Concerning rail connection Kempten has a good accessibility for passengers being serviced at least hourly through the lines Munich – Lindau, Neu-Ulm - Memmingen – Kempten, Nuremberg – Lindau/Oberstdorf in regional service and three Intercity/Eurocity-connections from northern Germany to Oberstdorf or Munich to Zurich.

There are no major logistic platforms Kempten, but several international shipping companies maintain logistic centres / depots in Kempten, where they provide logistic services for their clients:

Dachser has its main seat in Kempten and maintains a distribution centre for the parcel service enterprise DPD, which is located nearby the highway A7 in the north of Kempten (Ursulasried).

Lebert maintains a branch in Kempten with 7,500 m<sup>2</sup> area for stock turnover and 24,000 m<sup>2</sup> logistic area.

Logistik Zentrum Allgäu (Center for Logistics Allgaeu Region) maintains a branch in Kempten.

All of them are located in commercial zones near the main road infrastructures, so they are not perceived as a pressure for the inhabitants.

#### **Environmental diagnostic**

Air pollution in Kempten did not yet exceed the legal limit values.

The strategic noise map, compiled by the Bavarian Environment Agency for Kempten, shows LDEN at state roads St 2009 and 2055, federal roads B1 and B309 and federal highway A7.

The number of residents affected by road traffic noise (rounded on 50) shows in Kempten 700 residents affected by LDEN > 67 dB(A) and 900 residents affected by LNight > 57 dB(A).

Noise caused by railroad traffic is no issue in Kempten.

There are some “hotspots” where air pollution is perceived as annoying, but they are strongly connected to individual motorized traffic and not as much to freight transport.

#### **Governance**

An integrated transport development plan is in process and goods transport will be an issue. It will be finished probably in 2014.

The municipal council of Kempten declared in 2009 that climate protection is one of five strategic future aims to the year 2020 and takes part in a pilot federal project “Masterplan 100% climate protection until 2050”. In this context Kempten has a manager for climate

protection issues in the administration. The manager plans to start a small city logistic project in the next two years, but this is not elaborated at the moment.

## **Experiments**

In cooperation between the University of Kempten and a private enterprise (ABT) 50 delivery vehicles will be transformed to electric vehicles. The goal of this project is to prove that e-mobility is not only adequate for urban areas, but also for delivery services in rural regions.

### **9.2.6. Lindau**

#### **Overview**

The city of Lindau, district capital of the district of the same name, at the Lake Constance at 400 m a.s.l. and covers an area of about 33 km<sup>2</sup>. The historical centre of Lindau lies on an island in the Lake Constance. Lindau has 24,491 residents (Census 2011) and a population density of about 750 residents per km<sup>2</sup>. Lindau is the seat of the administrative district of the same name with 78,420 residents.

In the year 2011 Lindau had about 11,600 regular workplaces and a relatively high positive commuter balance of 3,600 employees. About 4,300 workplaces were in the second sector, about 2,400 in public or private service providers, about 5,000 also in the tertiary sector (trade, tourism, transport and others). Especially summer tourism plays an important economic role for Lindau, but also congresses and conferences have economic importance. Lindau lies at the highway A 96 and at the federal roads B12 and B31. Concerning rail connection Lindau has a good accessibility for passengers being serviced through the lines Munich – Lindau, Nuremberg – Augsburg – Lindau, Ulm – Kempten – Lindau, (Stuttgart) – Ulm - Lindau in regional service and Intercity/Eurocity-connections from Munich to Zurich. Additionally Lindau is daily connected by the Austrian high-speed-train Railjet from Vienna.

#### **Environmental diagnostic**

In Lindau the Federal Environment Agency has a traffic-related air pollution monitoring station. It shows that Lindau had in the past several years more exceedances of the daily limit value<sup>50</sup> for PM<sub>10</sub> (particulate matter < 10 µm).

Due to the exceedance in the year 2003 an action plan for clean air was developed in 2005/06 and updated in 2010 when NO<sub>2</sub> threshold was exceeded.

To reduce air pollution the effects of three measures concerning the transport sector were modelled:

Passage ban for HDV

Low emission zone

Speed limits

The results showed that none of these measures have enough effect on air quality to justify them. Detailed modelling of the emissions showed that local traffic has a share of 29% to particulate matter and local traffic in this case is mainly caused by private cars used by commuters. Most of the PM-pollution has its origin in other sources and the exceedance of the daily limit value occur mainly in winter times when inversions are very frequent.

The strategic noise map, compiled by the Bavarian Environment Agency for Lindau, shows LDEN at state roads St 2375, federal roads B12 and B31 and at federal highway A96.

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50 The daily limit value of 50µg/m<sup>3</sup> may be exceeded 35 days per year

The number of residents affected by road traffic noise (rounded on 50) shows in Lindau 200 residents affected by LDEN > 67 dB(A) and 200 residents affected by LNight > 57 dB(A). Noise caused by railroad traffic is no issue in Lindau.

### **Governance**

Within the administration there is no position explicitly responsible for urban freight transport issues. Competences are determined for issues like traffic supervision and spatial planning / local building / infrastructure planning. For local and regional public transport planning a planning document is giving guidance and the municipal transport service company is providing the service. The contacts to the administration showed that urban freight transport and logistics is not an issue perceived as field of action.

### **Experiments**

Lindau had started a City logistic project for the Island in the 90th, but sadly nobody within the administration or the Chamber of commerce could give any information about this project. In the air plan one suggestion to improve air quality was to re-activate this city logistic project, but this was not pursued.

### 9.3. Italy

The following pages briefly resume the state-of-the-art regarding logistics and urban freight delivery, at local/regional scale, in some selected Italian case studies and territories identified. Related best practices and further information will be highlighted in the dedicated session.

#### 9.3.1. Aosta



Aosta is the most important urban area of the Autonomous region of Valle d'Aosta. The region is located along the corridor which connect North-Western Italy to France through the Mont Blanc Tunnel and it is one of the main Alpine transit roads. The city of Aosta plays a vital role in the development of the region with its 35,000 inhabitants, amounting to 27% of the total resident population of the region (127,000 units). This percentage reaches the 54% if we take into consideration the total population living in the "Plaine Valdotaïne" (69,000 units). Demographic trends of past decade highlight positive balance for the entire region, especially for Municipalities of "La Plaine" area (+13,1%) and lower values for Aosta (+2,7%). The city is also a crucial node also of economic and commercial activities. As far as it concerns services, Aosta is the main destination area for the entire population of the valley. Motorway connections crossing the city of Aosta mainly refer to two international itineraries:

1. Torino-Aosta-Mont Blanc (Motorway A5 e T1 of Mont Blanc) - Geneva (CH)- Macon (F);
2. Aosta-Martigny (R9-variante della SS 27-T2 del Gran San Bernardo).

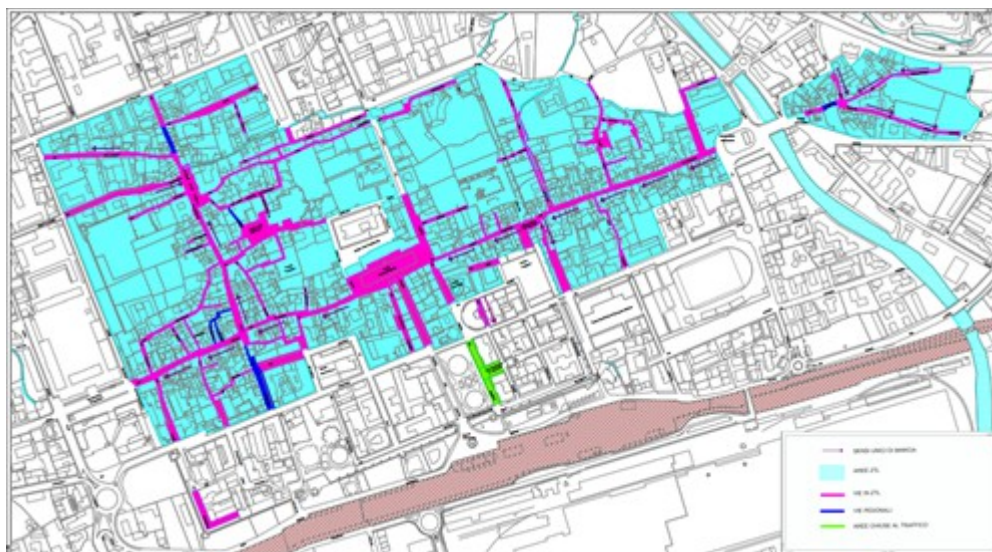
Currently, Aosta has one of the highest Italian motorization rate (70,3 cars per 100 inhabitants, national average amounts to 60,1), producing negative effects on mobility behaviours. Modal shift available data shown that 90% of trips starting from Aosta and 82% of trips having the city as final destination are made by car. Aosta generates and attracts 78% of daily trips, made for working or study purposes in the entire "Plaine" area.

Almost 70% of trips within 7 a.m. and 11 a.m. are made for travel purposes (with some differences among districts). Most trips are made on a daily basis or several times per week. With the exception of the hilly areas which register high shares of non-daily trips (40%). Most circulating cars (almost 75%) travels with only one person on-board.

Currently, the Autonomous Region of Valle d'Aosta not dispose of a regional Transport Plan, nor a regional Logistic Plan. The Territorial Coordination Plan (Piano Territoriale di

Coordinamento) has not been realized yet. Therefore, logistics is mainly regulated at municipal level. The municipality of Aosta realized in 2011 the General Plan on Urban Traffic (Piano Generale del Traffico Urbano, PGTU), in which is highlighted the role of the “Autoporto” and “Cityporto” (for further details, see the related best practice).

Aosta's Autoporto is located in proximity at the “Aosta Est” tollbooth of highway no. A5, between the two municipalities of Brissogne and Pollein. The freight terminal is equipped with a large area for the parking of goods vehicles (40,000 m<sup>2</sup>) and specific services, such as customs offices, veterinary controls led by the Ministry of Health, a post office, a logistics platform, as well as various commercial and directional accessories. The parking area is used for temporary or longer stops, as a recovery for heavy vehicles coming from or directed to the Mont Blanc Tunnel. Its management is under the responsibility of Autoporto Valle d'Aosta S.p.A.



Source: [www.autoportovda.it](http://www.autoportovda.it)

Vehicles distributing the goods in shops located within the “LTZ<sup>51</sup>” area must follow the following rules:

- Access to “LTZ” area is allowed from 7 a.m. to 10.30 a.m.;
- Any stop (taking and delivering of goods) is allowed from 7 a.m. to 11 a.m.;

Within the General Plan of Urban Traffic of the Municipality of Aosta, some interesting data are available regarding urban freight delivery. Almost 80% of heavy vehicles which enter in

51 Limited Traffic Zone (LTZ). In Italian Zona a traffico limitato (ZTL)

the city between 7 a.m. and 11 a.m. make deliveries, while about 20% enter to withdraw goods. More than 60% of vehicles which enter in the city has a load factor lower than 25%. However, it should be indicated that the central urban area attracts more than 50% of commercial vehicles with a load factor higher than 25% (with peaks that reach 75% in some localized areas).

### **9.3.2. Torino and Piemonte**

Historically, Piemonte has been considered, probably because of its morphology, more as a generator of traffic than an area of transit of goods. The regional economy have been characterized by large companies redistributing raw materials, semi-finished and finished products. Nowadays, the planning and the implementation of European major infrastructure corridors contributed contributed to modify this scenario.

The development of a regional logistics system capable to respond to the global demand brings necessarily both positive and negative elements for the territory: on the one hand, it is a factor of development of the regional system (higher local employment, development of know-how, the presence of high-level logistics services for local businesses). On the other hand, it can create critical situations (congestion, environmental pollution and “soil occupation”) for the presence of crossing streams.

Critical issues have been identified in the current freight traffic routes crossing the region, as well as in weak existing infrastructure and a not efficient logistics system that works in a non-optimal inter-modal side (especially the modal shift from road to rail), which clogs the urban nodes (and especially at metropolitan scale), as well as much of the network regional roads. This produces an excess of heavy traffic flows along corridors situated in most sensitive Alpine areas.

At the local level, the entrepreneurial system of Piemonte is composed by an extensive network of industrial districts. The business and productive structure on which are based the so-called industrial districts is quite diverse. However, the underlying trend, in many districts, is to create supply chains based on several SMEs. The dispersed production, often across various stages of manufacturing, makes the management of the transport flows of goods a key element for the competitiveness of individual districts. In addition, the current management – which should be verified with respect to the single district realities – often delegated the transport organization to the same companies that already operate a significant portion of their own. The type of the district, rather than the type of product or the geographical area of the district, affects the characteristics on which is managed. Three types are identified:

- Districts within which there are only one or a few large companies that emerge on the others for market power and technological and commercial leadership in relation to other;
- Districts where there are some medium-sized companies with market power and industrial capabilities mostly equivalent;
- Districts characterized by the presence of a widespread combination of small businesses and artisan companies of similar size, where none prevails;

The process started by institutions and companies in some territories is certainly a positive sign of greater awareness of the problem. Nevertheless, it would be necessary to establish a network of collaboration between the different administrative levels, supporting integration and dialogue between different sectors such as transport, environment, urban planning, trade and mobility of goods and related projects. These are areas of local government not sufficiently connected between them and rarely designed to promote an integrated system of



urban policies and sustainable mobility choices based on urban development and investment in transport.

For the organization of the logistics centre in the metropolitan area of Turin, on the which was started a special study are proposed:

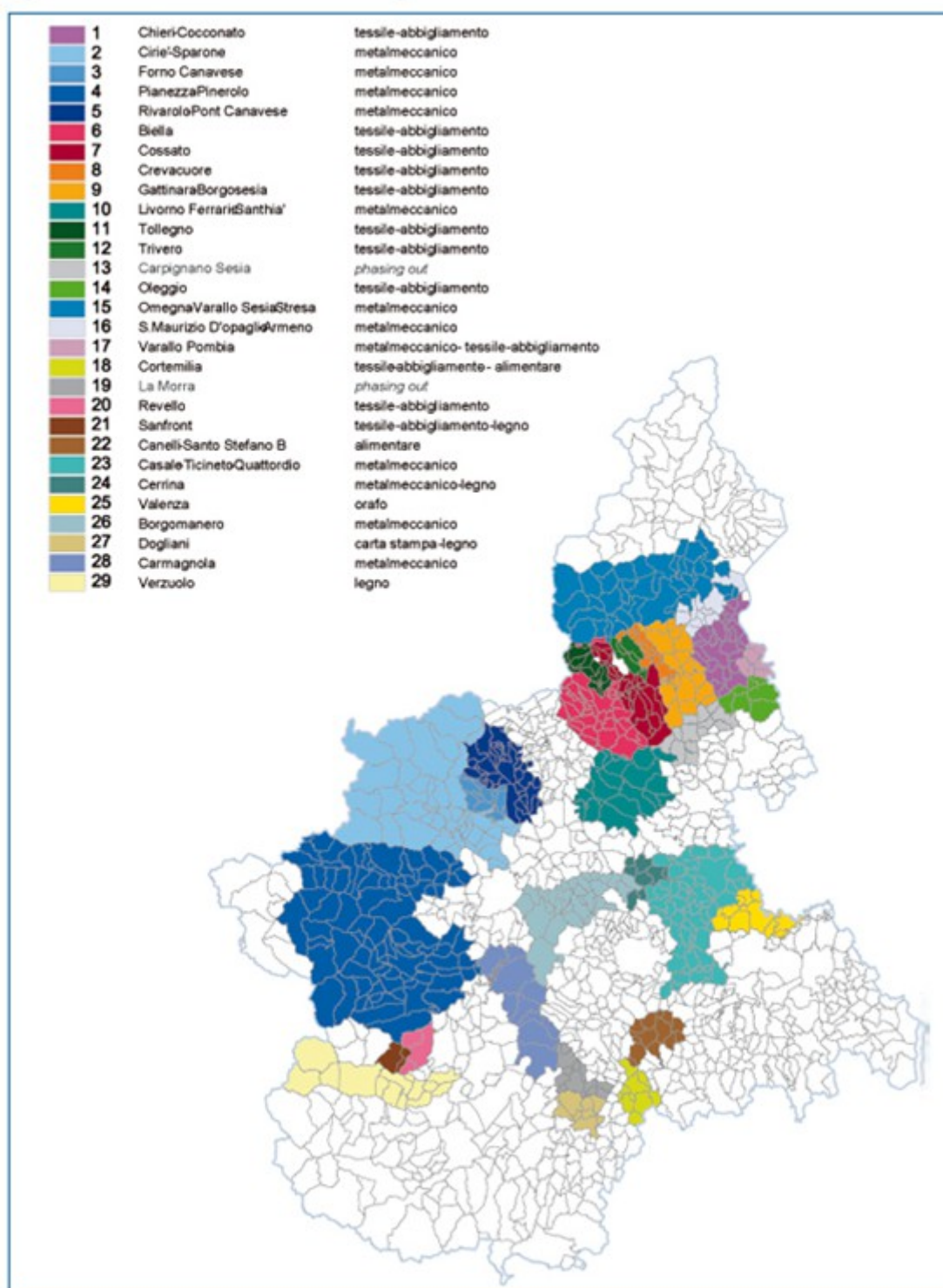
- the development of city logistics, acting on the rationalization of the system distribution of goods about times and schedules, storage and delivery;
- the activation of reverse logistics projects, aimed at reducing the environmental impact of return flows through the material handling, packaging, products and transport to waste treatment facilities;
- the introduction of e-logistics, creating the conditions for which firms, leveraging information technology, may transact business using procedures and computer applications, in accordance with shared standard trade agreements.

The municipality of Torino (130 km<sup>2</sup> surface) counts more than 900.000 inhabitants, and a GDP of about 55.000 millions of Euro (4.5% of national GDP), is one of the most important towns in Italy. Since the 1990's Torino has been following a path that transformed the city from an industrial capital into an innovation pole. Torino is nowadays multiplying its efforts towards a more sustainable development, one of the key-themes of the City Strategic Guidelines. Torino's path to become a "Smart City" started two years ago, when the City Council took the decision to take part in the initiative of the European Commission "Covenant of Mayors" and engaged itself to elaborate an Action Plan for Energy in order to reduce its CO<sub>2</sub> emissions more than 20% by 2020. The Torino Action Plan for Energy (TAPE), that represents a fundamental step to present Torino as "Smart City", was approved in 2010 and its objective is to reduce 40% CO<sub>2</sub> emissions by 2020.

Since the mid '90s the City of Torino has worked on sustainable mobility, approving the Traffic Urban Plan and detailed scale plans (city centre mobility plan, cycle paths plan, road safety plan, ecc). In 2011 The City Council approved the Sustainable Urban Mobility Plan, in line with the indications reported in the White Book "The European transport policy until 2010: time for choices" and the Green Book "Towards a new urban mobility culture".

Torino's city centre is at the heart of the daily commute, and requires greater protection for the presence of its historic fabric, with buildings of great artistic and architectural value. There are about 10,500 economic activities, of which the most numerous are commercial (retail / wholesale) and public places (bars / restaurants) which constitute a total of about 4200, followed by the tertiary sector and private public offices.

Figura 3.1 - Distretti Industriali Individuati dalla Regione Piemonte con DCR 2927-6663 del 26 febbraio 2002 - dati 2006



Fonte: Regione Piemonte

The city of Turin, even if not included within the Alpine Convention area, is currently facing new challenges on developing new solutions, keeping into account incoming traffic flows from surrounding perialpine areas.

In 2012 the City of Turin decided to improve the efficiency of urban logistics by shifting from policies offer oriented to supply demand management. Two official charts paved the way to this change of perspective: the first one was signed with Italian Ministry of Transport and Infrastructure, being the city experiencing this new governance model as coordinator of Italian Great Metropolitan Areas network. The second agreement was signed with all relevant local stakeholders in order to have a long term plan towards the objective of 2030 zero emission urban logistics. The new plan imply new investments for the renew of vehicles and the installation of tracing & tracking facilities for all commercial vehicles, investments that have been balanced by operative advantages for the operators that accept to follow to the recognition scheme.

The new governance model identify – in a time frame of five years – the necessary steps for the substitution of Euro 3-4 vehicles that have to be replaced with more environmentally friendly vehicles, or otherwise complying at least with Euro 5 and 3,5 tons or “zero emissions” vehicles with a gross vehicle weight less than or equal to 7 tons. In both cases, the vehicles should have installed electronic devices able to detect and transmit distance data regarding the location of the vehicle (tracking & tracing).

On the other hand, the operators fulfilling these requirements will have extended downtown restricted area (LTZ) time windows from 6 am to 12pm, free admission to LTZ for two years, use of reserved areas for loading/unloading in LTZ, use of reserved corridors for accessing the LTZ.

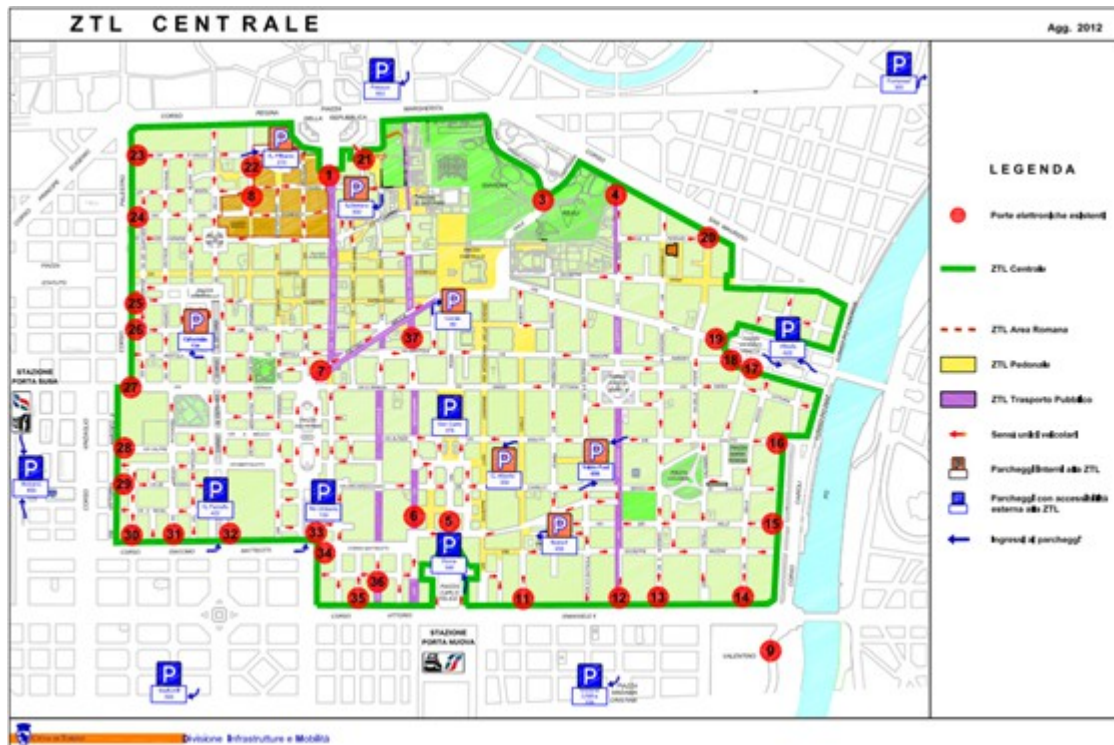
This concertation involved not only freight carriers, forwards and logistic operators but all relevant stakeholders including shopkeepers, chamber of commerce, automotive and ITS industries, representing a best practice that will be implemented at National level by all Great Metropolitan Areas in Italy.

