Overall Inventory and Project Report

A) Overall Inventory and Project Report

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<td>Safe on the streets, safe in the city</td>
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2 Work Package 4: Public Transport

2.1 Inventory Report

This chapter provides an argument on the relevance of public transport in general and zooms in on conditions in TRANSPOWER-cities. Based on this, a set of recommendations is given and the efforts within the TRANSPOWER-project are presented.

⇒ Relevance of public transport:

Every year several quality of living rankings of cities around the world are published. What at first sight sounds like surveys among city dwellers of limited impact turns out to be a guide for prospective investors. In a services society it is no longer the availability of natural resources or access to the sea that give cities a competitive advantage. In the run for the best brains companies choose cities that provide the best environment for their best employees and their families.

Though, what are the factors that make cities to most liveable cities? Certainly, it is a combination of multiple determinants like the availability of medical facilities or recreational value. Yet, one of the most important factors is the transportation system. In a survey conducted among inhabitants of 14 cities around the world the quality of infrastructure and quality of public transport were considered as two of the most crucial points concerning the quality of life (see figure 1). Only fundamental conditions, namely cost of living and safety of persons and property, and the quality of the environment were rated more important.

<table>
<thead>
<tr>
<th>City excellence</th>
<th>No. of inhabitants (tsd.)</th>
<th>Public transport passengers 2008 (mio.)</th>
<th>Integrated public transport system</th>
<th>Airport express / train connection</th>
<th>Employer pass</th>
<th>Cycling policy</th>
<th>Real time internet journey planner</th>
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<td>188</td>
<td>155 ('07)</td>
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<td>✓ ('09)</td>
<td>✓</td>
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Table 1: Excellent cities and their public transport system

Also companies benefit from a high quality transportation system. They appraise time and cost savings provided by public transport services and a good integration of all modes of transport which reduces long-distance travel times.

The places with the highest quality of living rankings are cities, mostly in Europe and North America, chosen as a major station of many companies and organisations. They managed to attract investment providing a high quality environment. Each of these cities has an outstanding public transportation system and a comprehensive policy framework on transport issues.
This chapter provides a brief illustration of the interrelations between a cities’ public transport system and economic and environmental factors. It focuses on the impact on capital investment and shows that negative consequences of economic growth in the transport sector can be overcome with a good public transport system and sustainable policies.

**Economic growth and transport – Overcoming the negative consequences**

When cities grow economically and their residents become wealthier usually car ownership begins to rise. However, the additional cars do have a negative impact on the city environment:

- Air quality in the cities degrades due to higher car emissions. Pollution often causes severe damage to human health and results in approximately 3 million premature deaths annually. The cancer risk increases.
- The noise generated by road traffic, especially at night, influences the hormonal balance of the affected resulting in higher stress levels and reduced physical and mental performance.
- Space in cities is rare and expensive. Traffic areas for motorised vehicles consume land and reduce the quality of environment.

**Benefits of an improved public transport network**

Investment in public transport infrastructure is worthwhile in many ways:

- Gaseous emissions and pollution caused by motorised vehicles is reduced the more people use the public transport network. The air quality is improved. The city environment becomes more liveable.
- The noise level in the city decreases, the quality of living increases. The environment becomes calmer and less stressful.

**Box 1**

**Zurich: Promoting business opportunities with its transport system**

Zurich is supposed to know how to attract companies and investors. In its image brochure Zurich’s world class transportation system is placed at first sight – before its lovely environment and education facilities. This highlights the importance of transport issues in the global competition between cities.

Zurich does not only highlight its excellent connections to national and international destinations and the famous Swiss railway system. She describes its public transport network as one of the best in the world. The average citizen travels 800 times a year on the system.

Source: [http://www.stadt-zuerich.ch/content/prd/en/index/stadtentwicklung/wirtschaftsforderung/LocationZurich.html](http://www.stadt-zuerich.ch/content/prd/en/index/stadtentwicklung/wirtschaftsforderung/LocationZurich.html)
• Compared to new road or parking space constructions public transport infrastructure usually consumes less of the scarce space in your city. Space that can be use for living quarters, cycle lanes or playgrounds.
• Using the public transport network is often faster than going by car, even if the roads are not congested. There is no need to search for available parking space. Commuters and tourists save time and money.