Moreover, several projects are currently interesting the city, in particular should be mentioned the Urbelog<sup>52</sup>, PUMAS<sup>53</sup> and CityLOG projects (on the latter further details will be summarized in the following pages).

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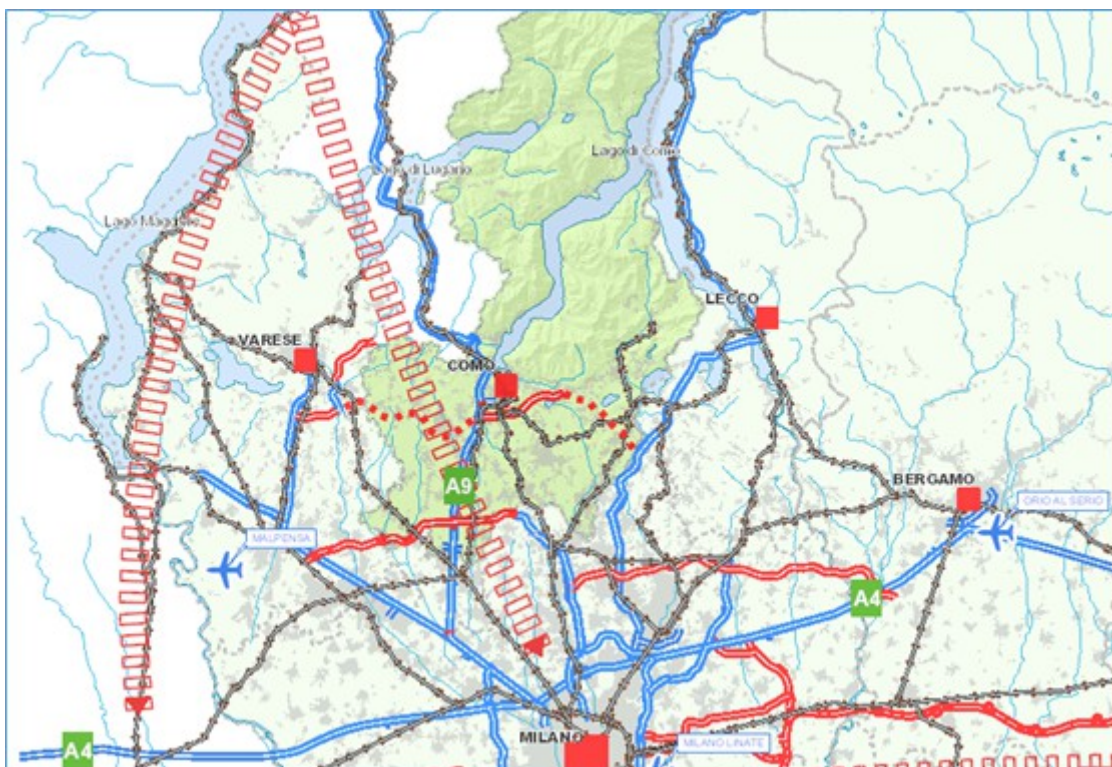
52 <http://www.sitospa.it/index.php/it/marketing-eventi/150-torino-sito-pilota-del-progetto-urbelog>

53 <http://www.sitospa.it/index.php/it/marketing-eventi/150-torino-sito-pilota-del-progetto-urbelog>



Torino's restricted traffic zone (Source: City Council of Torino)

### 9.3.3. Como – Lombardia



Source: elaboration from [geoportale.provincia.como.it](http://geoportale.provincia.como.it)



Lombardy region is the most important Italian hub generating and attracting freight traffic. The elevated industrial concentration, the high population density and per-capita income produce in this area as much high mobility rate of people and goods, both within the region itself and towards other Italian and European regions.

The city of Como is situated at the southern tip of the south-west arm of Lake Como, located 40 kilometres north of Milan, bordering the Swiss towns of Chiasso and Vacallo. Nearby major towns are Varese, Lecco and Lugano (CH). Its population amounts to about 133,000 inhabitants, (23% of the entire province), and its number of employed people amounts to nearly 48,000 units (27% of the entire province). Demographic growth, even if at lower intensity than the provincial average, between 2001 and 2011 was remarkable (5,6%). Hinterland municipalities registered higher values (7,3%) than the inner city (4,6%). Even economic activities seemed to show a good resilience to the crisis, marking a significant decrease in the overall number only between 2008 and 2009 (-1.7%), remaining quite stable in the following years.

The economical structure is characterized by a strong concentration of tertiary activities, occupying 45% of employees working in the area and 38% of them within the province. The nearby lake certainly constitutes the most important driver for the development of local tourism, also in consideration of several international events and workshops regularly organized in the area.

According to a SWOT analysis recently developed, the main strong and weak points have been identified for the Como's area, here briefly resumed:

Strengths	Weaknesses
Existence of several companies and sectors of excellence, able to compete on national and international scenarios, in textile, mechanic, chemical and home furnishing sectors.	Incomplete infrastructure network and growing congestion of urban and regional mobility
Good level of infrastructure, both at road and rail level, to access to the Milan metropolitan area and to Switzerland (North-South) and connections to other main Lombardian towns (East-West)	Inadequate logistical infrastructure for the distribution of goods on a local scale and lack of inter-modal platforms for access main transnational road axes
New central role assumed by the city of Como, with regard to the strengthening of the Gotthard rail corridor and its reinforcement as logistic intermodal node (crossborder North-South links)	Need to strengthen rail links, at urban level
Thanks to the completion of works on upgrading the motorway no. A9 and the East-West connection on Alpine foothills, a remarkable improvement of infrastructure network is expected. Further enhancements may come from the realization of a	High exposure of the territory to hydrogeologic risks, and need of maintenance and safety measures
	Deep territorial gaps and difficult activation of virtuous growth paths in mountainous areas inland, poorly connected and exposed to the risk of further economic marginalization
	Growing congestion and pollution of urban areas, due to heavy car and truck traffic, The lack of adequate links to the Gotthard

connection between Varese, Como and Lecco.	corridor plays a key role in sharpening these phenomena
Proximity to the EXPO 2015 area and other most important exhibition areas	
Realtà industriale organizzata in interdepartmental districts, with high inclination to innovation and product diversification	

Among the strong points, highlighted also in the SWOT analysis, it is worth to recall the realization of an inter-modal logistics platform, in view of the ending of the AlpTransit line, which would constitute a strong support to the development of the economic system, providing answers to the growing demand of intermodal freight transport, given intense North-South flows and road transit restrictions prescribed by Switzerland. This infrastructure may also produce benefits to the decongestion of the urban area, optimizing last-mile freight delivery.

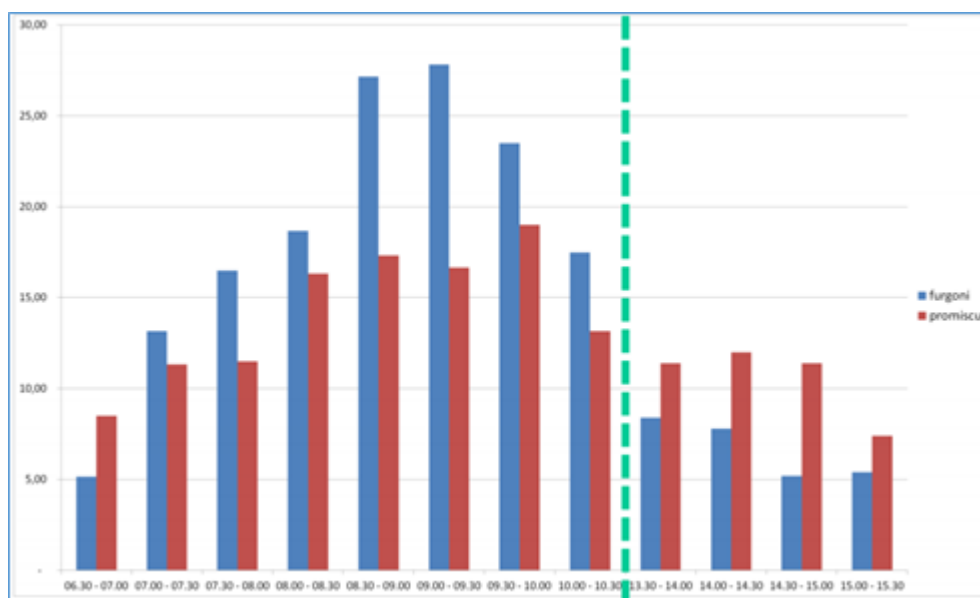
The Smartfusion initiative is currently reorganizing city logistics in the inner core area of Como. A demonstration of the new model of city logistics, which took place in Como's limited traffic zone (LTZ), during the week from 5th to 10th May 2014. The demonstration activity foreseen the use of the new Iveco electric vehicle and of the routing system that calculates least pollution grip for consolidated deliveries to LTZ dealers. The vehicle and the advanced navigation system have been developed respectively by Centro Ricerche Fiat and PTV Group within the Smartfusion project. Further details on such initiative are described in the specific chapter dedicated to the best practices.

The figure below shows the inner restricted area (orange colour), closed to car and heavy vehicles traffic.



Source: Lombardia region

The chart below highlights the number of vehicles entering every day, on average, within the Como's urban area, subdivided in “furgoni” (vans, blue coloured) and “promiscui” (mixed vehicles, red colour). The highest amount of vans circulate between 8.30 a.m. and 9.30, rapidly decreasing after 10.30 a.m. and during the afternoon. The number of mixed vehicles circulating is more distributed throughout the day, even if, also in this case, peak hours can be individuated among 8 a.m. and 10 a.m.



Source: Gruppo Clas

### 9.3.4. Trento



Source: [www.interbrennero.it](http://www.interbrennero.it)

The city of Trento is located in the Adige River valley in Trentino-Alto Adige. Modern-day Trento is a city with highly developed and organized modern social services, as well as several economic activities. In recent years Trento ranked extremely highly out of all 103 Italian towns for quality of life, standard of living, and business and job opportunities. Trento is also one of the nation's wealthiest and most prosperous, with its province being one of the richest in Italy, with a GDP per capita of €29,500 and a GDP (nominal) of €14.878 billion. Currently, the Trentino-Alto Adige region do not dispose of a Regional Logistics Plan (Piano Regionale della Logistica), nor a Regional Territorial Plan (Piano Territoriale Provinciale). The

Autonomous Province of Trento do not equally dispose of Coordination Provincial Plan (Piano di coordinamento provinciale).

With regard to the Trentino's area, supply chains of a certain relevance are those linked to agro-industry, paper industry, processing of porphyry, but also tourism and commerce that create congestion problems especially in historical centres and, especially in some seasons, in most sensitive and vulnerable areas from the environmental point of view. As concerns other logistic supply chains (car industry, fashion, fuel oils) their traffic flows are more developed on medium and long distances. Each one of these supply chains present specificities from the logistics point of view, which should be analysed in more-detail, looking for organizational and infrastructural adequate solutions.



Localization of the Trento's interport (source: Unione Interporti Riuniti)

Generally, despite the existence of several local logistic infrastructure (an interport and logistic private platforms), however, existing traffic flows show a high share of crossing traffic (mainly transalpine North-South) and a lower shares of traffic with origin and destination at local level. Therefore, most efforts in recent years have been addressed to the development of logistics and freight transport at medium and long distances (Northern Italy markets and beyond the Alps). In order to reduce traffic congestion, air and noise pollution, the City Council established a ZTL area within the city centre, with regulated accesses.

However, it is to be mentioned that a very important logistic node is operating in the Northern part of the municipality, in proximity of a well developed industrial and commercial area. It has been conceived mainly for favour access to local market and Northern Italy to transalpine and centre European markets The Interporto of Trento is well integrated within the national network infrastructure, both at road and rail level, and can rely on the following links:

- the A22 Motorway Brennero-Modena is only 250 meters far from the Interporto (Trento Nord tollbooth);
- national road no. 47 of Valsugana (SS47) and the provincial road no. 235 are only 500 meters far from Interport
- proximity to most important regional road network;
- the Brenner railway can be reached through the Trento railway station, served also by the new railway station of Roncafort, addressed only to freight transport.

Currently, the Trento interport dispose of a surface of 150.000 mq, distributed on 6 platforms (four of them 650 m long and two of them 400 m long). The current site occupies 275.000 mq. Accompanied (rolling highway), non-accompanied combined transport and traditional rail services are implemented.



## 9.4. Switzerland

The best practice examples presented for the case of Switzerland lay in- and outside of the Alpine convention area. The outside examples include Basel and Zurich, two major towns with 172'500 and 400'000 habitants respectively, as well as Arbon, a small town with a population of 14'000. Even though they lay outside of the Alpine Convention area and are not situated in a strictly alpine context, they were purposely included in the collection of best practice examples, since they display highly innovative solutions which are considered to be easily applicable in Alpine towns. The territories of the three examples within the area of the Alpine Convention are described in more detail below.

The following map shows the locations of the best practice examples for the case of Switzerland.



### 9.4.1. Thun

Thun is a town of almost 50'000 habitants in the canton of Bern and covers an area of 21.6 km<sup>2</sup>. It lays at the boarder of the Lake of Thun and has a small, historical town center. It is around point where the river Aare flows out of the Lake of Thun and encompasses both banks of the river and an island between. The city ranges in altitude between about 560 m in the city centre and 1170 m on its eastern boundary.

32.1% of the city's total area is used for agricultural purposes, while 19.7% is forested. 45.6% is settled (buildings or roads) and 2.5% of the area is non-productive, mostly due to the presence of water or mountains.

Besides tourism, machine and precision instrument engineering, the food industry and publishing are the town's economic pillars.

In the centre of the city, there is a railway station connecting Thun the national railway network. There's also a public transport bus service operating within the city as well as connecting it with nearby towns.

The city is circumscribed by the federal road A6 which leads to Bern in a westerly direction and merges at Spiez into the A8 to Interlaken and Lucerne in an easterly direction. Thun has two highway exits (Thun North and Thun South). Within the borders of the city of Thun there is a narrow network of cantonal and municipal roads.

#### **9.4.2. Bulle**

Bulle is a town in the canton of Fribourg with a population of little over 20'000. It covers an area of 23.8 km<sup>2</sup> and is situated near the lake of Gruyère.

Bulle is the second largest town of the canton and its municipal territory is heavily branched. 17% of the community's territory are settled, 31% forested and 51% are used for agricultural purposes, while only 1% of Bulle's territory is unproductive. The altitude ranges from 771 m in the city centre to 1384 m in the south of the community's territory.

The town is an important regional centre of economy and trade. The former agricultural community has transformed today to an important hub of industry and the tertiary sector. Along the large streets, there has been a strong development of industrial zones on the western, northern and southern border of the town.

Bulle is three kilometres away from the nearest exit of the federal road A12 from Bern to Vevey. As an important touristic gateway to the Alpine region of Fribourg, Bulle suffered under a lot of motorized traffic during the weekends before a bypass was built in order to relieve the town from the traffic loads. The town is not directly connected to the national railway network but disposes only a regional train to Romont.

#### **9.4.3. Zizers**

Zizers is a small community of little over 3000 inhabitants in the canton of Graubünden. It covers an area of 11 km<sup>2</sup> and lays in the valley of the Rhine. It's territory ranges from the riverside at 561 m up to the ridge at an altitude of 17774 m.


41.5% of the territory is agriculturally used, 38.5% is forested, 12.1% is settled and 7.8% unproductive. While agriculture has lost its formal importance to the community, there are still numerous fruit orchards and vineyards. Zizers shares the industrially used zone "Tardisland" together with the neighboring community Igis.


The community has a railway station where trains pass from Chur to Landquart. There is also bus service from Landquart to Zizers. Chur can be reached within 10 minutes on the federal road A13 which passes right along the western border of the community.


**10. Appendix n°2 : Description of best practices within the area of the Alpine Convention**

**Austria – Project E-Log in Klagenfurt/ Carinthia – an ambitious project for electric powered freight mobility**

<b>Location</b>	Klagenfurt/ Carinthia
<b>Service organizer</b>	The project E-Log will be carried out by a partnership of institutions of the municipality, the biggest energy supplier in Carinthia, private companies and research-institutes.
<b>General presentation</b>	<p>In the framework of this project, which is under way, a freight logistic centre will be built. The place is accessible by road (near access to the Austrian A2 motorway, which is connecting Carinthia with Styria and the Vienna region and with Italy. Also a rail access by a work siding (Anschlussbahn) is available. Finally, the Klagenfurt-airport is situated close by this logistic centre.</p> <p>The logistic centre will also be the base for a fleet of 200 electric powered vehicles.</p>
<b>Action typology</b>	Infrastructure, governance and cooperation, supply chain management
<b>Underlying issue and objectives</b>	
<b>Specification</b>	The electric powered vehicles (most of them light duty vehicles) will be rent including the reloading equipment to different logistic and service companies in Klagenfurt and the surrounding region. For the main freight connection between the logistic centre and the downtown of Klagenfurt 3 innovative “CityLogs” (articulated transporters), powered by hydrogen and fuel cells should be introduced.
<b>Implementation details</b>	<p>The following 200 electric powered vehicles should be introduced in the project E-Log according the current plan: 20 Renault Twizy 80, 20 Renault Zoe, 100 Renault Kangoo, 40 Renault Kangoo Maxi, 6:Renault Maxity, 6 e-Wolf Vans, 5 e-Velotaxi Delivery Cruiser, 3 CityLogs (transporters, see <a href="http://www.citylog.at/">http://www.citylog.at/</a>)</p>  <p>Prototype of a CityLog: Source <a href="http://www.citylog.at/">www.citylog.at</a></p>

	 <p>CityLog Train Source: <a href="http://www.het-engineering.com/de/produktentwicklungen/citylogistik-fahrzeugentwicklung">http://www.het-engineering.com/de/produktentwicklungen/citylogistik-fahrzeugentwicklung</a></p> <p>The additional consumption of electric energy by the 200 electric vehicles should be covered by photovoltaic cells with a surface of 6300 square meters.</p> <p>200 electric powered vehicles seem to be a high number, but today 3200 cars and light duty vehicles are used for deliveries and service trips in Klagenfurt. In the project light duty vehicles are a focus, many of them are used also for social services, like “lunch on wheels” for elderly people.</p>
<b>Supporting mechanism</b>	The project started in 2012 and will be finished in 2015. The financial support by the climate funds is 1,57 Mio. €.
<b>Results / Assessment</b>	<p>Finally in the city of Klagenfurt, where frequently inversion weather situations with fog, typical for valleys and basins, come up, environmental zones with restricted access for conventional cars and duty vehicles should be introduced.</p> <p>The delivery of the electric vehicles starts in the year 2014.</p> <p>Based on the currently collected information the holistic urban freight logistic project E-LOG is the most ambitious in Austria and should be a main case study in the Austrian contribution to urban freight logistics.</p> <p>Source: <a href="http://www.klimafonds.gv.at">www.klimafonds.gv.at</a> and information by phone with a member of the project team in Klagenfurt.</p>
<b>Condition of success or failure</b>	
<b>Contacts</b>	<p>Dr. Wolfgang Hafner, Magistrat der Landeshauptstadt Klagenfurt am Wörthersee Tel.: +43 463 537-4885, E-Mail: wolfgang.hafner@klagenfurt.at, <a href="http://www.klagenfurt.at">www.klagenfurt.at</a></p> <p>Christoph Wolfsegger, MSc, Klima- und Energiefonds Tel.: +43 1 585 03 90-28, E-Mail: christoph.wolfsegger@klimafonds.gv.at</p>

<b>Austria – Combined transport terminals as base for city logistics: examples hall in Tyrol and Bludenz (Vorarlberg)</b> 	
<b>Location</b>	An interesting example in the Alpine area are the combined transport terminals in Hall in Tyrol (near Innsbruck) and in Bludenz (Vorarlberg).
<b>Service organizer</b>	
<b>General presentation</b>	<p>The terminal in Hall in Tyrol offers good connections in unaccompanied combined transport in Austria, Denmark and Germany, further connections are planned to Italy (see: <a href="http://www.tssu.at/anschluesse">http://www.tssu.at/anschluesse</a>). Some of these container train connections are used by a big food / other consumer products supplier company to send containers with different products to Hall in Tyrol and to distribute it in smaller deliveries (e.g. pallets) by truck to the markets of the supply chain in Tyrol. The city of Innsbruck has 125.000 inhabitants and the whole country northern Tyrol a population of 673.000.</p> <p>Source: <a href="https://www.tirol.gv.at/statistik-budget/statistik/wohnbevoelkerung/#c46659">https://www.tirol.gv.at/statistik-budget/statistik/wohnbevoelkerung/#c46659</a></p>
<b>Action typology</b>	Infrastructure
<b>Underlying issue and objectives</b>	
<b>Specification</b>	
<b>Implementation details</b>	<p>Since 2008, the “Orange Combi Cargo” is in use, a unit train, which runs daily between Vienna, Hall in Tyrol and Bludenz in Vorarlberg. Orange is the CI color of the carrier Gebrüder Weiss GmbH, who organize this service.</p> <p>Source: <a href="http://www.unglobalcompact.at/ungc/site/de/aktivitaeten/bestpractice/umwelt/gebruederweiss">http://www.unglobalcompact.at/ungc/site/de/aktivitaeten/bestpractice/umwelt/gebruederweiss</a></p> <p>In addition to the Orange Combi Cargo train, the supplier company uses also combined transport trains provided by Rail Cargo Austria in the NINA-network (see page 21) to send products for the local and regional distribution in the urban agglomeration of Innsbruck and in northern Tyrol.</p>
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	Through the 600-meter-long freight train 66 truck trips are daily saved – this corresponds to a CO <sub>2</sub> reduction of 9,000 tons per year.
<b>Condition of success or failure</b>	
<b>Contacts</b>	<p>Tiroler Strasse-Schiene- Umschlaggesellschaft mbH  Löfflerweg 35 A-6060 Hall in Tirol; phone: +43 5223 56650; fax: +43 5223 56649; e-Mail: <a href="mailto:office@tssu.at">office@tssu.at</a></p>

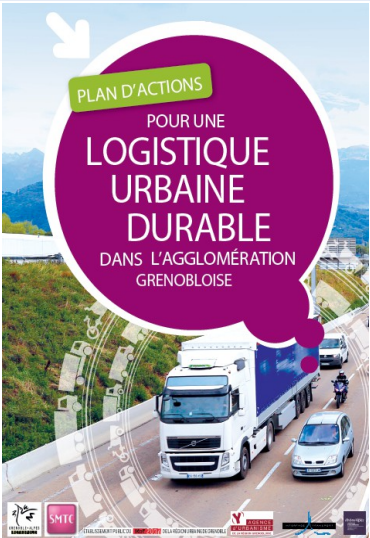
Austria – Project Innoversys (Innovative Verkehrssysteme für die Wirtschaft der Europaregion Salzburg)	
	
<b>Location</b>	Euregio Bavaria/Salzburg
<b>Service organizer</b>	
<b>General presentation</b>	The approach of this project is to bundle freight loads in the Euregio Bavaria/Salzburg to achieve load-sizes, which can be transported efficiently by rail.
<b>Action typology</b>	Infrastructure
<b>Underlying issue and objectives</b>	The focus of this project was to shift freight from road to rail by a more efficient use of existing rail infrastructure, e.g. of rail work sidings.
<b>Specification</b>	<p>In the project 8 implementation case studies were analysed. Since 2007 the following measures were implemented:</p> <ol style="list-style-type: none"> <li>1. „Mozart“- night container train Salzburg – Wien The innovation of this train was that unaccompanied combined transport was successfully implemented on a distance of only 320 km. A high share of the train capacity was used by a big food supplier chain.</li> <li>2. Cooperation of the long distance freight train provider DB Schenker Rail AG Deutschland with the Salzburger Lokalbahn (agreement 2013) The benefit for city logistics is that the collection and the distribution of goods are provided on rail via railway sidings.</li> <li>3. Gravel and grit on rail For the transport of large quantities of gravel and grit on the rail network was created. Since then, regular trains run from the newly constructed railway siding in different relations in the Euregio Salzburg <a href="http://www.iv-salzburg.at/dokumente/210/innoversys_folder2007.pdf">http://www.iv-salzburg.at/dokumente/210/innoversys_folder2007.pdf</a></li> </ol>
<b>Implementation details</b>	
<b>Supporting mechanism</b>	The project was elaborated in the frame of the Interreg IIIA program (Austria – Bavaria) in the years 2006 and 2007
<b>Results / Assessment</b>	Approximately 13.500 truck-loads could be shifted to rail, with the night container train Salzburg – Wien, and more than 1.000 tons CO <sub>2</sub> -emissions were avoided.
<b>Condition of success or failure</b>	Since 2013 the service is interrupted, because the prices of the rail transport became too high.
<b>Contacts</b>	<p>Rudolf Mayer Beratungsgesellschaft (RMB) mbH Joseph-von-Fraunhofer-Str. 9 D-83209 Prien am Chiemsee; Tel. +49 -(0)8051 90 11 60; Fax +49 -(0)8051 90 11 09 <a href="mailto:mayer@rmb-log.de">mayer@rmb-log.de</a>; <a href="http://www.rmb-log.de">www.rmb-log.de</a></p>



## France – Grenoble sustainable logistics action plan

<b>Location</b>	Grenoble, inside the Alpine Convention area
<b>Service organizer</b>	Grenoble urban community ("Grenoble Alpes Metropole") and the urban transport authority ("Syndicat Mixte des Transports Collectifs de l'Agglomération Grenobloise")
<b>General presentation</b>	The Grenoble region's sustainable logistics action plan features 15 actions to deliver improvements in urban freight delivery.
<b>Action typology</b>	Governance and cooperation
<b>Underlying issue and objectives</b>	<p>Freight delivery accounts for approximately 11% of total greenhouse gas emissions in Grenoble urban area, with heavy goods vehicles and light utility vehicles representing only 5% to 8% of traffic on urban expressways and 2% to 8% of total traffic on all main roads in the conurbation.</p> <p>As with 15 other major urban centres in France, Grenoble and the surrounding areas experience regular pollution peaks that exceed the limits set by European regulations. The Grenoble region is particularly affected by two atmospheric pollutants: particulate matter (PM) and nitrogen dioxide (NO<sub>2</sub>). The regulatory thresholds for these two pollutants are regularly exceeded. In general, the level of nitrogen dioxide along the conurbation's roads is too high, and particulate matter counts are excessively high in winter.</p>
<b>Specification</b>	<p>The Grenoble region's sustainable logistics action plan features four key areas and sets out 15 actions to deliver improvements in urban freight delivery.</p> <p><b>Area 1: Create and implement a shared roadmap</b></p> <p>Action 1: Create a permanent space for public/private dialogue concerning freight delivery and urban logistics in the Grenoble region</p> <p>Action 2: Promote and enhance the urban logistics profession</p> <p>Action 3: Prepare a plan of logistics facilities across the entire Grenoble urban region</p> <p><b>Area 2: Incorporate logistics functions into town planning and development processes</b></p> <p>Action 4: Include logistics in town planning documents</p> <p>Action 5: Prepare a plan of logistics facilities for the conurbation, including a hierarchy of these facilities</p> <p>Action 6: Improve service to Grenoble city centre by investigating the benefits and feasibility of creating an urban distribution centre</p> <p>Action 7: Develop logistics services in the conurbation's centres and interchange hubs</p> <p>Action 8: Prepare a loading zone plan</p> <p><b>Area 3: Drive performance and innovation through regulation</b></p> <p>Action 9: Harmonise freight delivery regulations (traffic and parking)</p> <p>Action 10: Improve regulatory enforcement</p> <p>Action 11: Create regulated traffic zones in urban centres to encourage the use of less polluting delivery vehicles</p> <p>Action 12: Encourage "best practice" to reduce harm and</p>



	<p>environmental impacts caused by deliveries</p> <p>Action 13: Experiment with deliveries outside congested periods</p> <p><b>Area 4: Promote mixed infrastructure and networks</b></p> <p>Action 14: Develop the concept of multi-purpose parking spaces</p> <p>Action 15: Encourage the use of alternatives to roads</p> <p>These actions are currently under discussion and the stakeholders responsible for managing and coordinating them are currently being appointed. Work will begin in 2014 and the initial results will be examined in 2015.</p>
<b>Implementation details</b>	<p>4 public meetings were organised in 2013: in February, in April, in June and in October. There were about 50 to 100 people present to each meetings representing shippers, carriers, shopkeepers, municipality, chamber of commerce, Regional council...</p> 
<b>Supporting mechanism</b>	Active collaboration of private companies and public entities.
<b>Results / Assessment</b>	It is too soon to have quantitative results but there were good feedbacks from private stakeholders.
<b>Condition of success or failure</b>	A strong political involvement
<b>Contacts</b>	Anne Builles, <a href="mailto:anne.builles@lametro.fr">anne.builles@lametro.fr</a>

France – Sustainable urban mobility plan including freight	
<b>Location</b>	French conurbations with a population greater than 100'000 inhabitants. In the Alpine convention, Annecy, Chambéry, Grasse and Chamonix have a sustainable urban mobility plan.
<b>Service organizer</b>	Urban transport authority
<b>General presentation</b>	<p>The French sustainable urban mobility plan were created by the French framework law on inland transport in 1982, but have only really developed since the introduction of the French law on air quality of 1996, which made them compulsory in conurbations with a population greater than 100,000.</p> <p>They started out as global transportation planning tools in conurbations for the development of public transport and active modes (walking and cycling) in the 1980s and 1990s, and have gradually taken on more importance around more recent issues or ones that received insufficient treatment in the early decades, such as environment and climate change, accessibility for people with reduced mobility, transport and town planning, parking management and freight delivery. Indeed, the law on air quality of 1996 set out a requirement for sustainable urban mobility plan to include a "freight delivery" element.</p>
<b>Action typology</b>	Urban planning, governance and cooperation
<b>Underlying issue and objectives</b>	<p>sustainable urban mobility plan are managed by the urban transport authority and involve a range of institutional, business and civil society stakeholders.</p> <p>In terms of freight, its purpose is "to set out:</p> <p style="padding-left: 40px;">The specific arrangements governing the parking and stopping [...] of freight delivery vehicles [...]</p> <p style="padding-left: 40px;">The organisation of supply arrangements within the conurbation to meet the needs of shops and businesses, ensuring that delivery times are consistent with the size and weight of delivery vehicles within the urban transport area, that sufficient space is allocated to deliveries to limit congestion on roads and in parking areas, improving the use of existing logistics infrastructure, and in particular such infrastructure located on access routes other than roads, and specifying the location of future infrastructure as part of a multi-modal strategy."<sup>54</sup></p> <p>In practical terms, the sustainable urban mobility plan may contribute to a better organisation of urban freight delivery, through measures designed to harmonise municipal regulations, define HGV routes, develop loading zones in public spaces and introduce the requirement to make some private space available for the largest traffic flow</p>

	generators.
<b>Specification</b>	<p>The actors involved are the City Council, economic and social stakeholders, boroughs' representative, local organisations, business organisations</p> <p>The main action regarding freight in most of the sustainable urban mobility plan in the harmonisation of municipal regulations and the use of railways or waterways to convey goods.</p>
<b>Implementation details</b>	<p>2001: approbation of Annecy sustainable urban mobility plan</p> <p>2003: approbation of Chambéry sustainable urban mobility plan</p> <p>2007: approbation of Chamonix sustainable urban mobility plan</p> <p>2011: approbation of Grasse sustainable urban mobility plan</p>
<b>Supporting mechanism</b>	--
<b>Results / Assessment</b>	It contributes to raise awareness of political bodies on freight issues.
<b>Condition of success or failure</b>	<p>A strong political commitment prior to the establishment of the sustainable urban mobility plan is a key factor. Critical success factors includes a close public private partnership and sufficient staffing in the city's department of transport.</p> <p>sustainable urban mobility plan gives an overview and general objectives which are coherent between passengers and freight but implementation is actually more difficult for freight orientations than for passage transport because of insufficient permanent support and lack of staff.</p>
<b>Contacts</b>	<p>Thomas Plantier</p> <p><a href="mailto:Thomas.Plantier@Cerema.fr">Thomas.Plantier@Cerema.fr</a></p>

## Germany – Freight hub Burghausen and Freight hub Traunstein



### Location

Northern ports

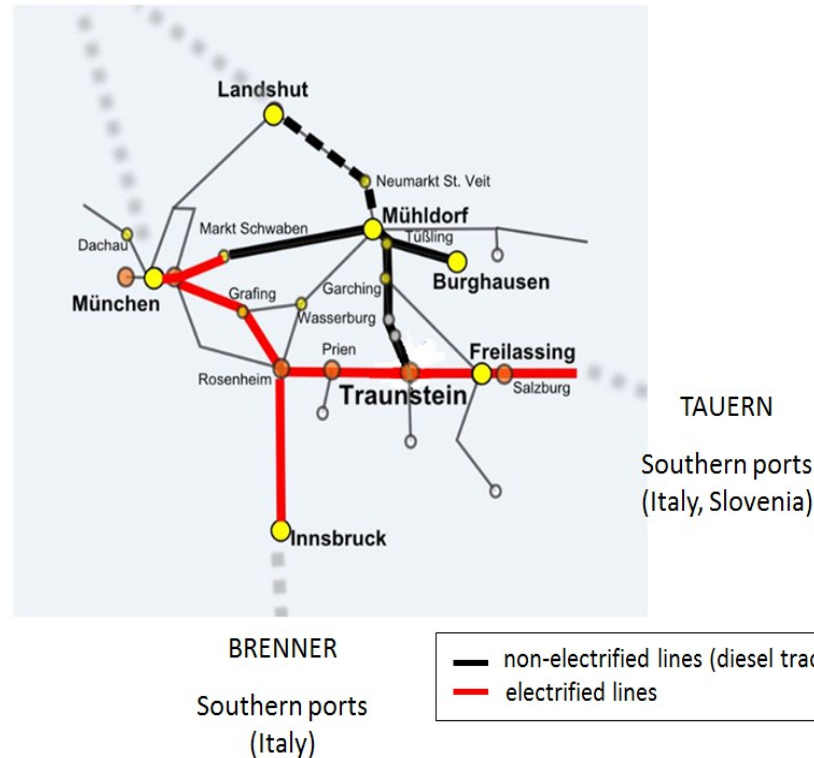


Figure 1: Southeast Upper Bavarian rail infrastructure (Source: LKZ, 2011)  
On the other hand, several city-logistic projects have been terminated in southern Bavaria over the last few years:

### Service organizer

### General presentation


### Action typology

Infrastructure, governance and cooperation

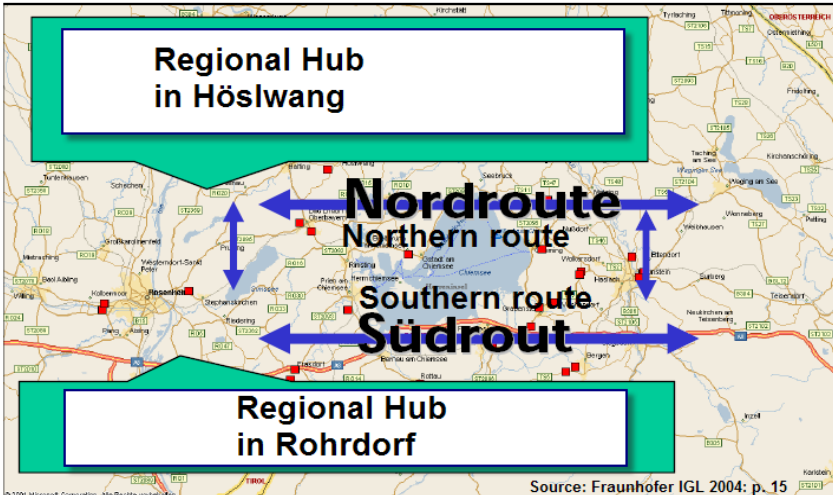
### Underlying issue and objectives

On the basis of many years of experiences it is consistently shown that unaccompanied intermodal transport (UIT) is currently the only answer how to harmonize ecological and economical requirements in the sensitive Alpine region. In the former alpine-specific transport policy mega-projects like for example the Gotthard tunnel or the Brenner base tunnel was in the focus. But the fact was ignored that for a successful shift from road to rail a place is needed where this is physically and technically possible. Particularly affected by these requirements are the areas north and south as well as directly adjacent to the alpine Arc because the rail freight in this area is more economic than in the lowlands due to the geographical peculiarities of the Alpine region. Economy and transport policy therefore face the challenge to find areas from 80.000-120.000 m<sup>2</sup> for building such terminals in touristic


	<p>areas and areas of great importance for nature. It is also very important for the economical traffic management to find areas which are as near as possible cargo activity and the motorway as well as if possible on a double-tracked, electrified line.</p> <p>In the German Alpine Convention area and its closer catchment area, the following logistic projects are currently being established or planned.</p>
<b>Specification</b>	<p><b>Freight hub Burghausen</b></p> <p>Such an area was found for example (at least with partial fulfilment of the above mentioned requirements) at the location in Burghausen. Terminal (8 ha) has 4 tracks with 600 m each and will shift in the initial phase 40.000 and in a later stage 80.000 trucks from road to rail. Such terminals were co-founded in Germany in the last 10 years with 1 billion Euros of the Federal Republic of Germany (about 80% of the effective investments costs). With this funding the inherent disadvantage of short route section on the road, handling of cargo, long rail section, handling of cargo and short route section will be compensated to reach competitive prices for the intermodal transport in comparison to road freight transport.</p> <p>In the short term, this terminal will be extended by the addition of a freight transport terminal to offer additional services as repacking and labelling, storage as well as rail-related-on-site-services (container repairing, container Depot...). Ideally urban freight logistics (collection and delivery of goods) in such a freight logistic centre will be realized by electric vehicles.</p> <p><b>Freight hub Traunstein</b></p> <p>An additional terminal was designed for Traunstein. In contrast to Burghausen terminal the terminal in Traunstein would be located directly next to a double-tracked, electrified rail line between Munich and Salzburg as well as next to the motorway A8. The terminal is planned, but not yet under construction.</p>
<b>Implementation details</b>	
<b>Supporting mechanism</b>	<p><b>Freight hub Burghausen:</b> a peculiarity is that among the Federal Republic of Germany also regional investors were found in the frame of a European tender to sign an Operator Agreement for 20 years comprising Deutsche Umschlaggesellschaft Schiene—Straße (DUSS) mbH (German Road-Rail Transshipment Company), DB Schenker BTT GmbH and Karl Schmidt Spedition GmbH &amp; Co.KG. Burghausen</p>
<b>Results / Assessment</b>	<p>The terminal Burghausen started operations in June 2014.</p>
<b>Condition of success or failure / Strong and weak points</b>	
<b>Contacts</b>	

Germany – Regional Freight Transport Management Lake Chiemsee																			
<b>Location</b>	Lake Chiemsee																		
<b>Service organizer</b>	Association of 10 municipalities around the Lake Chiemsee																		
<b>General presentation</b>	The Regional Freight Transport Management Lake Chiemsee (Regionales Güterverkehrsmanagement Chiemseegemeinden / WBC Warenbündelung Chiemsee was a pilot project running 2003-2004(last entry dates 2005).																		
<b>Action typology</b>	Governance and cooperation																		
<b>Underlying issue and objectives</b>	The idea of the project started in 2003 by initiative of an association of 10 municipalities around the Lake Chiemsee, which cooperate in several fields with a focus on sustainable development. Prior to starting the project a study analysed the status-quo of local and regional freight transport and a group of experts <sup>55</sup> was asked to elaborate a concept. The result was a concept that reduced delivery transports and increased the profitability of the transports.																		
<b>Specification</b>	<p>Several already existent systems of freight bundling like drop-box systems or pick-up points were analysed, but dismissed because of high efforts needed in terms of locations, permissions and the costs running such a system. So a logistic model was chosen, that primarily aims at shipping companies and good, parcel and pallet freight above a weight of 31.5 kg.</p> <p>Two models were developed:</p> <p>The first model arranged two reloading points for piece goods and the delivery of the bundled goods on fixed days of the week for the northern part and for the southern part of the Lake Chiemsee. This model was discussed in a stakeholder workshop. They perceived as crucial the time needed for unloading goods at the reloading point, the financial aspects of establishing and maintaining such a point and need for staff there.</p> <p>The second model based on the use of existing structures for the bundling, which was assumed to be less expensive and to need less time for reloading.</p> <p>The comparison of the different concepts is summarized in a table:</p> <table border="1"> <thead> <tr> <th>Concept</th><th>Advantage</th><th>Disadvantage</th><th>Costs</th></tr> </thead> <tbody> <tr> <td>Reloading on free fields</td><td>Cheap</td><td>High request for timeliness, hardly to fulfill</td><td>low</td></tr> <tr> <td>Locker boxes</td><td>No stuff needed</td><td>No service, only in case of disorder</td><td>Investment, maintenance, rent</td></tr> <tr> <td>Filling station as reloading point</td><td>Stuff available</td><td>Missing storage space, only</td><td>Rent for storage place and stuff</td></tr> </tbody> </table>			Concept	Advantage	Disadvantage	Costs	Reloading on free fields	Cheap	High request for timeliness, hardly to fulfill	low	Locker boxes	No stuff needed	No service, only in case of disorder	Investment, maintenance, rent	Filling station as reloading point	Stuff available	Missing storage space, only	Rent for storage place and stuff
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<sup>55</sup> Fraunhofer Institute for Material Flow and Logistics and a shipping company of the region (Günther Splitter Logistik)

			parcels	
	Central hall a new building	Central service center	High costs	New building, maintenance, stuff, equipment
	Use of given halls, shipping company from the region as service provider for delivery	Everything available: stuff and equipment	-	Increase of workload makes up for the expenses
	<p>Source: Fraunhofer IML 2004, p. 14</p> <p>The decision was taken to try the second model and on demand of the participating enterprises a manual was developed which regulates all procedures and charging.</p>			
	 <p>Logistic concept with two regional hubs</p> <p>Due to the geographical conditions with the Lake Chiemsee as a barrier for transport, routes can be prolonged up to 33%.</p>			
Implementation details				
Supporting mechanism				
Results / Assessment	<p>A small report on the system while it was working in summer 2005 gives some information about the effects:</p> <p>At this time three shipping companies participated.</p> <p>38 shipments were made per week, this accumulates to 1925 shipments per year.</p> <p>This saves about 3800 km/year.</p> <p>The project proofed that it is possible to establish a system of freight bundling without investing too much, if the developed rules are applied.</p> <p>The benefit achieved are the environmental effects more than effects in all day life of citizen as approximately one lorry less is not perceived by the population.</p>			
Condition of success or failure				
Contacts				



Italy – City Porto Aosta	
	
<b>Location</b>	Aosta is a town of about 35,000 inhabitants in the Autonomous region of Valle d'Aosta, located within the perimeter of the Alpine Convention (North-Western sector), at an altitude of 550 m a.s.l.
<b>Service organizer</b>	The project was co-financed by the Italian Ministry of the Environment, Land and Sea and supported by the Regional Councillorship on the Environment of the Autonomous Region of Valle d'Aosta and the Aosta City Councillorship on Mobility. The Municipality of Aosta, the Regional Councillorship on Land Management, Chambre Valdôtaine, the "Autoporto S.p.A." and Itinera Engineering S.r.l. companies are involved as well <sup>56</sup> . The company Logistics Biellese s.n.c. is responsible for the management of the CityPorto, following a European call for tenders.
<b>General presentation</b>	The project "Cityporto Aosta" is aimed at reorganising the activities of freight delivery at urban scale – with particular attention to the historical centre and the "ZTL" <sup>57</sup> area (counting around 8,500 inhabitants and 700 shops), creating a service of "centralized delivery", starting from a single logistic platform.
<b>Action typology</b>	Infrastructure, supply chain management, intelligent transport system, regulation and organisation
<b>Underlying issue and objectives</b>	According to the data related to traffic flows and their peaks highlighted in the Local Traffic Plan, the city centre was more and more affected by the crossing of heavy trucks along the city centre, increasing noise and air pollution as well as bothers for pedestrians. The project was also aimed at reducing journeys, improving the efficiency of urban traffic flows, lowering noise pollution and improving air quality, by means of vehicles with lower carbon emissions.
<b>Specification</b>	The actors involved are the City Council, economic and social stakeholders, boroughs' representative, local organisations, business organisations The main action regarding freight in most of the sustainable urban mobility plan in the harmonisation of municipal regulations and the use of railways or waterways to convey goods. Packages reach the logistic centre set up in the Cityporto area, where the information system already received in advance the data concerning the incoming goods. Goods are here unloaded and redistributed by Cityporto's responsible, according to the scheduled delivery programme. Goods can be

56 Total investments amount to 521.940 Euros, subdivided as follows:


- Municipality of Aosta, 417.720 euros (of which 198.111,19 co-financed by the Italian Ministry of the Environment, Land and Sea);
- Autonomous Region of Valle d'Aosta – Regional Councillorship of the Environment, 30.000 Euros;
- Società Autoporto, 9.000 euros;
- Chambre valdôtaine, 5.220 Euros;
- Itinera engineering srl, 60.000 Euros.

57 Restricted Traffic Area (Zona a Traffico Limitato, ZTL)


	<p>transported within the historical centre (ZTL area) every day, according to the following rules:</p> <ul style="list-style-type: none"> <li>- entry for "Cityporto" vehicles allowed from 7 a.m. to 10.30 a.m., (exit within 11 a.m.), and from 3.30 p.m. to 4.30 p.m. (service on demand);</li> <li>- free entry for all freight forwarders from 7 a.m. to 8 a.m. (exit within 8.30 a.m.)</li> </ul>
<b>Implementation details</b>	<p>Thanks to the multi-network system, each operator has its own system, suitably encoded, for the management of activities in the area. This information includes all terminals and their gates in order to facilitate withdrawals and deliveries of goods, according to the type of service. This information is called "mapping logistics".</p> <p>Moreover, Cityporto's employees make use of specific handhelds during the different working phases. The Honeywell Dolphin 6000 devices are equipped with a dedicated barcode reader, photocamera, GPRS and Wi-Fi connectivity and GPS Navigator, which also allows 'path optimization' of goods. Their main function is to certify the delivery of each good: this information is available in real time, both for logistic operators and Cityporto employees.</p>
<b>Supporting mechanism</b>	<p>Three charging stations refuel the vehicles, thanks to photovoltaic shelters and photovoltaic panels at high performance. The total production of the three charging stations is estimated at 6,490 kWh/year, allowing vehicles to operate about 100 km without using batteries. This further initiative received national<sup>58</sup>, regional<sup>59</sup> and local public funds.</p>
<b>Results / Assessment</b>	<p>Here are briefly reported some valuable data related to Cityporto Aosta:</p> <ul style="list-style-type: none"> <li>- 20-25 kg: mean weight of each package transported;</li> <li>- 300: the average number of packages delivered every day;</li> <li>- 6000/7000 kg: total weight of packages delivered every day.</li> </ul>
<b>Condition of success or failure / Strong and weak points</b>	<p>Cityporto Aosta certainly represents a good example of application of a well-organized supply chain at local scale, integrating also other aspects such as innovation and promotion of renewable energies. Aosta, due to its limited extension, may represent a good example for other small-middle sized urban centres located in the Alps.</p>
<b>Contacts</b>	<p><a href="http://www.cityportoasta.it">http://www.cityportoasta.it</a></p>

58 D.Lgs 6th August 2010, "Incentivazione della produzione di energia elettrica mediante conversione fotovoltaica della fonte solare".