Liveability and economic success – the outcomes of a high quality public transportation system

Liveability

• The positive impact of the public transport system on the environment makes a city a more attractive to settle down. Especially higher educated personnel and families are very health-conscious are will not choose cities with poor air qualities and high noise levels that threat their and their families health.
• Additionally public transport networks improve the mobility of citizens who are not able to use a car, e.g. children. Parents do not need to take them to school or recreational activities. When going out at night people are less likely to take the car when public transport is available. Thus road safety is not compromised by intoxicated drivers. All these advantages make a metropolis a more liveable place with a higher recreational value.

Economic success

• There is only a small step from liveability to economic success. In a society based on services the best companies are competing for the best human resources. The quality of living at their workplace is a crucial point for employees when choosing their employer. Therefore companies will invest in cities with a good transport infrastructure, which is a prerequisite of a high quality of living standard. In addition, an attractive environment supports city tourism.
• Not only does a well developed public transport system attract employees and heir firms and tourists, it is also one of the so called hard location factors. A reliable and interconnected public transport network is time and money saving for companies. Employees and guests can travel quickly from the airport or railway station to their workplace. Appointments can be kept reliably. Time losses are minimized. This raises productivity and eliminates extra costs for carpools etc.

These benefits are essentially important for businesses in the tertiary sector, the sector that will gain even more importance in the information society of the 21st century. In a survey conducted among companies of the services sector in London, a city with a well-developed public transport system but also major congestion problems, access to public transport was ranked the most important location factor. And, priority of this factor has increased since in the last years (see figure 3). Plenty of statements of company representatives underpin this vital importance: “An efficient public transport system benefits the whole
economy of Hamburg. An attractive and, in first place, reliable public transport network is an important location factor and implicates enormous advantages - for the employees of Hamburg's businesses, commercial transport and the mobility in our city altogether” (Dr. Karl-Joachim Dreyer, President Hamburg Chamber of Commerce, 2007, Source: HVV, 2007).

The bottom line

• The essence is that without investment in public transport systems cities will seriously lose competitiveness in a 21st century economic environment.

• On the contrary, an extended public transport system will boost the quality of living in cities, realize important benefits in quality of environment and reduce carbon emissions and thereby and additionally increase its economic attractiveness. Foreign direct investment will raise and enable sustainable growth and prosperity.

➔ Conditions in TRANSPOWER-cities:

Public transport is one of the main pillars of sustainable urban transport and covers rail- as well bus based systems. In Europe, a renewed interest in tramways – due to their perceived advantages in terms of emissions and services quality – can be observed. Three TRANSPOWER-cities, namely Groningen, L’Aquila and – with long planning perspective – Nis have taken steps to (re-) introduce tramways or are considering it. Groningen plans to introduce a tram line (investment of approx. 150 Mio EUR) which should mainly connect the central train station with the university campus. The project is envisaged to start in 2010. In detail the following key issues are found in TRANSPOWER-cities:

• **Graz** - Extension of services and 100% Bio Diesel Bus Fleet

• **Groningen** – Planned Tram (Funding not yet secured) & Concept of a compact city with development corridors and targeted encouragement of bicycle and public transport use.

• **Halandri** – Improvement of public transport through better coordination and integration envisaged

• **L’Aquila** – Tire tramway (last part of the tramway is not approved up to now)

• **Nis** – reorganisation of PT (incl establishment of dedicated supervision unit) & development of real-time GPS-based tracking information (University of Nis)

• **Volos** - aims at improving the quality of bus services, to expand the network; but: city has limited control over bus operations + as it provides no subsidies, routes are set up on a purely economical basis

• **Skopje** – aging fleet (about 17 years for public company; 27 years for private); Declining LOS → declining riderships: 180 millions per year in 1992 to 70 millions in last few years & Feasibility study for LRT under way

• **Timisoara** envisages encouraging the use of public transport by modernizing and extending the public transport infrastructure, Public Transport Company of Timisoara recently funded a campaign for attracting and maintaining travellers.
Transport modes in Transpower – cities:

<table>
<thead>
<tr>
<th>City</th>
<th>Bus</th>
<th>Minibus</th>
<th>Tramway</th>
<th>Taxi</th>
<th>Train</th>
<th>Total Route Lengths (all modes, km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graz</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>294</td>
</tr>
<tr>
<td>Groningen</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Halandri</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓ (Athens metro)</td>
<td>131</td>
</tr>
<tr>
<td>L’Aquila</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Nis</td>
<td>✓</td>
<td>✓</td>
<td>( O )</td>
<td>✓</td>
<td></td>
<td>519</td>
</tr>
<tr>
<td>Sibiu</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>394</td>
</tr>
<tr>
<td>Skopje</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Timisoara</td>
<td>✓**</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>378</td>
</tr>
<tr>
<td>Volos</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

* ✓ - existing mode; O - planned mode; (o) planned on the long run; ** incl Trolley-bus

For cities within the TRANSPOWER network - in particular those in Southern and Eastern Europe – the task remains to upgrade bus services substantially.