59 art. 6 quater della legge regionale 3 gennaio 2006, n. 3, "Misure per la riduzione del fabbisogno energetico nel settore terziario"

Italy – Working Group on Freight Transport	
	
<b>Location</b>	Lombardy region, partly included within the perimeter of the Alpine Convention area.
<b>Service organizer</b>	Lombardy region – Directorate General for Infrastructure and Mobility
<b>General presentation</b>	Lombardy region is the most important origin and destination for freight transport in Italy. The volume of goods transported amounts to nearly 400 million of tons per year (both internal and external traffic). About 90% of goods is carried out on road. For this reason the Lombardy region decided to establish a regional Working Group on freight transport (Tavolo regionale per la mobilità delle merci), bringing together institutions, Chambers of commerce and social partners with all the major actors involved in the supply chain (more than 80 associations overall). Three subgroups have been set up, among which one focused on “urban mobility” issues.
<b>Action typology</b>	Governance and cooperation
<b>Underlying issue and objectives</b>	The need to provide freight transport operators of a clearer and updated state-of-the-art of measures applied in the towns of Lombardy, as well as to better know the restricted areas.
<b>Specification</b>	<p>The Directorate General for Infrastructure and Mobility of the Lombardy region asked the main regional municipalities to collaborate in the preparation of a report that collects and shows, according to a common standard agreed with operators, useful information to allow hauliers to better plan their own paths to deliver goods in the city. Specific guidelines have been prepared to particular issues arisen during the works, i.e. the need to harmonise and rationalize the regulation of freight transport in urban centres in Lombardy, by means of:</p> <ul style="list-style-type: none"> <li>- simplification, coordination and harmonization of measures for improving air quality, traffic regulation and loading/unloading operations;</li> <li>- elaboration of analytical tools and methods for planning mobility on medium and long term;</li> <li>- analysis of strengths and crucial measures of urban logistics, such as access restrictions, infrastructure, technology and regulation measures, providing concrete suggestions.</li> </ul>
<b>Implementation details</b>	
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	Resolution no. 10/834 of 25th October, 2013, approved the "Guidelines of regional municipalities to regulate the activities of freight transport in urban areas". "The document includes two technical annexes "Tools and methods for the planning of measures to regulate the mobility of goods in urban areas" and "Report on measures on urban freight delivery", which was presented during the workshop organized by the Assessorate on Infrastrutture and Mobility at the Palazzo Lombardia,

	<p>on 14th November, 2013.</p> <p>Moreover, a detailed cartography of bans, limitations and activities allowed in most important towns of the region, in order to optimize the organization of their own delivery activities has been realized.</p>
<b>Condition of success or failure</b>	<p>The need of increased cooperation between all actors involved represent certainly an interesting approach, replicable also in other regions. This modus operandi follows the indications and the recent development of Italian legislation, aimed at favouring cooperation between State and local authorities; it may be suggested also at lower administration levels, e.g. in the case of specific district areas and/or, in the case of Alpine territories, along main bottom valleys and corridors. The aim could be the one to improve “last-mile” connections between interports and urban areas.</p> <p>The most challenging task remains to transform political discussion in concrete actions on the territories involved.</p>
<b>Contacts</b>	<p>DG Infrastructure and Mobility of the Lombardy Region Regional Working Group on Freight – Lombardy region</p>

Italy – Smart fusion Como	
	
<b>Location</b>	Como is a town of about 85,000 inhabitants in the Lombardy region, located at the border of the perimeter of the Alpine Convention and in proximity of Swiss boundary, at an altitude of 200 m a.s.l.
<b>Service organizer</b>	Fourteen project partners take part to the project. Among them, for Italy, FIAT Research Center, responsible for the development of eco-friendly means of transport, Lombardy region (Department of Trade, Tourism and Services) and Gruppo CLAS, responsible of trial activities. The city of Como is involved as one of the three pilot areas (together with Berlin and Newcastle).
<b>General presentation</b>	SmartFuSION (Smart Urban Freight SoluTIOns) is an innovative project approved and co-financed by the European Commission in the 7th Framework Programme for the European Green Cars Initiative. The project is aimed at testing new technologies and innovative models for urban freight delivery, in order to improve efficiency, economic, environmental and social sustainability
<b>Action typology</b>	Supply chain management, intelligent transport system, regulation and organisation
<b>Underlying issue and objectives</b>	
<b>Specification</b>	<p>The trial in the city of Como, provides, inter alia, the testing of electric and hybrid vehicles in the distribution of goods; the path optimization rationalization thanks to the use of Advanced Navigation systems, with particular attention to the improvement of dangerous goods and how to use the logistic platforms. Other activities are expected to:</p> <ul style="list-style-type: none"> <li>enhance the innovation process and urban-interurban interfaces;</li> <li>demonstrate and evaluate the technical feasibility of the introduction of electric vehicles and second generation technologies for hybrid vehicles;</li> <li>apply these vehicle technologies, in conjunction with information technology, operational, managerial and regulatory innovations, including urban consolidation centres and telematics systems.</li> <li>determine success factors stimulating the acquisition of innovations by the logistics market;</li> <li>develop analytical tools that enable other city/regions and supply chains to analyse the probability of success and the benefits arising from the application of these innovations to their own territory / industry.</li> </ul>
<b>Implementation details</b>	



<b>Supporting mechanism</b>	Smartfusion held a series of workshops, among different pilot areas in each one of the three city-regions, in order to derive the user requirements from various regions in Europe. During the workshops, participants had the opportunity to exchange experiences and knowledge on urban freight transport. These workshops were the start of a two-phase assessment, allowing stakeholders to share knowledge and resources for cleaner, more efficient urban freight transport. Two workshops were held in Como, on 8th-9th October and 6th-7th February 2013. During the first one was presented the new ordinance for the Limited Traffic Zone (ZTL) issued in Como city center, that came into force on 1st October 2012. The second one was aimed at reaching a common view on the main measures to be implemented in the testing of Como, such as location of the Urban consolidation centre, the characteristics and tariff of the service, the type of goods to be delivered, the regulation aspects of the ZTL and its possible future extension.
<b>Results / Assessment</b>	Not yet foreseeable, as the project will end in March 2015. However, it could be mentioned that the main project output will be a Smart Urban Freight Designer tool, that will allow urban policy makers, users and operators to analyse the likely success and benefits of applying green vehicle technologies to their city-regions and supply chains.
<b>Condition of success or failure</b>	Collaboration and concertation at European level and, through a constructive dialogue between public and private stakeholders, with a concrete application on pilot areas, such as Como. Criticality: guarantee adequate transferability and make sure that the approach may be “adopted” by other realities, considering that each city constitutes a particular environment with, in addition, often specific traffic and access regulations.
<b>Contacts</b>	<a href="http://www.smartfusion.eu">www.smartfusion.eu</a>

Italy – PIE VERDE project	
	
<b>Location</b>	Torino and Piemonte region, the latter partly located within the perimeter of the Alpine Convention area.
<b>Service organizer</b>	Iveco S.p.A., Lead Partner of the project, and other 29 project partners <sup>60</sup> .
<b>General presentation</b>	<p>The project is aimed at enhancing the opportunities offered by city-logistics to promote innovation, through the strengthening of know-how processes and favouring cooperation between universities, research centres and companies. The main fields of interest are the following ones:</p> <ul style="list-style-type: none"> <li>• Light commercial vehicle (light commercial vehicles) considered as core element of innovation;</li> <li>• systems, i.e. infrastructure and managing systems for city logistic (governance models and services), in order to take full advantage of innovations implemented to vehicles.</li> </ul>
<b>Action typology</b>	Infrastructure, supply chain management, intelligent transport system, regulation and organisation, education and information
<b>Underlying issue and objectives</b>	<p>There is currently a strong potential for the use of electric powered vehicles, especially the ones travelling no more than 100 km daily (amounting to 20% of the entire light commercial vehicle fleet):</p> <ul style="list-style-type: none"> <li>• Hybrid vehicle that allows access to more restrictive ZTL areas;</li> <li>• freight urban transport (ECMT estimation) accounts for 30% of the total freight traffic (in tonnes/km), contributes to 20% of “road occupation”, 56% to the total emissions of particulate matter and 23% of CO2 emissions;</li> <li>• European norm that binds the light commercial vehicle manufacturers to reduce CO2 emissions, in order to reach the European target of 175 g/km in 2014 and 147 g/km in 2020.</li> </ul>
<b>Specification</b>	<p>Four macrothemes have been individuated, briefly explained as follows:</p> <p>Theme 1: engines with low environmental impact – main objectives are focused to the development of new modular architectures allowing the adaptation to different types of use, electric traction, hybrid traction (Dual Energy), store and recharge energy systems.</p> <p>Theme 2: new materials – main objectives are focused to the development of solutions for the relief and improvement of the efficiency of the components of the transmission line and the development of architectural and technological solutions for the realization of lightened shells;</p>

60 Iveco S.p.A. – as Lead Partner and FPT Industrial S.p.A., Magneti Marelli S.p.A., Centro Ricerche Fiat S.C.p.A., ENERGRID S.p.A., AMET ITALY S.r.l., BLUE Engineerig S.r.l., Bluethink S.p.A., Capetti Elettronica S.r.l., Cold Car S.p.A., EICAS Automazione, S.p.A., EMA S.r.l., Enerconv S.r.l., Get Italia S.r.l., MECAPROM TCO Italia S.r.l., MEC S.r.l., MECT S.r.l., MONET S.r.l., NOVA, PROGETTI S.r.l., OPAC POWER S.r.l., SynArea Consultants S.r.l., STC S.r.l., T&T Elettronica S.r.l., TEORES I S.p.A., VE&D Vehicle Engineering & Design S.r.l., 4S-Sistemi sicuri e sostenibili S.r.l., Politecnico di Torino, Università Degli Studi di Torino, Istituto Superiore Mario Boella, TNT Global express S.p.A.



	<p>Theme 3: Reduction of losses and energy recovery – main objectives are focused to the development of systems for the reduction of rolling drag effects and for the improve of efficiency of engines, recovering kinetic and thermal energy.</p> <p>Transversal Theme: the «System» - main objectives are focused to the consideration of environmental factors (e.g. carbon footprint) and “dynamic” contexts in which variables change over time; assessment of impacts (traffic, charging spot, grid) using modelling and simulations, development of telematic and communication systems that promote maximum productivity, development of path-optimization techniques.</p>
<b>Implementation details</b>	
<b>Supporting mechanism</b>	<p>Smartfusion held a series of workshops, among different pilot areas in each one of the three city-regions, in order to derive the user requirements from various regions in Europe. During the workshops, participants had the opportunity to exchange experiences and knowledge on urban freight transport. These workshops were the start of a two-phase assessment, allowing stakeholders to share knowledge and resources for cleaner, more efficient urban freight transport. Two workshops were held in Como, on 8th-9th October and 6th-7th February 2013. During the first one was presented the new ordinance for the Limited Traffic Zone (ZTL) issued in Como city center, that came into force on 1st October 2012. The second one was aimed at reaching a common view on the main measures to be implemented in the testing of Como, such as location of the Urban consolidation centre, the characteristics and tariff of the service, the type of goods to be delivered, the regulation aspects of the ZTL and its possible future extension.</p>
<b>Results / Assessment</b>	Not yet foreseeable in detail. The project will end in December 2014.
<b>Condition of success or failure / Strong and weak points</b>	Important commitment to foster innovation and strengthen the impact of new technological solutions, under the lead of major transport operators. Potential results and analysis will be replicable to the entire national territory.
<b>Contacts</b>	Iveco S.p.A. – <a href="http://www.iveco.com">www.iveco.com</a>

Switzerland – SpediThun	
	
<b>Location</b>	Thun is a town of almost 50'000 habitants in the canton of Bern. It lays within the Alpine convention area at the boarder of the Lake of Thun and has a small, historical town centre.
<b>Service organizer</b>	The association “Stadtmobilität Thun”, initiated by “VCS”, an association for transport and environment and the “IG Velo”, a cyclist lobby organization. Members are the local public transport operator, the municipality and several cyclist lobby organizations; the association of inner city trade and retailers is currently being integrated. The association deals with any question or problem in relation to urban mobility in the city of Thun including urban freight.
<b>General presentation</b>	<p>SpediThun is a city logistics scheme, aimed to enhance heavy vehicle transport to carry out deliveries in the historical center of Thun.</p> 
<b>Action typology</b>	Urban planning, supply chain management
<b>Underlying issue and objectives</b>	The narrow streets of the small city of Thun are often packed by large trucks which enter the city center only to deliver a few goods to local businesses. This is not only inconvenient for the deliverer but also for the local population as well as for tourists. Deliverers often don't know the area and spend time searching their destination within the city center, not taking the best ways to get around the narrow streets of Thun. SpediThun wants to offer a solution to these prob-blems: Local transport operators who know the area deliver the goods in a more efficient way and by far more conven-ient (smaller) vehicles. This is convenient for the deliverers who don't have to enter the city, for the retailers who re-ceive their goods all in one and by the same, known transport operators, for the city, its environment and its population because the deliveries are more efficient, the vehicles are used to their capacity and the negative effects of freight transport is minimized.
<b>Specification</b>	<p>In collaboration with two local transport operators, a terminal was realized in the outskirts of Thun, located near from the Thun highway exit. At the terminal the goods are reconsolidated and then delivered twice a day to the retailers in the inner city using appropriate vehicles adapted to the network of narrow streets downtown.</p> <p>There are approximately 350 retailers in the city of Thun. Goods arriving by 8:30 at the terminal are delivered no later than by 11:00. Arrivals by 13:00 are delivered by 18:00 at the latest. SpediThun also offers the return of empties.</p>


<b>Implementation details</b>	<p>SpediThun was started in summer 2000 under the motto “delivering together”. It emerged from the project “urban mo-bility” that was launched in 1997 by the municipality of Thun and various transport associations. The project is a public private partnership composed of five essential partners who are building a sort of steering committee for the project.</p> <p>The project is economically independent and apparently attractive for the two transport operators involved. The transport operators covered their entire costs due to terminal investments, etc. The municipality covered the cost for public relations and marketing at the beginning of the project. All other members of the working group covered their own expenses.</p>
<b>Supporting mechanism</b>	<p>The project was started with an intensive marketing campaign including over 300 transport operators as well as local businesses. The involved transport operators are known to be highly innovative, have good local contacts and have a close relation to the project.</p> <p>At the beginning, personal contacts were crucial and the partnership worked out very well. Nevertheless, the steering group broke up after the launch of the project and a first evaluation meeting. A success factor for the partnership and the project was the board composition of the steering group. An innovative actor is needed to initiate the project but broad partnership is necessary in order to reduce the implementation risk.</p>
<b>Results / Assessment</b>	<p>The project aims to deliver at least 200 consignments per week, reducing the number of trucks with trailers downtown to zero and reducing the number of trucks downtown up to 20%. In average, the SpediThun vans deliver around 50 tons into the city per month.</p>
<b>Condition of success or failure</b>	<p>Apart from the location of the terminal, its opening hours are estimated to be crucial for the success of the project. SpediThun takes a governing and coordinating role by bringing together the various actors and their different demands and supplies while knowing about the specific details and complexity of the local transport business.</p> <p>Although the partnership was attached to a project, thus temporary, the association considers now that it was broken up too quickly. They reckon that the partnership should have continued in order to elaborate further measures support-ive to the project.</p>
<b>Contacts</b>	<p>For more information contact the City of Thun: <a href="http://www.thun.ch/en/utilities-navigation/contact.html">http://www.thun.ch/en/utilities-navigation/contact.html</a></p> <p>Detailed report and marketing concept (german): <a href="http://www.thun.ch/fileadmin/behoerden/fachstelle_umwelt_und_mobilitaet/media/pdf/spedithun.pdf">http://www.thun.ch/fileadmin/behoerden/fachstelle_umwelt_und_mobilitaet/media/pdf/spedithun.pdf</a></p>

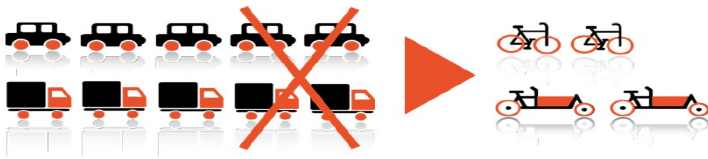
## 6 - Switzerland Strict restrictions mainly in pedestrian zones



<b>Location</b>	Various towns in Switzerland (some within the Alpine Convention area)
<b>Service organizer</b>	Local authorities
<b>General presentation</b>	On a country wide basis there are several direct regulations that affect freight transport in urban areas: There are several strict regulations, mainly in pedestrian zones.
<b>Action typology</b>	Governance and cooperation, regulation and organisation, urban planning
<b>Underlying issue and objectives</b>	National legislation in Switzerland defines possible restrictions cantons or municipalities are allowed to introduce. These are: time, weight and size restrictions for a specified area or street and loading time limitations.
<b>Specification</b>	The general prohibition for heavy goods vehicles 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. There are many small to larger towns 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.
<b>Implementation details</b>	<p>Differences from case to case, but only 4 smaller towns (Bulle and Zizers within the Alpine Convention Area; Arbon and Riehen outside) ban heavy goods vehicles in their centres on a general basis.</p> <p>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 realized in some cases.</p>
<b>Supporting mechanism</b>	National and cantonal legislation
<b>Results / Assessment</b>	
<b>Condition of success or failure /</b>	
<b>Contacts</b>	Heiko Abel, Rapp AG Zurich; BESTUFS

**11. Appendix n°3 Description of best practices outside of the Alpine Convention area but applicable on Alpine towns**

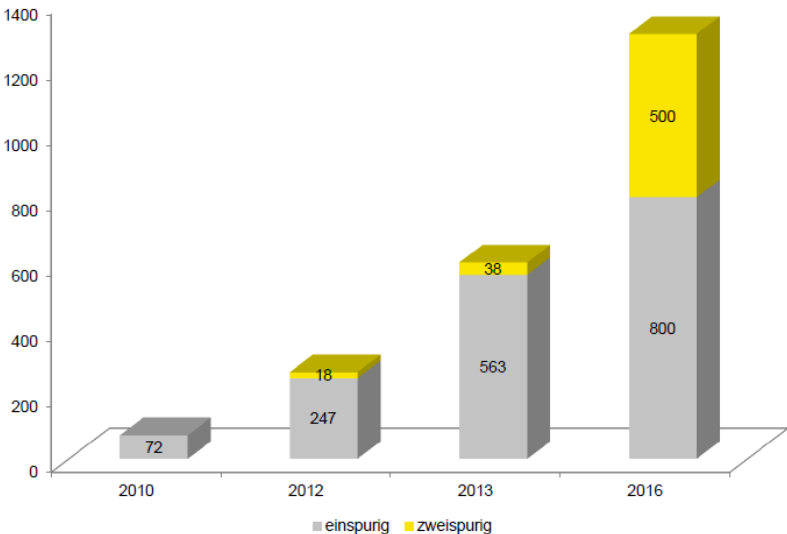
<b>Austria – Cargo Centre Graz (CCG)</b>		
<b>Location</b>	Graz	
<b>Service organizer</b>		
<b>General presentation</b>	The Cargo Centre, situated 20 km in the south of the downtown of Graz near, Werndorf is one of the biggest logistic centres in Austria.	
<b>Action typology</b>	Infrastructure	
<b>Underlying issue and objectives</b>		
<b>Specification</b>	<p>The Cargo Center is a combined transport terminal with 4 loading- rails with 700 m length and 2 portal cranes and big space for storing containers and transshipment activities between road and rail. More than 1000 employees in various logistic branches are working there. Moreover, CCG provides an own combined transport train to the Slovenian Adriatic port of Koper.</p> <p>In the context of urban and regional logistics, it is important that CCG is used by 2 big European supplier chains (mainly food, but also other consumer products) as distribution centre for the town of Graz (269.000 inhabitants) and the whole urban region (almost 600.000 inhabitants including the city of Graz). One of the supplier companies transports goods over long distances on rail, the other company transships products in the CCG from long distance trucks to smaller delivery trucks.</p>	
<b>Implementation details</b>		
<b>Supporting mechanism</b>	Private – public partnership.	
<b>Results / Assessment</b>		
<b>Condition of success or failure</b>		
<b>Contacts</b>	<a href="http://www.cargo-center-graz.at">http://www.cargo-center-graz.at</a> Contact: Cargo Center Graz Betriebsgesellschaft m.b.H.&CoKG, A-8402 Werndorf Phone:++43(0)3135 54445 – 0 Fax: ++43(0)3135 54445 - 20 <a href="mailto:office@cargo-center-graz.at">office@cargo-center-graz.at</a>	



Austria – Project Cycle Logistics ( <a href="http://www.cyclelogistics.eu">www.cyclelogistics.eu</a> )	
Location	Europe
Service organizer	
General presentation	Running from May 2011 until April 2014 and spanning 11 countries, the EU-funded project CycleLogistics aims to reduce energy used in urban freight transport by replacing unnecessary motorised vehicles with cargo bikes for intra-urban delivery and goods transport in Europe.
Action typology	Supply chain management
Underlying issue and objectives	<p>Often diesel powered duty vehicles carry small freight over short distances in urban areas, causing some problems, like space demand, energy consumption and harmful emissions.</p> <p>The team of the European Cycle Logistics project (from May 2011 to May 2014) is working on possible solutions to these problems. The project demonstrates how big the possibilities for sustainable solutions are, if a portion of the urban goods transport would be shifted from motorized vehicles on bikes. For this purpose, during the project, based on existing traffic surveys of European towns, also a potential analysis was carried out and resulted in the following conclusions:</p> <p>In urban areas, especially in inner towns, 42% of the loads could quite well transported by special transport bikes. Approximately one third of these movable motorized transportation of goods is caused by commercial freight. The rest is so-called "private logistics". As a private logistics are considered transports of purchases (like consumer goods), of recreational materials and all those things that are larger than a handbag / school bag.</p> <p><b>Shifting Potential</b></p>  <p><b>4 out of 10</b></p> <p>Source: Susanne Wrighton; Cycle Logistics, presentation in research forum "Mobility for all", Vienna 4th December 2013</p>
Specification	<p>The project Cycle Logistics is focused on the following activities:</p> <ul style="list-style-type: none"> <li>• Delivery of goods in the business to business (B2B) and business to consumer (B2C) segment</li> <li>• transport of goods in the municipal sector</li> <li>• small businesses and services</li> <li>• private goods transport with a focus on shopping traffic</li> <li>• interventions of city government to promote cargo bikes and restrictions of motorized delivery vehicles</li> </ul>



	<ul style="list-style-type: none"> <li>• establishing the European Cycle Logistics Federation</li> <li>• Already implemented examples for the use of cargo bikes are large express courier companies such as DHL, other examples are:</li> <li>• "Medic bike" in Germany, delivers medicine from the pharmacy directly to the customer.</li> <li>• In Graz restaurants and bakeries transport goods between shops and save time for searching a legal parking space</li> <li>• Also pizza in Germany is delivered with a specially designed e-cargo bike, on a large scale and for over ten years.</li> </ul> <p>Cargo bikes are also suitable for the craft service sector: In Vienna, for example a bicycle window cleaner; chimney sweepers, photographers, painters and decorators, as well as locksmith and key services would be good candidates for a shift from motorized transport to a cargo bikes.</p> <ul style="list-style-type: none"> <li>• Copenhagen : 530.000 inhabitants                      35.000 cargo-bikes</li> <li>• Graz :                      260.000 inhabitants                      60 cargo-bikes</li> </ul>
<b>Implementation details</b>	<p>The town administration of Graz is ambitious to increase the number of cargo-bikes, these bikes get a public support of 50 % of the price (up to 1000,-€, but only one support for every company), see at <a href="http://www.graz.at/cms/dokumente/10175977_367152/edfd9ac6/RL2011-Transportfahrraeder.pdf">www.graz.at/cms/dokumente/10175977_367152/edfd9ac6/RL2011-Transportfahrraeder.pdf</a></p> <p>In the project "Cycle Logistics" interested companies and businesses are also given the opportunity to test for free cargo bikes specific purposes to find the most suitable models. Therefore, the number of load wheels in Graz since the project began was already more than doubled.</p> <p>Source of all information to the project Cycle Logistics:  Susanne Wrigthon (FGM-Amor, Graz): Cycle Logistics, presentation in the research forum "Mobility for all", Vienna 4th December 2013  <a href="http://www.bmvit.gv.at/bmvit/innovation/mobilitaet/forschungsforum/forschungsforum2013.html">www.bmvit.gv.at/bmvit/innovation/mobilitaet/forschungsforum/forschungsforum2013.html</a></p>
<b>Supporting mechanism</b>	EU-funded project CycleLogistics
<b>Results / Assessment</b>	
<b>Condition of success or failure</b>	
<b>Contacts</b>	

Austria – Electro Mobility Logistics: Austrian Post	
	
<b>Location</b>	Austria
<b>Service organizer</b>	Austria Post
<b>General presentation</b>	
<b>Action typology</b>	Supply chain management
<b>Underlying issue and objectives</b>	<p>Austrian post distributors, who deliver letters and parcels, drive every working day approx. 200.000 km by car and 14,250 km by light motorbikes. More than 7.000 km are performed on bicycles and 6020 kilometers on foot. A lot of this post traffic is done in densely populated and urban areas.</p> <p>Electro-mobility on road has – with an interruption of some years – since more than 100 years an important role in the services of the Austrian Post. Already in 1913 in Vienna, the first package car type Daimler Tudor was in operation (with modest 30 horse powers and a range of 45 km).</p> <div>    </div> <div> Daimler Tudor (built 1913) E-Bike Puch La Poste (2011) Citroen Berlingo First Electric (2011) </div> <p>Source: Alexander Casapiccola (Österreichische Post AG, presentation in the research forum “Mobility for all”, Vienna 4th December 2013</p>
<b>Specification</b>	
<b>Implementation details</b>	
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	<p>After the second world war, as fossil fuels were scarce and already the residents needs for silence during the nights were perceived, the electric fleet was increased up to 185 vehicles, because a large part of the post movements happens at night. Only in the eighties of the last millennium, there was an interruption of electric mobility, although individual providers still presented prototypes of electric powered duty vehicles. But these vehicles did not meet the postal requirements.</p> <p>In 2010, the topic of electro-mobility has been taken up again by the</p>

	<p>Austrian Post by introducing an initial fleet of electric powered 72 mopeds and bicycles. In 2012 came back first electric cars. At the end of this year the fleet of the Austrian Post counted already over 250 electric powered vehicles.</p> <p>At the end of 2013 the number of electric vehicles has already grown to 600 electric bicycles and mopeds. By the end of 2016 are about 1,300 electric vehicles in the fleet of the Austrian Post planned. One focal point of electric mobility in post services is currently in the Austrian capital Vienna. There was set the target to deliver at the end of 2016 all private letters CO2-free, by 10 electric bicycles, 90 electric mopeds and 150 cars, as well the charging infrastructure needed for this will be introduced. This is likely the greatest challenge, because not at all post- delivery-points parking space is available and therefore delivery vehicles are parked on public space.</p>  <p>2-wheelers (bikes, scooters), cars and trucks</p>
<b>Condition of success or failure</b>	
<b>Contacts</b>	<p>Source of all information to electric mobility of the Austrian Post: Alexander Casapiccola (Österreichische Post AG, presentation in the research forum "Mobility for all", Vienna 4th December 2013</p> <p><a href="http://www.bmvit.gv.at/bmvit/innovation/mobilitaet/forschungsforum/forschungsforum2013.html">www.bmvit.gv.at/bmvit/innovation/mobilitaet/forschungsforum/forschungsforum2013.html</a> in Wien und Graz und innovative</p>

Austria – Project Rumba (Vienna)	
<b>Location</b>	Vienna
<b>Service organizer</b>	Administration of Vienna
<b>General presentation</b>	Based on a project of the LIFE program the administration of Vienna elaborated a guidebook for the environmentally sustainable organization of building and infrastructure construction works. A summary report in English is available at <a href="http://www.rumba-info.at/files/kurzbericht_rumba_english.pdf">http://www.rumba-info.at/files/kurzbericht_rumba_english.pdf</a> .
<b>Action typology</b>	Infrastructure, education and information
<b>Underlying issue and objectives</b>	<p>Reasons to elaborate the RUMBA project were:</p> <ul style="list-style-type: none"> <li>• Two thirds of the quantitative goods traffic (in tons) are building material transportations.</li> <li>• 99% of the building site traffic is done with trucks.</li> <li>• 7% to 10% of the NOx and particle emissions in traffic are due to building site traffic.</li> </ul>
<b>Specification</b>	<p>In three demonstration projects at eight demonstration building sites of different types, measures for a sustainable building site management were implemented.</p> <div>   </div> <p>Photos: Kabelwerk Bauträger GmbH  Source: Mobilitätsmanagement für Betriebe und öffentliche Verwaltungen  Leitfaden für Betriebe und öffentliche Verwaltungen, Vienna 2010 , published by BMLFUW  <a href="http://www.klimaaktiv.at/publikationen/mobilitaet/mobilitaetsmanagement.html">http://www.klimaaktiv.at/publikationen/mobilitaet/mobilitaetsmanagement.html</a></p>
<b>Implementation details</b>	<p>The demonstration projects had the following topics:</p> <ul style="list-style-type: none"> <li>• Train instead of truck: Shift of excavation and pre-fabricated part transportation to the railway.</li> <li>• Ecological building site management: Waste separation at the building site, dust reduction, reduction of the disposal trips.</li> <li>• RUMBA contest among the building firms: Integrated planning</li> </ul>

	<p>of a sustainable building site management in the context of a competition procedure (housing with approximately 500 dwellings).</p> <p>In addition, sustainable building site management needs the correct framework. Present market conditions do not offer sufficient incentives or obligations for a sustainable building site management. A substantial part of RUMBA consisted of developing recommendations for an improvement of the basic conditions for a sustainable building site management including the obtained feedback from the demonstration projects.</p>
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	<p>The success of the case studies and the evaluation of the environmental impacts is worth to be presented more detailed:</p> <p><i>Demonstration building site with pre-fabricated part logistics by train at an urban multi-storey building in Vienna</i></p> <p>A large complex of residential buildings with 204 dwellings in 26 floors was established in the 10<sup>th</sup> Viennese district. Four builder companies were involved in the project. Due to static requirements the first nine floors were established in site-mixed concrete whereas from the 10<sup>th</sup> Floor on, the pre-fabricated part construction method was applied. Altogether 1,200 pre-fabricated parts were used, among them 480 (40%, approximately 9,500 tons) railway-suited units, which means that they were not oversized.</p> <p>The railway-suited pre-fabricated units were driven by train over 18 km from the precasting plant of the builder company Mischek (with own work siding connection of rail) in Gerasdorf near Vienna to the unloading place of the Viennese south railway station and brought from there by truck to the building site (distance 2 km).</p> <p>Compared to truck transports, a reduction of the CO<sub>2</sub>-emissions of around 54% to 91% depending on the traction (diesel or electric) could be reached by using rail transports.</p> <p>Environmental effects of the rail transport of pre- fabricated concrete elements:</p>

Indicators	Transport Handling			Change compared to truck			
	With truck	With train	<sup>3)</sup>	Diesel		Electric	
	<sup>1)</sup>	Diesel <sup>2)</sup>	Electric	absolute	%	absolute	%
Truck - km	16,896	1,408	1,408	-15,488	-93	-15,488	-93
Train - km	-	1,584	1,584	+1,584		+1,584	
Diesel usage (l)	11,830	5,400	1,000	-6,430	-54	-10,830	- 91
CO <sub>2</sub> -emissions (t)	35.8	16.3	3.2	-19.5	-54	-32.6	- 91

<sup>1)</sup> 70 litres / 100 km

<sup>2)</sup> With diesel traction, Usage of 100 litres/h, Driving time precasting plant - Viennese south railway station: 0,5 h

<sup>3)</sup> 0.09 kg CO<sub>2</sub>/tonkilometer

Source: Mischek ZT: Demonstrationsvorhaben Bahn statt Lkw im Rahmen des EU-LIFE-Projektes RUMBA, Wien, 2004

### *Demonstration: Building site excavation transport by train*

At the former industrial site of the cable works Vienna-Meidling, a new quarter with approximately 900 dwellings, offices, a hotel and culture and leisure facilities is created. After a participation process including the neighbourhood, the use of the existing railway connecting line for the evacuation of the 170,000 tons of excavation (approximately 14,000 truck trips inclusive deadheads) was agreed and linked to the assignment of housing promotion means.

On the basis of the received offers, a life-cycle assessment was developed (see table below). The results made clear that the double-handling of the excavated material with conventional wheeled loaders charges the life-cycle balance of the railway alternative with 55% (CO<sub>2</sub>) to 99% (particles). The use of low-polluting wheeled loaders like the ones used in the tunnel construction, could reduce the particle emissions of the wheeled loaders by 90%. Other technical solutions – like the use of the rolling-container-transport system (ACTS) or conveyors – could also save additional handling procedures, but the evacuation by train however costs 1,5 to 2 times more.

Environmental effects concerning the shift of excavation transports to the train

Alternative Offers	Distance to the dumpsite	Diesel / ton	CO <sub>2</sub> / ton	Particles / ton
Truck to the next dumpsite	14 km	0.45 l	1.23 kg	0.41 g
Truck to the cheapest dumpsite	32.5 km	1.0 l	2.86 kg	0.96 g
Train with diesel traction	43 km	0.4 l	1.06 kg	0.83 g 0.08 g <sup>1)</sup>
Train with diesel + electric traction	5 km 49 km <sup>2)</sup>	0.23 l	0.62 kg	0.76 g 0.08 g <sup>1)</sup>

<sup>1)</sup> Low-polluting wheeled loader as in the tunnel construction

<sup>2)</sup> Electricity from renewable energy

Source: Mischek: *raum & kommunikation: Ökobilanz Schiene / Straße - Zur Umweltwirkung transportlogistischer Maßnahmen am Fallbeispiel des Aushubtransports der Wohnanlage Kabelwerke KDAG, Demonstrationsvorhaben Bahn statt LKW im Rahmen des EU-LIFE-Projektes, RUMBA, Wien, 2004.*

In a report of the program klima.aktiv.mobil some additional calculations to the case study on the transport of the excavation material lead were summed up:

- transport by truck: 32,5 km to the landfill, 2.86 kg CO<sub>2</sub>/t = 486t CO<sub>2</sub> for 170'000 t
- by train: 43 km to the landfill, 1.06 kg CO<sub>2</sub>/t = 80t CO<sub>2</sub> for 170'000t

So a CO<sub>2</sub> saving of about 400 tons was achieved.

In addition to the presented case studies in the project Rumba were worked out:

- A manual for sustainable building site management.
- Recommendations for the adaptation of laws, regulations, guidelines, standards, contract
- awards (biddings) and promotions.
- Conceptions for additional projects or supporting plans like the installation of building logistics centers.

In the up-date of the masterplan transport for Vienna 2008 the recommendations of the project Rumba were added. Moreover, in this document the importance of direct rail sidings and their consideration in land-use planning are highlighted. Moreover, support for freight traffic reducing business plans are recommended (see also <https://www.wien.gv.at/umweltschutz/oekobusiness/ueberblick.html> )

In the masterplan transport is also recommended that terminals for the combined transport (road rail and also from the inland waterway to road and rail should be more intensive used also for city logistics. Moreover, it should be checked if trams can contribute to urban freight logistics (like the Cargo Tram in Dresden).

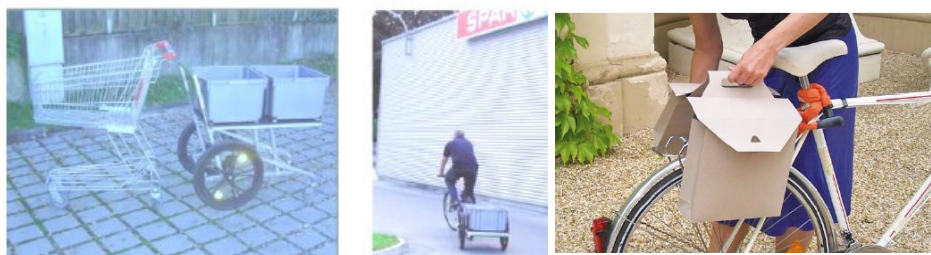
Source: Wien Masterplan Verkehr, Fortschreibung 2008  
<https://www.wien.gv.at/stadtentwicklung/studien/pdf/b008012.pdf> ,



	Freight Transport p. 25 f.
<b>Condition of success or failure</b>	
<b>Contacts</b>	<p>Results and documents of all project parts can be found at: <a href="http://www.rumba.info.at">www.rumba.info.at</a></p> <p>All information on the Rumba project is based on the English report at: <a href="http://www.rumba-info.at/files/kurzbericht_rumba_english.pdf">http://www.rumba-info.at/files/kurzbericht_rumba_english.pdf</a>, RUMBA – Guidelines for Sustainable Building Site Management – Short Report.</p>

Austria – Innovative bicycle-trailers	
<b>Location</b>	Vienna, Graz, Salzburg
<b>Service organizer</b>	
<b>General presentation</b>	<p>The Austrian super market chain “Spar” let elaborate by experienced transport planners a mobility survey among employees and customers in Vienna. The results of this study showed low shares of bicycle use (in most cases below 5 %) and high shares of pedestrians among the clients, in some in suburbs situated bigger shops also high shares of car use, up to 49%.</p> <p>Based on these results and wishes of clients, based of interviews the market chain started a motivation-campaign for the use of the bicycles for everyday instead of cars in 2012 in Vienna and Graz.</p>
<b>Action typology</b>	Supply chain management
<b>Underlying issue and objectives</b>	Motivation-campaign for the use of the bicycles for everyday instead of cars
<b>Specification</b>	In 2013 was introduced a prototype of a combined shopping cart and bicycle trailer in Vienna (see photos above). Moreover, a simple saddlebag “Tragerl” for the bikes was developed (see photo below)

## Implementation details



Source of all information and photos to innovative bicycle trailers: Franz Hölzl, sustainability coordinator, SPAR Österreichische Warenhandels-AG, presentation in the research forum “Mobility for all”, Vienna 4th December 2013.



The INTERSPAR delivery box is unique: a delivery service creates social benefits: The purchases will be delivered to only two euros per delivery throughout Salzburg city. The delivery bicycle- rides make young people from the labour market of the association FAB, which can thus access the labour market. In use are eight climate-friendly e-bikes.

## Supporting mechanism


Private initiative

## Results / Assessment


## Condition of success or failure

## Contacts

Sources: Franz Hölzl (see above) and [www.lieferbox.at](http://www.lieferbox.at)

<b>Austria – Wastepaper logistics: collecting in Vienna and transport by train across the Alps to a paper factory in Frohnleiten (Styria)</b>	
<b>Location</b>	From Vienna to Frohnleiten (Styria).
<b>Service organizer</b>	
<b>General presentation</b>	A collection-equipment for waste paper containers from Vienna was built in the freight rail station Wien Penzing.
<b>Action typology</b>	Infrastructure, supply chain management
<b>Underlying issue and objectives</b>	Shift from road to rail
<b>Specification</b>	The waste paper containers are transported by rail to the paper factory in Frohnleiten (Styria).
<b>Implementation details</b>	 <p>photo: Rieger Austria Entsorgungs und Verwertungs GmbH</p>
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	<p>With this logistic chain around 30.000 tons freight per year are shifted from road to rail, this corresponds to a saving of almost 1.700 truckloads. The distance from Vienna to Frohnleiten is about 170 km and also returns of trucks must be considered. This would make a total of approximately 580.000 truck- kilometers which can be saved per year.</p> <p>Approx. 450 tons CO2 emissions can be saved yearly. In addition truck operating in frequently congested densely populated areas of Vienna can be reduced.</p>
<b>Condition of success or failure</b>	
<b>Contacts</b>	<p>Source: Mobilitätsmanagement für Betriebe und öffentliche Verwaltungen</p> <p>Leitfaden für Betriebe und öffentliche Verwaltungen, Vienna 2010 , published by BMLFUW</p> <p><a href="http://www.klimaaktiv.at/publikationen/mobilitaet/mobilitaetsmanageme nt.html">http://www.klimaaktiv.at/publikationen/mobilitaet/mobilitaetsmanageme nt.html</a></p>

**Austria – IT-based delivery tour planning system and fuel-saving driving training for truck-drivers in a big furniture delivery chain in Vienna**

<b>Location</b>	Vienna
<b>Service organizer</b>	Company Möbel Lutz
<b>General presentation</b>	The measures of the furniture company Möbel Lutz are typical for measures in a company. The introduced tour planning system provides cost-optimal delivery tours with consideration given constraints. The telematics system provides a reporting, monitoring and archiving tool to get easily reliable information for operational and environmental decisions.
<b>Action typology</b>	Intelligent Transport System
<b>Underlying issue and objectives</b>	To provide cost-optimal delivery tours with consideration given constraints
<b>Specification</b>	For calculations and evaluations the IT system provides the following information: <ul style="list-style-type: none"> <li>• Visualization of addresses</li> <li>• Driver-day reports</li> <li>• Toll cost evaluation</li> <li>• Vehicle utilization statistics</li> <li>• Cost monitoring of delivery routes</li> </ul>
<b>Implementation details</b>	<p>By combining IT tour planning with a telematics system, a target / actual comparison the transparency and quality of planning is improved. Furthermore, unnecessary empty mileage, low vehicle utilization and increased fuel consumption avoided.</p> <p>In the presented project 29 trucks and 70 trailers are equipped with the necessary hardware and software.</p> <p>Implementation of truck fuel-saving training: 50 truck drivers of the furniture deliverer participated in the fuel saving training.</p>  <p>photo:Lutz Service GmbH</p>
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	<p>Optimization of tour planning: due to the described measures 24.500 liters of diesel per year and approximately 65 tons of CO2 are saved.</p> <p>Implementation of truck fuel-saving: the truck fleet needs more than 1</p>

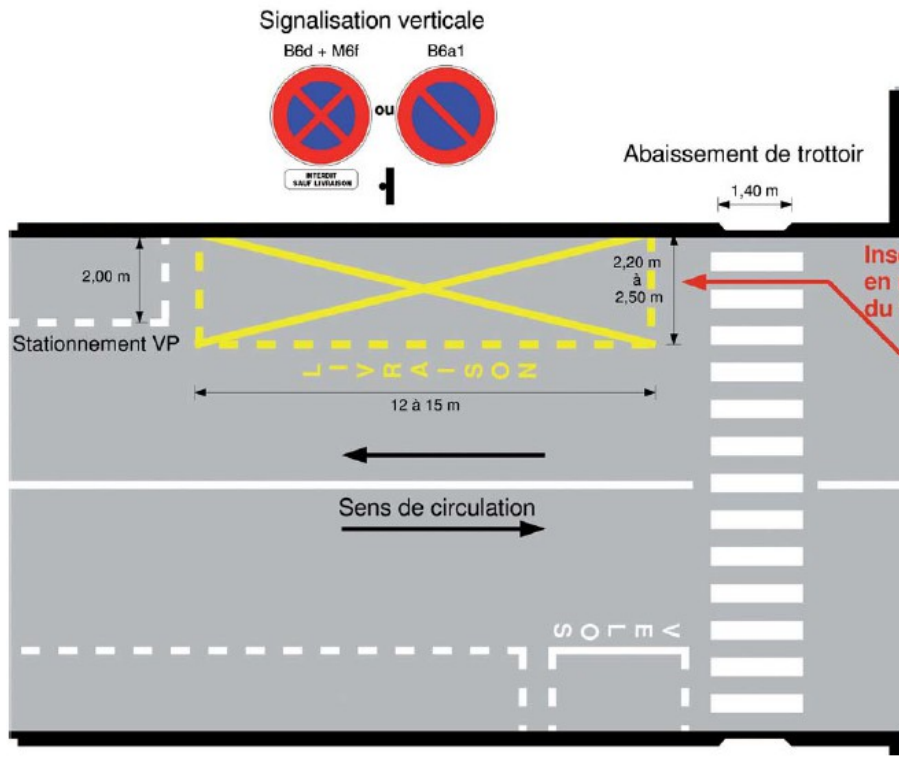
	<p>mio. liters of diesel per year. The trained drivers save at least 5 % fuel and contribute with their fuel-saving driving style. The reduction of CO2 emissions is calculated by 138 tons per year.</p>
<b>Condition of success or failure</b>	
<b>Contacts</b>	<p>Source: Mobilitätsmanagement für Betriebe und öffentliche Verwaltungen  Leitfaden für Betriebe und öffentliche Verwaltungen, Vienna 2010 , published by BMLFUW  <a href="http://www.klimaaktiv.at/publikationen/mobilitaet/mobilitaetsmanagement.html">http://www.klimaaktiv.at/publikationen/mobilitaet/mobilitaetsmanagement.html</a></p>

**France – National guideline to developing loading bays:  
quantity, location and dimensions**



<b>Location</b>	France (nationwide)
<b>Service organizer</b>	Centre for Expertise and Engineering on Risks, Urban and Country Planning, Environment and Mobility Technical Division for Territorial Development and Urban Planning
<b>General presentation</b>	Guide providing rules for the lay-out of on-street delivery spaces: number, size and design, location
<b>Action typology</b>	Infrastructure, education and information
<b>Underlying issue and objectives</b>	<p>The regulatory framework surrounding loading bays is incredibly vague, making it difficult to deal with urban delivery issues efficiently. This means it has been left open to interpretation, which is why many towns have been faced with the problem of illegal parking. In the majority of towns, the monitoring of loading bays takes second place to the monitoring of pay and display parking. Even though the purpose of this guide is not to suggest an in-depth modification to the legal status of loading bays or to suggest monitoring methods, the recent strategies used by several big towns (Paris, Lyon, Dijon, etc.) must be taken into account when considering loading bay development.</p> <p>By and large, the development of loading bays and their location in relation to the delivery addresses do not take into account the difficulties inherent to the delivery driver's line of work. Even though loading bays are mainly intended for goods transportation vehicles, their technical specifications (length, width, etc.) are often based on standards which have no bearing on the vehicle's dimensions.</p>
<b>Specification</b>	<p>The standard urban delivery vehicle equipped with a tail lift requires the length of the bay to be between 12 and 15 meters. This length takes into account the overall length of the vehicle as well as the size of a folded out tail lift and the space necessary at the back of the vehicle for the delivery person to handle the goods.</p> <p>Furthermore, this length allows the driver to pull straight into a bay. This is important because reverse parking is to be avoided with this sort of vehicle, mainly for the safety of other road users but especially for that of pedestrians or cyclists. As part of the considerations on multi-purpose spaces (loading bays/parking of private vehicles) the 15-meter length provides enough space for three private parking spaces during periods when the bay is not reserved for goods deliveries. This is an example of how to best make use of the public highway. An urban distribution vehicle, even the smallest 3.5-tonne van, has an overall width of more than 2 meters. In the same way that the standard dimensions of private cars are taken into account when designing parking bays, it is important that the size of the goods vehicle be considered when designing loading bays. Such considerations enable delivery drivers to easily identify the loading bay, ensure the safety of the delivery person as they move around their vehicle while it is parked in the bay and enable passing traffic to see when a goods vehicle is occupying it. In any case, the width of</p>