The graph below shows the modal split in TRANSPOWER-cities (NB: * Note: Data for Graz and Timisoara encompass bus, train and tram; No data for pedestrians provided for Groningen).
It becomes obvious that cities in Central and Eastern Europe (exemplified by Sibiu and Timisoara) feature today relatively high shares of sustainable transport means, namely walking, cycling and buses/trams. Investments in transport services and infrastructures in the next years will determine the fate of these systems, i.e. whether

The graph below reflects a fare required for a 5 km or 15 minutes city ride. No data were gathered on season tickets or other reductions.
Fare Integration

* integration with Athens-Metro on selected routes; **More expensive integrated tickets available, no integration between companies; Note: Fare refers to single bus trip

Graz and Groningen feature relatively high fares, which are offset by numerous other incentives. Groningen for example encourages the use of P+R facilities: P+R users pay no fare for parking but 2 Euro for a return ticket which can be used by up to 5 people.

Fares are considerably lower in Nis, Sibiu, Volos and Halandri – in nominal as well as in relative terms (compared to gasoline). In Graz only, the ticket price exceeds the price for one litre gasoline. The systems in Graz and Groningen offer full fare integration, i.e. no new ticket has to be bought when lines are changed during an individual trip.

In the case of Graz, as far as the question of fare fixing is concerned, the authority rests with the traffic operators, who have the possibility to increase the fare to the 1.75 times of the consumer price index. An increase over the mentioned figures is only realisable with the compliance of the local authorities. The last increase of fare was in 2006 and was in the average about 4.03 % over all kinds of tickets. Styrian transport association (province Styria, federation, city of Graz) is responsible for it.

In Nis, transport operators define fares and City Assembly gives its opinion and agreement. In Timisoara, the Local Council is in charge of setting fares.

Further issues:

Public transport priorisation can take various forms, starting from priorisations at junctions and traffic lights through marked lanes (shared sometimes with cyclists and taxis) up to fully segregated bus routes, as they are used for bus rapid transit.
Halandri has 1800 m of bus lane. Graz sports extra lanes - separated tracks for bus and trams, with priority at traffic light for trams and 2 bus lines. It aims at extending the zero waiting time schemes for public transport as well as to extend public transport across the city border.

**Public transport density** (either weighted by population or area) is a rough indicator to assess public transport coverage.

A more useful – albeit difficult to establish – indicator is the distance to the next public transport stop. Any area within a city should be within less than 500 m to the next public transport stop.

Public transport density is strongly linked with efforts to promote non-motorised means, such as walking and cycling. As [Hass-Klau 2001] writes: "A public transport network with (...) high density and good penetration) will generate for each public transport trip at least two walking trips. They will be shorter if the public transport network is dense but the amount of walking will be higher if public transport is used frequently. So you can see that in this example there is a three-way relationship between public transport and walking:

- a reduction in walking as a mode on its own
- a reduction in walk length because of high public transport density
- (iii) and more walking trips because of high public transport use."

Coverage in all observed cities is well developed.

**Summary:** The limited extent of fare integration in most cities (not only limited to TRANSPOWER cities) is one key obstacle to for further improvement of public transport quality. In terms of other key performance indicators, such as frequency, passenger information and scope of service the conditions of public transport vary widely. Generally spoken, in particular cities in Central and Eastern Europe offer extensive services, but the quality of vehicles and infrastructures for passengers remains a key challenge.

In so far, public transport cannot yet play the role in boosting environmental and economic performance of participating cities. Whereas Graz and Groningen actively use their transport systems in displaying an comparative advantage of the respective city, other cities still struggle on the decision whether to prioritize public transport on the long run.