	<p>the loading bay road markings must, depending on the context, measure between 2.2 and 2.5 meters.</p> 
<b>Implementation details</b>	<p>This guide brings together recommendations based on fieldwork conducted in several French towns on loading bay development. This guide does not, by any means whatsoever, constitute a fixed set of instructions. The general suggestions outlined in this guide should be adapted to the specific requirements of each urban area.</p>
<b>Supporting mechanism</b>	<p>This guideline has been published and distributed in French in 2008 and English in 2010.</p>
<b>Results / Assessment</b>	<p>A better awareness of French towns technical services. Good feedbacks from the users of the delivery bays and transport companies' organizations. About 15.000 delivery bays have been redesigned based on the recommendations of this guideline</p>
<b>Condition of success or failure</b>	<p>--</p>
<b>Contacts</b>	<p>Thomas Plantier, <a href="mailto:Thomas.Plantier@developpement-durable.gouv.fr">Thomas.Plantier@developpement-durable.gouv.fr</a></p>

## France – Paris' Sustainable Urban Logistics Charter



<b>Location</b>	Paris, outside of the Alpine Convention area (but applicable on Alpine towns)
<b>Service organizer</b>	Paris City Council
<b>General presentation</b>	In 2013, the city of Paris established a new charter fixing the rule and good practices for the urban transport of goods
<b>Action typology</b>	Governance and cooperation
<b>Underlying issue and objectives</b>	Paris with its 2.2 million inhabitants and its 1.8 million jobs must offer its residents, employees and visitors and foreign tourist efficient structures and networks for the movement of people and goods.
<b>Specification</b>	<p>This charter is founded on two key principles: actions concerning urban logistics facilities and infrastructure (hubs, networks, local infrastructure, etc.) and actions concerning innovative logistics practices (new organisational methods, new services, etc.).</p> <p>This charter involves 47 partners (shippers, carriers, shopkeepers, rail and waterway network authority, municipality, chamber of commerce, Regional council...).</p> <p>One of the objective, decided by the City political bodies, is to have 50% of deliveries made by electric vehicles in 2017 and 100% in 2020.</p>
<b>Implementation details</b>	<p>Paris has had a consultation body covering the issue of urban freight delivery since 2001. The first commitment and best practice charter was signed in 2006. This initial charter committed all signatories to a specific set of actions. However, the lack of a time-delimited action plan and participatory management meant that, over time, the private signatories have withdrawn from the charter. The charter has, nevertheless, been the source of several major achievements, primarily in areas covered by public stakeholders (a uniform 29 m<sup>2</sup> regulation across Paris, the introduction of delivery discs, permission to conduct "silent delivery" experiments, the introduction of reserved spaces for logistics, etc.).</p> <p>Aware of the limitations of these actions, Paris city council decided to renew the charter process in 2013, with a firm commitment to delivering sustainable public and private actions.</p>
<b>Supporting mechanism</b>	--


<b>Results / Assessment</b>	It is too soon to have quantitative results but there were good feedbacks from private stakeholders.
<b>Condition of success or failure / Strong and weak points</b>	<p>The strength of this new charter lies in the fact that it is considerably more operations-focused than the 2006 version. It includes a "project factsheets" section, concerning projects managed by both institutional stakeholders and private-sector stakeholders from the freight delivery sector.</p> <p>The main difficulty is to reach a consensus between the city authorities, carriers and shopkeeper, particularly to find the adequate rules acceptable to all.</p>
<b>Contacts</b>	Sylvaine Benjamin, <a href="mailto:sylvaine.benjamin@paris.fr">sylvaine.benjamin@paris.fr</a>

## France – Regulating freight delivery : the case of Lyon



<b>Location</b>	Lyon, outside of the Alpine Convention area (but applicable on Alpine towns)
<b>Service organizer</b>	Lyon Urban Community ("Grand Lyon") and Lyon City Council
<b>General presentation</b>	The Lyon urban community decided to simplify and harmonise truck access regulation.
<b>Action typology</b>	Regulation and organisation
<b>Underlying issue and objectives</b>	In the Lyon metropolitan area, as many as thirty different rules on trucks' access regulations based on weight and size exist, forcing truck drivers to decide which rules they will comply with and which one they will disregard.
<b>Specification</b>	<p><u>Harmonisation and improvement of loading zone accessibility</u> Following the publication of a loading zone planning and location guide (Grand Lyon, 2006), action was taken to harmonise loading zones in all communes within the Lyon Urban Community. The aim of this initiative was to improve access to loading zones for transport professionals (size, suitable time periods and new signage). These loading zones are planned and developed as a matter of course during all road redevelopment projects, and are being introduced gradually in key locations.</p> <p><u>Time regulations</u> As part of the new delivery regulations applied in the Lyon Presqu'île area in 2007, the consultation body introduced a new delivery disc. This initiative is designed to improve loading zone availability by enforcing a higher delivery vehicle turnover rate. Under this new system, stopping time is limited to a maximum of 30 minutes. The delivery disc initiative has since been extended across Lyon and to the centre of Villeurbanne.</p> <p><u>Surface area regulations</u> As indicated above, Lyon city council has introduced surface area restrictions, with a limit of 29 m<sup>2</sup> applying between the hours of 7 am and 7 pm in the city centre. The chosen value represents a sensible compromise and is based on a similar initiative in Paris, where the surface area of delivery vehicles travelling in the city between 7 am and 10 pm is also limited to 29 m<sup>2</sup>. In the interest of harmonisation, this regulation could be extended to cover the central zones of all French conurbations.</p> <p><u>Environmental regulations</u> This type of regulation involves authorising city-centre access for electric vehicles. Lyon has introduced such a regulation, where the most polluting vehicles (below the Euro 3 standard in 2010) are prohibited from travelling in the city centre. A similar regulation has</p>

	<p>also been introduced in other towns, including Toulouse, Berlin and Milan.</p> <p>The main drawback of this type of regulation, however, lies in enforcement. Information about a vehicle's Euro rating, for example, can only be found on its registration certificate, which renders effective enforcement impossible.</p>
<b>Implementation details</b>	<p>A freight delivery consultation body was set up in late 2004, chaired by Michèle Vullien (Vice President responsible for transport, Vice President of SYTRAL and Mayor of Dardilly). His role is to exchange and disseminate information, approve ongoing projects and publicise new projects.</p> <p>The body consists of public authority representatives (Grand Lyon, Lyon city council, Villeurbanne city council, the Rhône-Alpes Region and DDT), business representatives (distributors, operators, Rhône-Alpes Logistic Cluster and Région Urbaine de Lyon), researchers, chambers of commerce and the Lyon Urban Truck and Bus (LUTB) competitiveness cluster, among others.</p> <p>One example of the work undertaken by this consultation body is the new delivery regulations introduced in the Lyon Presqu'Île area in 2007. Consultation is therefore an essential part of the project implementation process.</p>
<b>Supporting mechanism</b>	Local traffic and parking regulation.
<b>Results / Assessment</b>	<p>The new delivery regulations introduced in the Lyon Presqu'Île area in 2007 were the result of work undertaken by the freight delivery consultation body. These regulations have already proved effective, with the corresponding improvements to loading zones resulting in:</p> <ul style="list-style-type: none"> <li>• better use of loading zones by transport professionals</li> <li>• a 25% reduction in double parking</li> <li>• more effective enforcement.</li> </ul>
<b>Condition of success or failure</b>	<p>These initiatives have been successful in Lyon due to:</p> <ul style="list-style-type: none"> <li>• coordination and partnerships achieved through effective consultation</li> <li>• simple, harmonised regulations</li> <li>• the development of delivery zones in line with professional standards</li> <li>• effective enforcement methods and trained local officers.</li> </ul>
<b>Contacts</b>	Diana Diziain, <a href="mailto:ddiziain@grandlyon.org">ddiziain@grandlyon.org</a>

France – Data collection modelling, Bordeaux	
	
<b>Location</b>	Bordeaux, outside of the Alpine Convention area (but applicable on Alpine towns)
<b>Service organizer</b>	Bordeaux urban community, Laboratoire d'Economie des Transports, Ministry of transport and environment, the environmental French agency (ADEME)
<b>General presentation</b>	The French National programme “Urban Goods Movements” has been organising an ambitious urban goods movements data collection for many years.
<b>Action typology</b>	Data acquisition and modelling tools
<b>Underlying issue and objectives</b>	The data available on global urban logistic came from survey carried out in 1995. New surveys will help quantify the impact on urban logistic of the rapid growth of freight transport and e-commerce.
<b>Specification</b>	The unit considered is the “movement” i.e. deliveries or pick-ups achieved in each establishment.
<b>Implementation details</b>	<p>The “Laboratoire d'Economie des Transports” has built and analysed three large original Urban Goods Movements surveys in order to provide the quantitative elements useful for demand forecasting and vehicle flow generation in French towns. Surveys have been carried out in 1995, 1996 and 1997 in the French towns of Marseille, Dijon and Bordeaux.</p> <p>To be able to cope with the evolution of freight transport, a new survey is being carried out in Bordeaux (2013-2014).</p>
<b>Supporting mechanism</b>	The ministry of transport and environment, the environmental French agency (ADEME) and the local municipality are financing the survey.
<b>Results / Assessment</b>	First results will be available in September 2014. They will be used as a data base for the Freturb model calibration and as decision aid for the transport master plans of French towns.
<b>Condition of success or failure</b>	This survey make it possible for local authorities to measure the stake of the urban goods movements in city management.
<b>Contacts</b>	Thibaut Baladon, <a href="mailto:tbaladon@cu-bordeaux.fr">tbaladon@cu-bordeaux.fr</a>

France – Simplicité: an urban distribution centre in Saint-Etienne	
<b>Location</b>	Saint-Etienne, outside of the Alpine area (but applicable on Alpine towns)
<b>Service organizer</b>	Saint-Etienne urban community ("Saint-Etienne Métropole") and private stakeholders
<b>General presentation</b>	In 2013, Saint-Etienne Métropole and local haulage companies created an urban distribution centre called "Simply Cité".
<b>Action typology</b>	Infrastructure, supply chain management
<b>Underlying issue and objectives</b>	<p>The key issues identified in Saint-Étienne are city-centre congestion, public space usage conflicts, pollution (e.g. CO<sub>2</sub> emissions of 2,200 tonnes per year and NO<sub>x</sub> emissions of 8.8 tonnes per year), noise, the falling profitability of delivery services and delivery problems encountered by shopkeepers.</p> <p>In recent years, realisation of atmospheric protection plans and climate plans was obligatory. The haulage companies, meanwhile, demonstrated their intention to play an active role in the process, rather than simply accept rules that fail to consider the efforts they had already made. The local authority and haulage companies quickly reached a consensus on the idea of creating an urban distribution centre, based on existing models. The launch of an ERDF<sup>61</sup> call for projects covering innovation in freight delivery, and the associated funding possibilities, represented the catalyst for this project.</p>
<b>Specification</b>	<p>The public stakeholders (Saint-Étienne Métropole, Saint-Étienne city council) and business stakeholders have joined forces to create a Co-operative Company of Collective Interest (SCIC) that <i>"allows all types of actors to associate with the same project [and] products [sic] all types of goods and services which meet the collective needs of a territory with the best possible mobilization of its economic and social resources"</i><sup>62</sup>.</p> <p>The urban distribution centre covers transport operations concerning service-sector businesses, small businesses and service companies and certain shops. Hotels, restaurants, bakeries and pharmacies, for example, are excluded from the scope due to the nature of their freight.</p>

61 European Regional Development Fund (ERDF): It aims to redress the main regional imbalances by supporting the development and structural adjustment in regional economies – including the conversion of declining industrial regions and regions lagging behind. (<http://ec.europa.eu>)



62 <http://www.les-scic.coop>





<b>Implementation details</b>	<p>Haulage companies deliver their freight to the urban distribution centre. Staff at the urban distribution centre then break up the consignments and reorganise the freight into optimised delivery rounds using a special software program. They then make the deliveries in electric vehicles, enabling them to access the pedestrian zone at any time of day.</p> <p>The urban distribution centre acts as a traditional subcontractor, adopting a neutral position towards the haulage companies. It does not compete with them. The vehicles and delivery drivers' uniforms bear the urban distribution centre's "Simply Cité" branding.</p> <p>The urban distribution centre is located in a 500 m<sup>2</sup> facility, which can be extended to 1,500 m<sup>2</sup> to cope with future additional capacity needs. The facility includes four loading bays on two sides of the building. The urban distribution centre makes deliveries using two electric vehicles (one Goupil and one 3.5 ton vehicle) and employs three delivery drivers.</p> <p><b>Costs</b> The subcontractors are normally paid per delivery. The standard market rates are between €2.10 and €2.60.</p>
<b>Supporting mechanism</b>	<p>The cost of the project is €321,000 (subsidies: ERDF €144,500; Saint-Étienne Métropole €64,000; Saint-Étienne city council €16,000). The project also involves other stakeholders who do not form part of the SCIC. These include central government, which is involved in an advisory capacity and university researchers.</p>
<b>Results / Assessment</b>	<p>The experiment is planned to last for one year. The urban distribution centre is aiming to achieve a 30% market share. In terms of turnover, the target is to achieve €250,000 in the first year and €450,000 in the second year. In the medium-term, the urban distribution centre's goal is to achieve profitability and enable the local council to withdraw its financial support.</p> <p>Three months after its launch, the urban distribution centre has not received any negative feedback from its customers.</p>
<b>Condition of success or failure</b>	<p><b>Obstacles/problems :</b> The local authorities still do not have yet define a clear strategy in terms of urban freight delivery. At present, unauthorised parking on pavements and unauthorised access to the pedestrian zone remain significant issues.</p> <p>The conurbation wishes to preserve and maintain its consultation body. This should help to develop and facilitate future actions in conjunction with the urban distribution centre.</p>




	<p>In terms of topography and climate, Saint-Étienne is situated on hilly terrain. Some areas of the conurbation, may prove inaccessible to electric vehicles..</p> <p>Furthermore, Saint-Étienne is located in a mid-level mountainous region and is subject to potentially harsh weather conditions in mid-winter, including snowfall. These conditions were encountered during the first winter of operations.</p> <p><b>Condition of success</b> :The success of the Saint-Etienne urban distribution centre is dependent on the following factors:</p> <ul style="list-style-type: none"> <li>- Motivated councillors</li> <li>- Effective consultation involving all stakeholders</li> <li>- A high number of deliveries/pick-ups in the city centre.</li> </ul>
<b>Contacts</b>	Fouad Bellouanas, <a href="mailto:f.bellouannas@agglo-st-etienne.fr">f.bellouannas@agglo-st-etienne.fr</a>

Germany – Bentobox		
<b>Location</b>	Pilot status in Berlin, afterwards the prototypes are going to Lyon and Torino.	
<b>Service organizer</b>	Consortium within the citylog project (Senat administration for urban development and environment Berlin, messenger Transport + Logistik GmbH, LogisticNetwork Consultants GmbH (LNC), Fraunhofer Institute for Production Systems and Design Technology (IPK)	
<b>General presentation</b>	<ul style="list-style-type: none"> <li>• BentoBox is part of the citylog project, which follows three strategies to improve citylogistic systems: Development and use of innovative loading units</li> <li>• Vehicle technologies</li> <li>• Logistic-related telematics services</li> <li>• BentoBox is an innovative loading unit.</li> </ul>	
<b>Action typology</b>	Infrastructure	
<b>Underlying issue and objectives</b>	Substitute car by bike for courier services.	
<b>Specification</b>	<p>Small containers which can be used as inner-urban reloading point, meant to bundle deliveries of service providers. It works in two directions: as a small hub for detail delivery as well as a collection point for deliveries which will be shipped outside the region.</p> <p>The Prototyp weighs ca. 500 kg, the single small container ca. 80 kg. The measurements are 520 cm x 200 cm x 80 cm, of the small containers 200 cm x 67 cm x 80 cm. A power connection is needed (230 Volt).</p>  <p>The boxes can be transported with special bikes, trikes or small conventional delivery vehicles.</p>	


	 
<b>Implementation details</b>	
<b>Supporting mechanism</b>	Public funding
<b>Results / Assessment</b>	<p>Field tests ran for 7 weeks resp. 34 days, during this time 555 deliveries could be made with the use of BentoBox; 134 courier trips by car were substituted by freight bikes which is about 85% of trips in the test area</p> <p>Some deliveries were bundled which were direct deliveries before</p>
<b>Condition of success or failure</b>	Transferability is tested in Lyon and Torino
<b>Contacts</b>	<p>LogisticNetwork Consultants GmbH  Dipl.-Ing. Andreas Weber  Tel.: +49(0)30/46307-225  E-Mail: <a href="mailto:info@bentobox-berlin.de">info@bentobox-berlin.de</a></p>

Germany – Environmental loading point for inner city delivery (Bremen)		
<b>Location</b>	Bremen	
<b>Service organizer</b>	Cooperation of local authorities, logistics operators and the chamber of commerce	
<b>General presentation</b>	The ELP was proposed by logistic enterprises as a benefit to use environmental friendly vehicles.	
<b>Action typology</b>	Urban planning, governance and cooperation	
<b>Underlying issue and objectives</b>	Since heavy duty vehicles (HDV, <10% of traffic) emit a disproportionately large amount of air pollutants (approx. 50% of the NOx in Bremen) it is necessary to reduce emissions in particular of HDV. To promote environmental friendly delivery vehicles in Bremen's inner city, an Environmental Loading Point (ELP) was established for 2 years in November 2007.	
<b>Specification</b>		<p>The ELP is a denoted area at Jacobikirchhof, near the pedestrian area with its shops. It is exclusively reserved for vehicles with emission standard EURO5 or EEV (enhanced environmental vehicle) and suitable for vehicles up to 7,5t resp. a length of 8,5m. Users need a permission to access the loading point. Vehicles are earmarked with a label and a transponder so that their authorisation can be checked automatically (a traffic light showing “red” if access is not allowed). Currently the loading times are unrestricted; to meet higher demand, a temporal restriction can be imposed. In contradiction to the regulations for the pedestrian area the loading point can be used after 11:00 am. This gives more flexibility to its users as an additional benefit.</p>
<b>Implementation details</b>	The Environmental Loading Point is established temporarily. After an assessment it is decided whether this loading point is maintained or even extended to 4 loading points.	
<b>Supporting mechanism</b>	The city paid for the building of the place and the EU Life Project Parfum supported it as pilot activity.	
<b>Results / Assessment</b>		
<b>Condition of success or failure</b>		
<b>Contacts</b>	Hendrik Koch T: +49 421 361 10455 Fax: +49 421 361 10875 Hendrik.Koch@umwelt.bremen.de	

Germany – CarGo Tram (Dresden) <sup>63</sup>	
	
<b>Location</b>	Dresden
<b>Service organizer</b>	DVB AG (Transportation Services of Dresden)
<b>General presentation</b>	Sustainable delivery of automobile components by a CarGoTram in the city-centre of Dresden
<b>Action typology</b>	Supply chain management
<b>Underlying issue and objectives</b>	With the construction of a new factory ("Transparent Factory") close to the city center, VW and the DVB AG developed an innovative logistic concept to avoid emissions by truck delivery in a sensitive urban environment. Within this logistic concept the idea of a CarGoTram was born.
<b>Specification</b>	The CargoTram was quickly planned and constructed and in the tram passenger transportation system integrated. Partnership: VW and DVB AG.
<b>Implementation details</b>	Since 2001 the CarGoTram is in use transporting automobile components just in time from the GVZ through the city center to the "Gläserne Manufaktur" ("Transparent Factory"). It consists of two 60-meter long trains that can carry up to 60t of goods each. Every trip of the CarGoTram saves three truck trips and their respective emissions.
<b>Supporting mechanism</b>	As the GVZ and the new factory are very close to efficient tramcar lines, huge infrastructure investments could be avoided. The CarGoTram concept is part of Dresden's "Clean Air and Action Plan".
<b>Results / Assessment</b>	Goods are delivered by the CarGoTram in a very sustainable way, emissions in the city center can be saved, efficiency of the CarGoTram is guaranteed by the need of a continuous transportation flow
<b>Condition of success or failure</b>	The CarGo Tram in Dresden is a very successful project due to an efficient tram network, high vehicle capacity, no obstruction of the normal tram traffic and the general wish by the public and politics for a sustainable city logistics concept.  Developed for very specific conditions, not very easy transferable. The DVB AG is investigating the transfer of the concept to other applications in Dresden.
<b>Contacts</b>	E-mail: <a href="mailto:info@cargotram.de">info@cargotram.de</a>

63 <http://www.dvb.de/en/the-dvb-ag/facts-and-figures/cargotram/>, 07.11.2013



Germany – Emissions-free parcel delivery (Nuremberg) <sup>64</sup>	
	
<b>Location</b>	Nuremberg
<b>Service organizer</b>	DPD
<b>General presentation</b>	Emissions-free parcel delivery by electric vehicles in selected city centers
<b>Action typology</b>	Supply chain management
<b>Underlying issue and objectives</b>	Conservation of the climate Reduction of harmful greenhouse gases CO2- neutral shipping for all parcels
<b>Specification</b>	In 1997 a model project called ISOLDE ("inner-city service with optimized logistical services for retailers") was initiated in Nuremberg involving the state of Bavaria, the city of Nuremberg and a number of logistic service providers. DPD was the only system partner that continued with the concept and has started delivering parcels with two electric vehicles in the city's pedestrian zone.
<b>Implementation details</b>	Since the end of 2000 more than 1.5 million parcels have been delivered entirely free from emissions in Nuremberg's pedestrian zone. In comparison to conventional vehicles 68t CO2 have been saved and pollution from particulates has been reduced.  In 2013 DPD has replaced the electric vehicles by two new –generation vehicles (220V instead of high-voltage power).  DPD has implemented several projects for emissions-free delivery in other towns e.g. transport bikes in Hamburg.
<b>Supporting mechanism</b>	In Nuremberg's pedestrian zone delivery with conventional vehicles is only allowed until 10:30am. There are no restrictions on delivering and picking up parcels with the electric vehicles. Customers of DPD can be served all day long.
<b>Results / Assessment</b>	Emissions-neutral parcel delivery, reduction of emissions and congestion in Nuremberg's pedestrian zone
<b>Condition of success or failure</b>	The factors of success for the DPD project in Nuremberg are: no time restrictions for delivery, no additional costs for the customer, extension of concept to further European markets and the reduction of CO2 emissions.
<b>Contacts</b>	DPD Dynamic Parcel Distribution GmbH & Co. KG Frank Vergien PR Manager Wailandtstraße 1 63741 Aschaffenburg Phone: +49 6021 843-120


64 [http://www.dpd.com/de\\_en/media/files/press\\_releases/2013/dpd\\_in\\_germany\\_using\\_new\\_generation\\_electric\\_vehicles\\_in\\_nuremberg](http://www.dpd.com/de_en/media/files/press_releases/2013/dpd_in_germany_using_new_generation_electric_vehicles_in_nuremberg), 21.10.2013




**Germany – “Bring-Buddy”- Concept**  
(Source: Deutsche Post AG 2010:101)



<b>Location</b>	
<b>Service organizer</b>	Deutsche Post DHL
<b>General presentation</b>	Concept for future parcel delivery developed by Deutsche Post DHL
<b>Action typology</b>	Supply chain management
<b>Underlying issue and objectives</b>	Reduction of intra-urban traffic, reduction of congestion and CO <sub>2</sub> -emissions by saving additional delivery vehicles
<b>Specification</b>	<p>Partnership: Cooperation for parcel delivery between logistic service providers and inhabitants of a city</p> <p>Measure: Residents use their everyday ways (to work, shopping, sport,...) for picking up and delivering parcels</p>
<b>Implementation details</b>	<p>Steps and timing: A Bring-Buddy checks online which and where parcels have to be picked up and delivered to (e.g. urban locker boxes, end customer, bar, other Bring-Buddy...); He decides which parcels he wants to pick up (depending on his everyday way) and receives the relevant code on this cellphone; By scanning the codes at pick-up and delivery it is guaranteed that the correct parcels are delivered to the right address/person</p> <p>Resources and infrastructure needed: Logistic service providers have to organize the shipments, control the transports (correct delivery, protection of the privacy of correspondence) and administrate the network of Bring-Buddies; it has to be guaranteed that Bring-Buddies do not make long detours for parcel delivery, otherwise the full potential of saving CO<sub>2</sub>- emissions can not be achieved</p>
<b>Supporting mechanism</b>	Motivation of residents for participation in the “Bring-Buddy”-network e.g. rewards for the most active one, ...
<b>Results / Assessment</b>	Expected benefits: Savings of delivery vehicles, reduction of emissions and congestion
<b>Condition of success or failure</b>	Participation of a city's residents is crucial for the success of the concept; Legal issues regarding security and liability have to be clarified
<b>Contacts</b>	

Germany – Truck routing system (Bremen; Source: SUGAR 2011, p. 171 ff.)	
	
<b>Location</b>	Bremen
<b>Service organizer</b>	City Municipality of Bremen <sup>65</sup>
<b>General presentation</b>	In 1991 Bremen implemented a concept of integrative transport planning. This concept includes a truck routing system, which is based on voluntary use of recommended ways.
<b>Action typology</b>	Intelligent transport system
<b>Underlying issue and objectives</b>	<ul style="list-style-type: none"> <li>• Facilitate shipping and delivery traffic finding the most comfortable way (referred to vehicle-access as well as acceptance of residents)</li> <li>• Keep transit traffic out of side streets and residential areas</li> <li>• Establish legal security for businesses and the municipality of Bremen</li> <li>• Avoid regulation by traffic bans as these can lead to detours</li> </ul>
<b>Specification</b>	Cooperation between City, inhabitants, loaders and transport companies to make the distribution of goods for all stakeholders more efficient; Volunteer use of truck routing system as regulations can lead to detours and even worse impacts (e.g. affect areas with higher population density)
<b>Implementation details</b>	<p>Steps and timing: 1. Voluntary avoidance: Map indicating truck routes for driving, extension of city logistic measures and of the guiding system to industry parks 2. Avoidance by measures: Traffic regulation through restrictions e.g. bans</p> <p>Resources and infrastructure needed: Implementation of a variable message sign system (VMS) to recommend the use of alternative routes; construction measures for guidance and signs</p>
<b>Supporting mechanism</b>	Awareness and promotion campaigns, promotion of combined transport, strengthening of the multimodal freight village (GVZ)
<b>Results / Assessment</b>	Expected results: Minimize travel times and trip lengths of all trucks on the Bremen road network, minimize the number of residents affected by freight traffic; Achieved results: Decrease of freight traffic on residential roads about 40% and minor roads about 11%; benefits for fleet operators are in time and cost savings
<b>Condition of success or failure</b>	Involvement of all stakeholders (e.g. forwarders, shipping companies, loaders, residents,..) from the beginning is crucial for the success of the system
<b>Contacts</b>	<p>Ulrich Just, Ansgaritorstr. 2, 28195 Bremen</p> <p>Phone: +49 (421) 361-10239;</p> <p><a href="mailto:ulrich.just@bau.bremen.de">ulrich.just@bau.bremen.de</a></p>

<sup>65</sup> <http://verkehrsinfo.bremen.de/lkw-verkehr/lkwfuehrung/explanation.html?size=0&mobile=0&L=1>,  
30.10.2013

Germany – Environmentally oriented traffic control (Potsdam) <sup>66</sup>	
	
<b>Location</b>	Potsdam
<b>Service organizer</b>	City of Potsdam
<b>General presentation</b>	Since April 2012 Potsdam has been operating an environmentally oriented traffic control. The system, unique in whole Germany, aims to reduce emissions (mainly particulate matter, nitrogen dioxide) by tracking air pollution and adjusting the traffic flow accordingly.
<b>Action typology</b>	Intelligent transport system
<b>Underlying issue and objectives</b>	Because of exceeding limit values a reduction of air pollution by intelligently controlling the traffic flow should be achieved. The implementation bases on the city's clean air plan, federal legislation for monitoring air quality and reducing pollution levels and UE regulations to protect human health and environment.
<b>Specification</b>	Partnership: In cooperation with the European Union Potsdam has been able to establish the technical requirements for the system. Measure: Expansion and up-grading of the existing traffic control center
<b>Implementation details</b>	Steps and timing: The environmentally oriented traffic control system monitors levels of air pollution. In the case that specified values of nitrogen dioxide are exceeded the traffic lights on the heavily polluted places are adjusted to control the traffic (e.g. fostering the traffic flow, diverting of vehicles coming into the city) Resources and infrastructure needed: The existing traffic control center was expanded, and some 50 measuring stations were up-graded. The measurements combine now traffic density data, meteorological data and levels of air pollution. The control of 30 traffic lights was retrofit in order to be able to react to traffic problems or critical environmental situations.
<b>Supporting mechanism</b>	Development of sustainable transport e.g. Extension of bike lanes, fostering of public transport, speeding up of public transport
<b>Results / Assessment</b>	Improvement of air quality in many places; Some hot spots with too high levels are still existing
<b>Condition of success or failure</b>	Potsdam is against restriction (and the associated difficulties) for delivery vehicles; that was one reason Potsdam decided against an environmental zone (with exclusion for delivery vehicles) and for an intelligent traffic controlling system; Shifting of congestion and air pollution to outskirts and neighboring communities
<b>Contacts</b>	Phone: +49 (0) 331-289-2748 E-mail: <a href="mailto:info@mobil-potsdam.de">info@mobil-potsdam.de</a>

66 [http://www.mobil-potsdam.de/environmentallyoriented-traffic-control\\_12\\_2.htm](http://www.mobil-potsdam.de/environmentallyoriented-traffic-control_12_2.htm), 12.10.2013

**Germany – E-City-Logistics (Berlin)**


Source: Fraunhofer 2013, p. 84 f.





<b>Location</b>	Berlin
<b>Service organizer</b>	Research project on behalf of the German Federal Ministry of Transport, Building and Urban Development
<b>General presentation</b>	Research project to the integration of electric mobility and city logistics in the pilot region Berlin
<b>Action typology</b>	Data acquisition and modelling tools
<b>Underlying issue and objectives</b>	Demonstration of electric vehicles' potential for city logistics in respect to transport, energy, environment and its operational level as well as to urban development strategies; additionally the effects of regulatory measures and suitable logistic concepts will be analyzed. The results will be published in a user manual for the introduction of electric vehicles as urban delivery vehicles. <sup>67</sup>
<b>Specification</b>	Partnership: Public bodies (Federal Ministry of Transport, Building and Urban Development, City of Berlin), Transport companies (Deutsche Post DHL, Meyer&Meyer Transport Services); Research institutions (Deutsches Zentrum für Luft- und Raumfahrt IVF, Fraunhofer Institut für Produktionsanlagen und Konstruktionstechnik IPK), Other (VMZ Berlin Betreibergesellschaft mbH, 5GE Group AG, Logistic Network Consultants GmbH)
<b>Implementation details</b>	Demonstration of electric vehicles for efficient and environmentally friendly goods delivery by innovative concepts and new user advantages. Implementation of two field tests: 1. Fashion logistics operated by Meyer & Meyer <sup>68</sup> ; aim: reduction of emissions, increase of cost-effectiveness by suitable logistic concepts; 2. Parcel services operated by Deutsche Post DHL; aim: faster introduction of electric vehicles as they have lower emissions than conventional vehicles
<b>Supporting mechanism</b>	The pilot region Berlin is one of totally eight pilot regions in which electric mobility is fostered and demonstrated.
<b>Results / Assessment</b>	
<b>Condition of success or failure</b>	
<b>Contacts</b>	Dr. Verena Ehrler Head of the department Commercial Transport German Aerospace Center (DLR) Institute of Transport Research, Commercial Transport Rutherfordstraße 2 12489 Berlin phone: +49 30 67055-453

67 [http://www.dlr.de/vf/en/desktopdefault.aspx/tabid-958/4508\\_read-28668/](http://www.dlr.de/vf/en/desktopdefault.aspx/tabid-958/4508_read-28668/), 04.11.2013

68 [http://www.now-gmbh.de/uploads/media/05-F\\_BEHRENDT.pdf](http://www.now-gmbh.de/uploads/media/05-F_BEHRENDT.pdf), 04.11.2013

Germany – Urban Retail Logistics (Ruhr region)	
Source: Fraunhofer 2013, p. 82 f. and <sup>69)</sup>	
	
<b>Location</b>	Research project in the framework of “EffizienzCluster Logistik-Ruhr” funded by the Federal Ministry of Education and Research
<b>Service organizer</b>	Research project to innovative concepts for distribution in urban areas
<b>General presentation</b>	Data acquisition and modelling tools
<b>Action typology</b>	Urban logistics has to face new challenges as congested infrastructure, restrictions for urban delivery and very individual customer demands. Therefore new approaches are needed to bundle commodity flows and offer individual services. Urban Retail Logistics focuses on intelligent cooperation of competitors to develop a new kind of distribution within urban spaces respecting customer's behaviour and the reduction of emissions in the same time.
<b>Underlying issue and objectives</b>	Partnership: Research institutions (Fraunhofer-Institut für Materialfluss und Logistik IML), Other (Capgemini Deutschland Holding GmbH, DOEGO Fruchthandel und Import eG, GS1 Germany, Landgard Blumen und Pflanzen GmbH, Lekkerland Deutschland GmbH & Co.KG, Metro Group Logistics and Warehousing MGL GmbH, REWE-Zentralfinanz eG, EffizienzCluster LogistikRuhr)
<b>Specification</b>	By introducing a City-Hub many different processes will be bundled. Besides bundling the commodities of competitors, the respective information flows will be processed by an Urban Information System. Smart IT-technologies and innovative concepts (e.g. Tante Emma 2.0) will be used to develop innovative logistic solutions for the whole Ruhr area.
<b>Implementation details</b>	The project is embedded in the context of the “EffizienzCluster LogistikRuhr”)
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	
<b>Condition of success or failure</b>	
<b>Contacts</b>	Christiane Auffermann Fraunhofer-Institut für Materialfluss und Logistik IML Phone: +49 (0) 2319743309 E-mail: auffermann@iml.fraunhofer.de


69 [http://www.effizienzcluster.de/de/leitthemen\\_projekte/projekt.php?proPid=28](http://www.effizienzcluster.de/de/leitthemen_projekte/projekt.php?proPid=28), 07.11.2013

Italy – Cityporto Padova	
	
<b>Location</b>	Padova is a town of about 210,000 inhabitants in the Veneto region, located outside the perimeter of the Alpine Convention, in the Po Valley, at an altitude of 12 m a.s.l.
<b>Service organizer</b>	Interporto Padova S.p.A. and other 55 operators joined the initiative <sup>70</sup> . Cityporto was financed according to a convention between Local Public Authorities, the Holding of local public transport and Interporto S.p.A.
<b>General presentation</b>	It is an operating service of delivery of goods in urban area carried out with a fleet of hybrid and CNG vehicles. It is aimed at rationalizing the deliveries of different transport operators, reducing traffic of freight transport vehicles on urban roads.
<b>Action typology</b>	Infrastructure, supply chain management
<b>Underlying issue (problem/needs addressed) and objectives</b>	<p>Cityporto is based on an extremely simple operating model: the operators that use the service deliver the goods to a specific logistics platform near the city, where the ecological vehicles are then loaded and distribute the goods in the city, the so called “last mile”, which may be just the limited traffic zones or the entire city centre.</p> 
<b>Specification</b>	Thanks to the funds provided by the CO2NeuTrAlp project, an electric vehicle was bought by the Municipality of Padova and made available to Interporto S.p.A. The vehicle was equipped with a refrigeration unit for the distribution of perishable goods. Interporto S.p.A. keeps the vehicle operational and provides training for drivers and maintenance staff of the vehicle. A 'track and trace' system for the shipment of the


70 2 Erre Logistic srl, Angelo Finesso SpA, Arcese Trasporti Spa, Arco Spedizioni SpA, Artoni Trasporti SpA, Autotrasporti e Sped. Barone Spa, Autotrasporti Fusaro Dante, Autotrasporti Ribi SpA, Autotrasporti Rossato snc, Bartolini Corriere Espresso, Bedin Autotrasporti SpA, Bennato Ulisse & Figli Srl, BCE Srl, Bisinella Srl, Borgato Group Srl, Cassol Trasporti Srl, CAMAL Sas, CDM Logistica Srl, Ceccarelli srl, CESPED SpA, CEVA Logistics Italia Srl, City Express Transport Srl, C.P. Autotrasporti Srl, DHL Exel Supply Chain Spa, DHL Global Forwarding Spa, F.Ili Favaro Sas, F.Ili Padovan Srl, Fercam SpA, Gefco Italia SpA, Girmo Poletto Srl, Giotto Diffusione Srl, I.M.E.G Trans srl, Irene Srl, Italsempione SpA, JAS Spa, Jumbo Trasporti Srl, M.T.N. SpA, Metro Partners Srl, Nordestrasporti Snc, Pernice Logistica Srl, Prosdoci GM Srl, Righetto Massimo, SEB-MANDI Soc. Coop, S.I.T.T.A.M. Srl, Schenker Italiana Srl, Sifte Berti SpA, SUSPA SpA, Tardini Autotrasporti Srl, TLD Srl, TiTo Trans, T.M.L. Trasporti Mobili Lombardia, TRI.LEM srl, Valsped Italia Spa, Zanardo Serv. Logist. Spa, Zanettini Paolo

	<p>products has been decisive in the successful implementation of the pilot project. With two trips per day (about 30 km each) and up to 45 deliveries, the limited range of the vehicle (approximately 100 km) has never been a problem. The batteries are charged overnight using standard industrial connectors.</p> <p>Cityporto Padova has been activated on 21st April 2004.</p>					
<b>Implementation details</b>						
<b>Supporting mechanism</b>						
<b>Results / Assessment</b>	Deliveries in 2005	Deliveries in 2012	Delivery increase 2005/2012	Packages in 2005	Packages in 2012	Delivery packages 2005/2012
	44.472	101.666	+128.60 %	191.036	397.126	+107.88 %
	<p>Gruppo CLAS made a study for the Italian Ministry of the Environment, Land and Sea evaluating progresses made by Cityporto Padova through years. The study pointed out a reduction of the length of delivery trips and the total amount of kilometres covered by freight vehicles, as follows (24 months period):</p> <p>Reduction of kms covered: 561,400 km  Daily average reduction: 1,216 km/day  Reduction of gas consumption (less freight transport vehicles circulating): 58,200 litres  Natural gas consumption of Cityporto CNG vehicles: 3,904 kg</p> <p>Over the time frame taken in consideration (24 months), Cityporto activity achieved a great reduction of pollutants emissions, indicated as follows:  Carbon Dioxide (CO<sub>2</sub>): 219,65 tonn.  Nitrogen Oxide (NO<sub>x</sub>): 369 Kg  Sulfur Oxide (SO<sub>x</sub>): 72,8 Kg  Volatile Organic Compounds (VOC): 210,4 Kg  Particulate Matter (PM<sub>10</sub>): 51,4 Kg</p>					
<b>Condition of success or failure / Strong and weak points</b>	<ul style="list-style-type: none"> <li>- strong involvement of stakeholders;</li> <li>- full support by the Municipality of Padova;</li> <li>- definition of an industrial plan focused on economic sustainability;</li> <li>- voluntary subscription;</li> <li>- location of a freight village close to the urban area</li> <li>- step-by step implementation</li> </ul> <p>Cityporto Padova is certainly one of the most successful and long-lasting Italian examples of applied city logistics. This is why its relevance and approach should be carefully taken into account and studied as a reference for possible replication in the Alpine or, like in this case, other peri-Alpine areas. Its business model and field of application is particularly interesting and more adapted to wide areas, as the city of Padova lies at the crossroads of important networks linking North-East of Italy. <a href="http://www.interportopd.it">www.interportopd.it</a></p>					
<b>Contacts</b>						




Italy – Centre for eco-friendly City Freight Distribution in Lucca	
	
<b>Location</b>	Lucca is a town of about 87,000 inhabitants, located in the Tuscany region.
<b>Service organizer</b>	LuccaPort, eco-friendly transport and logistic service agency. It is an operative division of METRO Srl, participatory society of the Municipality of Lucca.
<b>General presentation</b>	The Centre for Eco-Friendly City Freight Distribution (CEDM – Centro Ecologico Distribuzione Merci) in Lucca represents a scheme of integrated actions whose goal is the implementation of a number of measures – regulatory, organisational, operational and technological – to enable the realisation and operation of a new city logistics system.
<b>Action typology</b>	Infrastructure, supply chain management, intelligent transport system, governance and cooperation
<b>Underlying issue and objectives</b>	<p>The main problems to be addressed were the presence of high levels of congestion due to commercial and freight traffic (relevant number of vehicles in the historical centre, non-optimised loads and delivery routes). Furthermore, high levels of air pollution, noise pollution and risk for historical buildings due to vibrations resulting from freight traffic, as well as safety conditions for pedestrians and tourists.</p> <p>According to data diffused, approximately 1,500 shops, retail points and commercial activities are located in the core area of city (i.e. the historical centre and its immediate surrounding) and constitute main destinations of freight flows travelling in the area. About 700 commercial vehicles were counted to enter the area each day. More than a quarter (27%) of business located in the area used their own vehicles.</p>
<b>Specification</b>	<p>The key operational concept behind CEDM is based on a city distribution terminal as a main infrastructure to support rationalised, eco and business-efficient urban distribution. CEDM measures are integrated in the broader context of mobility and transport measures and consist of the following key items:</p> <ul style="list-style-type: none"> <li>- adoption of restrictions to regulate freight deliveries in the historical centre (time slots for different types of goods, minimum load factor, electrical vehicles for final deliveries);</li> <li>- cooperation among freight operators to cover last mile city distribution (e.g. load consolidation, transshipment at freight transit points, etc.) meeting access requirements and economic efficiency;</li> <li>- implementation of innovative delivery concepts including goods consignment via dedicated collect points (i.e. the CEDM Pack Station) to be used directly by citizens and tourists.</li> </ul>
<b>Implementation details</b>	
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	The results achieved so far are relevant since they offer a good reference especially for small and mid-sized historic city centres. From a simple geographic and demographic perspective, the Italian Alpine

	Convention's area is characterized by several towns and urban areas
<b>Condition of success or failure</b>	In 2012 the City Council in collaboration with LUCCAPORT LAB has promoted the constitution of "Città Logica" (Logical Town) - International Association for sustainable city logistics in small and mid-sized historic towns. The Association is a non-profit organization aiming to the promotion, dissemination, exchange of good practices, study and analysis, knowledge transfer, application and strengthening of sustainable city logistics culture, solutions and services in order to support smart approaches to city logistics and to optimize the overall urban mobility, developing new services and eco-friendly city logistics systems, particularly in small and mid- sized historic towns. This could be very interesting for middle-sized Alpine towns.
<b>Contacts</b>	<a href="http://www.luccaport.it/content.php">http://www.luccaport.it/content.php</a>

Italy – CityLog	
	
<b>Location</b>	The CITYLOG solutions were implemented in three European test sites hosted in: Lyon, Berlin and Turin. Several components developed in CITYLOG were deployed according to specific test cases that were discussed by the partners in cooperation with local stakeholders. The project involved partners from 6 different European countries, including industries, research institutes, associations and local authorities.
<b>Service organizer</b>	CITYLOG is coordinated by FIAT Research Centre, it involves 18 partners in 6 different European countries, including industries, research institutes, associations and local authorities. The project CITYLOG has been conceived together with the project CITYMOVE. They are fully complementary towards an integrated innovative approach for urban freight distribution.
<b>General presentation</b>	The CITYLOG European project, started on January 1st 2010, is a focused research collaborative project co-funded by the European Commission under the Seventh Framework Programme, Theme 7, Sustainable Surface Transport. The CITYLOG project aimed at increasing the sustainability and the efficiency of urban delivery of goods by means of an adaptive and integrated mission management and innovative vehicle solutions. The innovative approach set out to decrease the number of delivery vehicles and optimise the use of delivery trucks in urban areas. It resulted in an increased quality of services. The solutions and technologies are of highest interest due to the increased energy efficiency and quality of services.
<b>Action typology</b>	Supply chain management
<b>Underlying issue and objectives</b>	The following activities were carried out: <ul style="list-style-type: none"> <li>- Organisation of stakeholders' workshops;</li> <li>- Dissemination of the project results;</li> <li>- Exploitation plans and deployment perspectives</li> </ul>
<b>Specification</b>	Today's city logistic system can be improved through innovative load units which can be carefully designed to operate, like the vehicles, in different missions. Therefore, a re-configurable internal layout will enable different uses, either as simple container or mobile pack station (BentoBox concept). In the latter case, the goal is the de-synchronisation of the delivery process between operators and final customers in order to reduce the unsuccessful deliveries. The innovative approach of CITYLOG will lead to decrease the number and optimise the use of delivery trucks in urban areas, while bringing an increased quality of services.
<b>Implementation details</b>	
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	The following main recommendations have been pointed out as results: <ul style="list-style-type: none"> <li>- administrators, carriers and residents are interested in policy measures which allow for an efficient utilisation of the available road</li> </ul>

	<p>capacity among the different road and non-road users;</p> <ul style="list-style-type: none"> <li>- conflicts should be avoided mainly by policies addressing the aspects of accessibility (of freight vehicles to the inner city or to other commercial zones) and reallocation of road spaces (priority lanes, delivery and parking areas);</li> <li>- planning measures (freight plans) and IT based city logistics solutions (optimized routing) are preferred to road pricing measures;</li> <li>- urban freight vehicles have to be clean, silent and safe to meet the Administrators and Residents expectation;</li> <li>- urban freight vehicles and their drivers have to be assisted by ITS instruments (route planners), right-sized and flexible as regards to cargo capacity.</li> </ul>
<b>Condition of success or failure</b>	Effective cross-cutting cooperation among several towns and projects, at European level.
<b>Contacts</b>	<a href="http://www.city-log.eu">http://www.city-log.eu</a> <a href="http://www.citymoveproject.eu">http://www.citymoveproject.eu</a>

Switzerland – Statistics: Main data on national level (GTS)	
	
<b>Location</b>	Switzerland (nationwide)
<b>Service organizer</b>	Swiss federal statistical office
<b>General presentation</b>	By periodically collecting data on freight transports among lorry owners, Switzerland creates a nationwide data bank which helps not only to get a general view on the subject but to use it for political decision making
<b>Action typology</b>	Data acquisition and modelling tools
<b>Underlying issue and objectives</b>	The increasing importance of freight transports makes it necessary to get a general view on roads goods transports on national and regional level (goods and vehicle flows and structure of these flows).
<b>Specification</b>	<p>The first GTS was done by the Swiss federal statistical office in 1936/37. In 1993 it was repeated after a first attempt in 1984 had failed (see: strong and weak points).</p> <p>The objective of the GTS is to get representative and useful main data to develop political frameworks (government, parliament, administration) as well as to acquire fundamental knowledge for reaction on new circumstances of European politics (relationship with the EU, realization of NEAT, heavy vehicles fee and realization of the Alpine initiative).</p>
<b>Implementation details</b>	<p>A detailed questionnaire (German and French) was sent as a paper version via post to the selected interviewees. 80% of the lorry owners had to fill in a detailed questionnaire and 20% a simplified one. The sample size was found by random selection of 22 effective days – each day 1/22 of all vehicles were counted.</p> <p>Collected data include: kind and use of goods vehicle on a fixed day, origin-destination and all stops during the whole run, use of trailer, reason if there was no run, driven kilometers during the last year/day/transport taking more than one day, transported goods.</p>
<b>Supporting mechanism</b>	The collection of data is done periodically, only a few adaptations of the whole concept were done. This guarantees a good feedback (known procedure) and the results are comparable and can be used for assessment of the developments. A detailed description of the whole concept and further interpretation of some aspects within the public report helps to use data for further analyses.
<b>Results / Assessment</b>	The focus of the whole data collection was on national level. In spite of the small sample size and large zones the results can be used on regional level but one has to be conscious that the results of such a projection can't be representative. They have to be

	<p>regarded as approximate values. The statistics are not usually suitable on local level.</p> <p>Only road transport including delivery vehicles (&gt; 1t) and no intermodal transport has been included into the survey.</p> <p>Therefore some important parts of the goods transports are missing, especially those which are of high interest within towns.</p>
<b>Condition of success or failure</b>	<p>In 1984, the survey was boycotted by the Swiss carriers (they decided to stay at home at the chosen days, no deliveries were done) whereas for the year 1993 part of the concept was modified and the collection of data was successful. One reason for the good feedback and quality of data collection is that the whole data collection and analyses were supported by law ("decree concerning collection on freight transports 1993).</p>
<b>Contacts</b>	<p>Martin Ruesch, Rapp AG Zurich, BESTUFS</p>


## Switzerland – Cargotram in Zurich




<b>Location</b>	Zurich, outside of the Alpine Convention area (but applicable on Alpine towns with tram networks)
<b>Service organizer</b>	Mr. Neuhold, CEO of “Entsorgung und Recycling Zürich” ERZ (municipal public waste disposal and recycling company Zurich)
<b>General presentation</b>	 <p>Because of ecological reasons the Cargotram was introduced to shift waste transport from road to rail and thus to reduce vehicle kilometres of truck usage and to improve quality of life in the city of Zurich.</p>
<b>Action typology</b>	Infrastructure, supply chain management
<b>Underlying issue and objectives</b>	The ERZ is the city refuse disposal service. In Zurich, items too bulky for the dustcart can be collected at a charge, or left for free at one of the two ERZ yards. Yet 300 tons of bulky waste items are dumped illegally every year. ERZ has been brainstorming on how to provide a more attractive yet inexpensive service.
<b>Specification</b>	Zurich has an extensive tram network serving most neighbourhoods. There are also many suitable sidings not used by regular services. ERZ approached the tram company (VBZ) with the revolutionary idea of using its infrastructure to collect bulky refuse in the neighbourhoods, so making disposal much more straightforward for residents. The idea was met with enthusiasm and Cargotram was born.
<b>Implementation details</b>	<p>The Cargotram project has been introduced in 2003 and is implemented in daily business and operating. The initiator of the Cargotram is Mr. Neuhold, CEO of the ERZ. The approach has been and is to collect bulky goods of households near the tram stops and since 2005 onwards the collection of waste and electronic equipment for households and industries. The payload is carried in two standard refuse containers. These are carried on four-wheeled flat wagons.</p> <p>The Cargotram serves different tram stations in the city area. In total 9 stations are served. The Cargotram is addressed to public transport users, residents, cyclists and pedestrians. It is not allowed for non-users of public transport to deliver bulky goods to the Cargotram. Cars and delivery vehicles will be turned away.</p>



	The collection of bulky goods is taking place every four weeks per station. The opening times for the Cargotram are between 3 p.m. and 7 p.m.
<b>Supporting mechanism</b>	Since traction vehicles and freight trailers were already existent, the project could be realized in a very efficient way. The project has been and is carried out in cooperation between the municipal ERZ and the "Verkehrsbetriebe Zürich (VBZ, public transport service of the city of Zurich).
<b>Results / Assessment</b>	The project has proven its worth and will be continued. Cargotram not only makes a contribution towards reducing congestion and pollution, it also provides a valuable service to residents. The project is permanently monitored. The evaluation focuses on evaluation of tonnage, acceptance by local population, development of illegal waste disposal.
<b>Condition of success or failure</b>	A pre-condition of the system is that the concept is not hindering the public transport by tram. Therefore the positioning of Cargotram is at those stations where additional tracks are existing (turning points at the end of a tram line, for example). Main success factors have been in the good planning and communication, the good cooperation of service providers, and high acceptance. The project is transferable to other towns.
<b>Contacts</b>	Gottfried Neuhold, ERZ Zürich; <a href="http://www.stadt-zuerich.ch/content/vbz/de/index/produkte_dienstleistungen/cargo_tram_und_etrain.html">http://www.stadt-zuerich.ch/content/vbz/de/index/produkte_dienstleistungen/cargo_tram_und_etrain.html</a>

Switzerland – Specific education of city planners, transport engineers and architects		
<b>Location</b>	Basel, outside of the Alpine Convention area (but applicable on Alpine towns)	
<b>Service organizer</b>	graduate schools, universities	
<b>General presentation</b>	In order to sharpen the awareness of city planners, transport engineers, architects and other key decision-makers concerning the needs of urban freight logistics, a study advises to foster specific educational modules at graduate schools and universities which address precisely this subject.	
<b>Action typology</b>	Urban planning, education and information	
<b>Underlying issue and objectives</b>	The subject of freight logistics, its planning and infrastructure is usually not particularly addressed during the education of city planners, transport engineers, architects or other concerned occupations. This causes a lack of awareness of these key decision-makers and therefore many difficulties in the long term planning as well as the every-day handling of urban freight logistics. A study therefore suggests that the subject should be, in fact, a mandatory part of such educations. It advises municipalities, cantons or the state to contact the concerned institutions and to communicate their need for such a complementary element in these curriculum as well as to propose their assistance in designing such a module.	
<b>Specification</b>	It is imaginable that regions or state with significant areas of Alpine territory would suggest to include the specific needs of Alpine towns and to include this subject into the educational program.	
<b>Implementation details</b>	Important stakeholders would be graduate schools, universities, the concerned public entities, but also planning offices and agencies.	
<b>Supporting mechanism</b>		
<b>Results / Assessment</b>	Enhancing the education of key decision-makers in a way that raises their awareness for the needs of urban freight logistics is a long-term contribution to well-planned infrastructure and processes.	
<b>Contacts</b>	Martin Ruesch, Rapp Trans AG Zurich, Report No. 60.166.0-001	


Switzerland – UrbanZen	
	
<b>Location</b>	Belgium, (but applicable in Switzerland and other Alpine countries)
<b>Service organizer</b>	The UrbanZen project is a partnership from the competitiveness cluster 'Logistics Wallonia' and involves several local companies, amongst whom are Liège company NSI Software IT & Services (conception of the project), private companies Smolinfo and M3 Systems, the Multitel research centre and the Road Research Centre (BRRC).
<b>General presentation</b>	UrbanZen is collecting information on public authorities needs and measures in relation to urban freight. The project will develop a GPS based tool to optimize travel times for heavy goods vehicles considering both infrastructure and policy measures. Thereby, UrbanZen proposes a collaborative solution which will contribute to decongesting urban traffic.
<b>Action typology</b>	Regulation and organisation, urban planning, infrastructure, data acquisition and modelling tools
<b>Underlying issue and objectives</b>	<p>The transport of merchandise by road has experienced developments which bring elements incompatible with sustainable mobility: a socially fragile sector, unnecessary and too numerous trips, congestion and negative effects involving the environment and the quality of life of local inhabitants...</p> <p>And the last few kilometres within an urban environment are the most costly and the most difficult for the transport company: dense traffic with congestion and jams, size constraints, the introduction of communal mobility plans and the growing volume of local regulations, which often vary greatly and pay little attention to freight needs – all of these hinder the smooth delivery of goods into town centres.</p>
<b>Specification</b>	<p>UrbanZen proposes a cooperative solution which will contribute to decongesting urban traffic. It is based on centralizing information from the twin sources of the drivers themselves and municipal authorities. This solution aims to obtain a notification of the existence of black spots from transporters and to match this information with computerized municipal mobility plans updated in real time by the municipal authorities.</p> <p>Information is fed back directly to drivers via the GPS system present in most lorries, enabling this system to calculate a new specific alternative route more suited to the constraints imposed by local authority managers. The originality of this scheme lies in the fact that it utilizes existing in-vehicle telematics (without an additional box) or a simple smartphone using generic operating systems.</p> <p>The use of UrbanZen will lead to more profitable operation of trucks in urban environments (decreasing transport times), to decongesting the urban area, and to diminishing nuisance with regard to inhabitants and other road users. It will also give the communal authorities immediate and long term data on the impact</p>


	of their mobility policies, which they can use to improve them, and decrease the production of CO2 and particulates engendered by trucks when stationary in congested areas.
<b>Implementation details</b>	The computer platform offering this system will at first be established at a Belgian level, then rolled out more generally in Europe. It is based on the open standards of road information communication (TPEG protocol, currently developed within a worldwide alliance – TISA), and on OpenGIS geographical architecture (an open standard becoming generally available to a worldwide public). The scheme quite clearly fits into the Belgian and European policy framework (BestUFS, Civitas and Sugar programs), by strengthening public/private collaboration in order to solve mobility problems in urban environments.
<b>Supporting mechanism</b>	Active collaboration of private companies and public entities
<b>Results / Assessment</b>	The project is still in the data-collecting-stage.
<b>Condition of success or failure</b>	
<b>Contacts</b>	Logistics Wallonia, <a href="http://www.logisticsinwallonia.be/urbanzen-0">http://www.logisticsinwallonia.be/urbanzen-0</a>

## Switzerland – Establishment of priority areas for city logistics



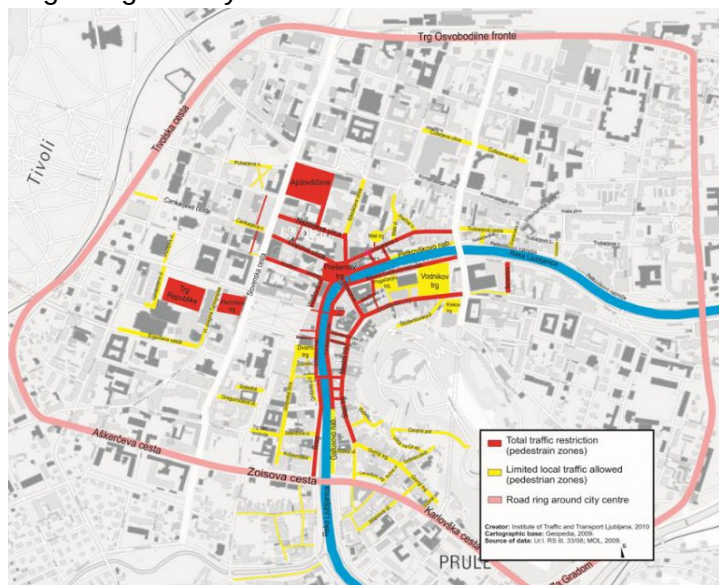
<b>Location</b>	Basel, outside of the Alpine Convention area (but applicable on Alpine towns)
<b>Service organizer</b>	Municipality of Basel
<b>General presentation</b>	In order to guarantee sufficient space for logistics and to minimize the problems caused by suboptimal location of logistics services, a study advises the city of Basel to legally define priority areas for city logistics.
<b>Action typology</b>	Governance and cooperation, urban planning
<b>Underlying issue and objectives</b>	The need for logistics services is constantly growing but for local (or new) logistics companies it becomes more and more difficult to find possibilities and room for expansion or new business locations. Often, conflicts arise among companies and local authorities or inhabitants concerning greater volumes of traffic and noise in the neighbourhood, parked trucks in narrow streets or other complaints. The needs of the logistics sector are often neglected in compare to other land use on city grounds.
<b>Specification</b>	In their cantonal structure plan the canton is advised to define adequate areas which shall be used primarily for city logistics. These areas have to meet certain criteria concerning their accessibility, size, shape, surrounding property, and the legal possibility of construction. The study advises to differentiate between different logistics uses such as terminals, ports, freight handling, storage, etc. Each use has its proper requirements for which different areas are appropriate.
<b>Implementation details</b>	The project has not yet been implemented. It is part of the proposed measures to assure sufficient logistics areas within the city of Basel. Stakeholders which will have to be involved include cantonal planning authorities, communal planning authorities, logistics companies and transport operators as well as concerned unions or other organizations. The implementation of the measure is proposed for 2015, when the cantonal structure plan and the communal zone plan will be revised.
<b>Supporting mechanism</b>	
<b>Results / Assessment</b>	Such a measure should assure sufficient areas for logistics use within the city of Basel and a optimal location where conflicts with other uses are minimized
<b>Condition of success or failure</b>	
<b>Contacts</b>	Martin Ruesch, Rapp Trans AG Zurich, Report No. 60.166.0-001

Switzerland – Framework “Urban freight transport”	
	
<b>Location</b>	Zurich, outside of the Alpine Convention area (but applicable on Alpine towns)
<b>Service organizer</b>	City of Zurich, civil engineering department, division for mobility and transport
<b>General presentation</b>	In Zurich the overall frameworks “Urban freight transport” has developed a strategy in order to reach specific goals.
<b>Action typology</b>	governance, regulation, urban planning
<b>Underlying issue and objectives</b>	The framework wants to react on the following circumstances: Increase of freight transports within the agglomeration, urban freight transport contributes in an above average percentage to noise and land-use, conflicts between heavy vehicles and slow traffic (bicyclists, pedestrians, motorcyclists), negative impacts of urban freight on environment and quality of life, new laws (protection of environment, air pollution, regional planning).
<b>Specification</b>	The main question, which led to the framework, was: “How can a certain piece of freight be transported with the most useful mode, on the shortest way and without loss of time, from its origin to its destination causing minimal costs, using a minimum of land and a minimum of follow-up pollution?”
<b>Implementation details</b>	<p>The answer to the questions above include various measures such as: planning of policy measures; innovations, more commercial transports (less transport for own account) and better circumstances on the market to get a better delivery density; better cooperation of road and rail transport systems, between pre- and end-haulage and between companies.</p> <p>Foreseen measures concerning city access: close certain roads for certain kinds of utility-vehicles, access for low-noise-vehicles; commercial vehicles get access to certain zones not being available for motorcar during certain hours of the day; flexible delivery-windows; regulations of paring- and loading-times; reform of wages and taxes.</p>
<b>Supporting mechanism</b>	the framework and a handbook with guidelines has been published and distributed
<b>Results / Assessment</b>	This is the case for the shopping-complex “Sihlcity” which has designed and planned its logistics processes in a way that all users can comfortably use the same (limited) space. Also, the retailer “Migros” has set up its deliveries in an efficient way and under strong noise prevention.
<b>Condition of success or failure</b>	Strong partners and political will needed.
<b>Contacts</b>	<p>Willi Dietrich (civil engineering department of the city of Zurich, <a href="http://www.stadt-zuerich.ch/ted/de/index/taz.html">http://www.stadt-zuerich.ch/ted/de/index/taz.html</a>)</p> <p>Martin Ruesch (Rapp Trans AG Zurich, specialist, project manager)</p>

Slovenia – Local freight partnership development plan in Ljubljana	
	
<b>Location</b>	Ljubljana, outside of the Alpine Convention area (but applicable on Alpine towns)
<b>Service organizer</b>	City of Ljubljana
<b>General presentation</b>	<p>The growing significance of urban freight transport and logistics is related to increased population and sustained economic growth in urban areas. In towns freight transport represents 10-18% of road traffic.</p> <p>Freight transport in towns is specific because distribution takes place at the end of the transport chain, which is characterized by small loads, frequent number of runs and many vehicle kilometres. In many European towns access to the city centres is limited due to often narrow roads, congestion and high population density, the requirements of the population in terms of their mobility as well as environmental protection. One of the objectives of efficient urban logistics solutions is solving conflicts between different interest groups in the most capable way. For this reason, partnerships between key actors (stakeholders) are formally establishing in many European towns. The partnerships have different names such as “local freight network”, “freight quality partnership”, “city logistics forum”, etc. but the goals are the same, i.e. to find urban freight policy measures that will satisfy the needs of all stakeholders. They aim to develop an understanding of freight distribution issues and problems and promote constructive solutions acceptable for all stakeholders.</p> <p>To deal with city logistics the CIVITAS-ELAN project set up a common measure (7.1-COM Integrated freight policy development) to establish freight partnerships in all ELAN towns. The aim of the local freight partnership is to present local freight transport problems and to receive critical feedback and opinions from stakeholders.</p> <p>In this common measure, Ljubljana was a leading city and according to the guidelines from the freight delivery stakeholder’s partnership plan for Ljubljana, other towns should make their own partnership plans.</p>
<b>Action typology</b>	Supply chain management, urban planning
<b>Underlying issue (problem/needs addressed) and objectives</b>	Freight transport in Ljubljana has significantly increased recently, particularly since Slovenia has joined the European Union. There are several distribution places and many transport operators in Ljubljana which are situated at different locations in the city, especially in the suburbs. Among them there is a lack of cooperation which causes a large number of transport operations and predictably lower load factors than could be possible with coordinated logistics.



With the implementation of a restrict area (pedestrian zone) in the city centre in 2008, the freight delivery times were shortened from 6:00 to 9:30. During this time period freight delivery vehicles are congesting the city centre.



*Restricted traffic zones in Ljubljana*

The establishment of a stakeholder partnership was therefore strongly connected to the implementation of this local measure. The main goal of partnership establishment was a formation of a long term co-operation with all stakeholders dealing with freight transport in Ljubljana.


The most important objectives were:

- to reach consensus and solving freight transport problems;
- to find better solutions in freight transport;
- to provide better information about freight transport policy in the city;
- to increase awareness and communication.

As regards stakeholder participation the level of “deciding together” was chosen as the most suitable way for the implementation of the measure.

<b>Specification</b>	
<b>Implementation details</b>	<p>Participating stakeholders</p> <ul style="list-style-type: none"> <li>· Local authority (City/ municipality) (1 partner); Research institutions (1 partner); Freight transport service providers (up to 6 partners); Distribution and logistics centres (1 partner); Chamber of commerce (1 partner); Local business sector (manufacturers, retailers, shop owners) (up to 8 partners); Police, local surveillance and other (2 partners)</li> </ul> <p>Total: 10-20 actively involved partners</p>
<b>Supporting mechanism</b>	CIVITAS ELAN project
<b>Results / Assessment</b>	

<b>Condition of success or failure / Strong and weak points</b>	Strong partners and political will needed.
<b>Contacts</b>	<a href="http://www.ljubljana.si">http://www.ljubljana.si</a>

Slovenia – Promotion of sustainable freight logistics in Ljubljana	
	
<b>Location</b>	Ljubljana, outside of the Alpine Convention area (but applicable on Alpine towns)
<b>Service organizer</b>	City of Ljubljana
<b>General presentation</b>	To counteract the problems associated with the negative impacts of freight transport, the City of Ljubljana has decided to promote sustainable city logistics. As a first step, a computer simulation model and a web portal for better freight transport in the city has been developed.
<b>Action typology</b>	Data acquisition and modelling tools, education and information
<b>Underlying issue (problem/needs addressed) and objectives</b>	<p>With pedestrian zones being overcrowded by delivery vehicles during delivery time in peak-hours, the City of Ljubljana has recognized the need to develop a long-term plan of measures aimed at reducing freight traffic in urban areas. In order to promote and increase the awareness of delivery companies, shop owners, citizens, local authorities and other stakeholders about sustainable freight logistics, different solutions have been introduced in Ljubljana within the CIVITAS ELAN project to achieve the following objectives:</p> <ul style="list-style-type: none"> <li>• To carry out transport research on goods flows in the demonstration area and to determine appropriate transport policy measures for sustainable city logistics</li> <li>• To develop a computer model simulating efficient goods distribution</li> <li>• To establish a national internet web portal for the promotion and support of sustainable city logistics</li> <li>• To develop an on-line routing tool</li> </ul>
<b>Specification</b>	
<b>Implementation details</b>	<p>The measure was started in 2009 with extensive research on freight traffic within the city centre to better define the specific problems associated with freight delivery in Ljubljana. As part of this research, traffic flows of freight vehicles on the main city roads were processed and analysed on a daily and yearly basis. The analysis was based on data of electronic traffic counters. In addition, delivery vehicles in selected pedestrian zones were analysed.</p> <p>All data was collected at entrance points and included the duration of performed deliveries, EURO emission standards, loading capacities and other important parameters for traffic planning and possible optimization of freight deliveries. In order to fully utilize the possibility to implement sustainable transport policy measures the special distribution of retailers and small companies within the city were also taken into account. Based on this data a web portal, for the promotion of sustainable freight logistics with freight transport simulation (<a href="http://www.dostave.si">www.dostave.si</a>), was established in</p>

	<p>2012.</p> <p>The tool demonstrates the benefits and positive impacts that freight consolidation would bring to stakeholders. The internet web portal also includes on-line calculations of optimal routes for navigation within the city centre and calculations of optimal paths through the pedestrian zone. Interactive maps with free parking spaces for delivery vehicles are also available, as are the locations of physical barriers and entry points, charging stations for electric vehicles, etc. In other words, the web portal is a tool for delivery companies helping them to perform optimal deliveries. The web portal is fully operational and feedback on its usefulness is continuously being collected. Several events to promote the measure, including three day training sessions for efficient freight delivery and a national conference on sustainable freight delivery were organised in Ljubljana.</p>
<b>Supporting mechanism</b>	CIVITAS ELAN project
<b>Results / Assessment</b>	<p>With the help of the computer simulation model it was calculated that emissions could be reduced up to 20% within the demonstration area. The web portal so far has about 100 visits per month and the satisfaction of the users is higher than expected.</p> <p>Based on these findings Ljubljana hopes to implement a national web portal (including routing tool) for the promotion of sustainable city logistics, as well as to organise more driving training (Eco-driving) to ensure optimal deliveries and energy efficiency. Another notable fact determined through the survey was the weight consignment of the vehicles. Only about a third of the consignments are heavier than 100 kg and almost half of the consignments only weigh between 0 and 50 kg (13% between 50-100 kg). These findings can help to determine the type of vehicles needed for goods transport in the inner city area.</p>
<b>Condition of success or failure / Strong and weak points</b>	Strong partners and political will needed.
<b>Contacts</b>	<a href="http://www.ljubljana.si">http://www.ljubljana.si</a>