**Recommendations**

Based on the joint efforts during the TRANSPOWER-project, the following recommendations can be summarized:

**Generally:**

- Public transport is and will remain a key instrument for managing urban mobility with low emissions, limited resource consumption and with the objective to increase liveability in cities
- Public transport operators and decision-makers need to realize that aging populations, urban sprawl, new forms of transport (such as e-mobility) and ever smarter vehicles are threatenting the revenue base of public transport
- Increased and integrated efforts are needed to protect the value of public transport in European cities and to expand it considerabely

**Specifically:**
The European Stakeholder such as European Commission and individual member states shall expand their efforts to support local decision-makers in protecting and expanding public transport by making financial means available and supporting legal amendments.

Increased efforts should be made to support planners, operators and decision-makers in enhancing public transport by providing forums for exchanges and knowledge transfer.

Under-researched and under-developed fields in public transport such as fare integration, integration with other modes, integration with urban logistics and urban public transport institutional reform need to be tackled more broadly.

2.2 Overall Project Report

2.2.1 City Solutions

Public Transport in Skopje: New Concepts for a better Quality of Service, FYRO Macedonia

New concepts for a better quality of service relating to public transport in the city of Skopje is an important step towards an improved traffic situation. The current situation is characterized by an overcome organizational concept of transportation, an old vehicle fleet, inadequate or nonexistent real-time passenger information, no existing systems for smart ticketing and intelligent cards, and a lack of an urban transport policy that is supported by the local government.

All these urged the city to develop measures that will be focused on:

- Development of a strategy for a sustainable urban transport system in Skopje
- Development of a strategy for a PT system in Skopje; this includes organisational solutions such as market definition, financing, quality of service, etc.
- Regulated market with establishing and implementing the new organizational concept
- Improvement of the quality of service by means of a renewal of the vehicle fleet and an introduction of the AVL system (Automated Vehicle Location) in order to improve service reliability and service quality
- Improvement of the quality of service by the introduction of real-time passenger information
- Introduction of Light Rail Transit as high-capacity, fast public transport mode for improving the service
- Introduction of smart ticketing and intelligent cards based on an integrated fare system for all PT service providers
- Reduction of the pollution from PT vehicles via the conversion of transit diesel vehicles and the introduction of electric powered LRT vehicles
- Support of an urban transport policy by the local government

All measures should be of high priority for the city but also for the state government and the respective ministries.

Rehabilitation of the Tram Line, Timisoara, Romania

The most frequently used public transportation system in Timisoara is the tram. It covers 57.78% of urban public transport. However, the tram infrastructure has not been restored for a long time and required numerous works of rehabilitation and modernisation. 30km of tram line have been under
technically antiquated conditions. The tram line has therefore been restored between 2002 and 2006 in a cooperation between the municipality and the local public transportation company. Thanks to those rehabilitation works, traffic noise and vibrations, which had previously affected the surrounding environment, have been successfully eliminated.

**Park and Ride (P&R), Groningen, The Netherlands**

Groningen is a compact city with limited space. Consequently, its centre neither offers the space nor the capacity to meet the demand for increasingly scarce parking facilities. To solve this problem, various forms of parking accommodation have been developed, each with its own target group and rates. The objective of the Municipality’s parking policy is that both the city in general and the centre in particular remain accessible to all economically essential motorized traffic. In the city centre and in the districts immediately surrounding it, the so-called ‘shell’ districts, all non-essential motorized traffic (commuter traffic as well as socio-recreational traffic) must be restricted as much as possible. As an auxiliary facility, Groningen has developed a well-functioning Park and Ride (P&R) system.

There are several P&R areas with a total capacity of over 2,000 free parking places. Keynote of the Citybus system is convenience. This means that there are no complicated fare systems, that the buses run with high frequency, and that the user can reach the city centre in no time at all.

**GPS-tracking for buses in NIS**

Veljko Radičević and Marija Petkovic from Nis /Serbia presented a GPS-based tracking information systems developed by the University of Nis that allows for tracking of bus operations, and respective billing and re-funding of operators as well as for dissemination of information to PT-users at stops and via Internet.

**2.2.2 Municipal Case Studies**

As no TRANSPOWER-coordinators was directly involved in Public transport planning, no Muncipial Case Study has been conducted on this issues. But as TRANSPOWER-coordinators they can influence framework conditions for PT (positively and negatively) – therefore space was given for discussions on public transport issues and MCS in other areas were reflected on. Further, continous effort has been given to highlight European and International portals on public transport issues, such as ELTIS, TRENDSETTER and SUTP. Beyond that, regular updates through the TRANSPOWER-newsgroup were given to all participants.

**3 Work Package 5: Integrated Planning**

**3.1 Inventory Report**

The approach of integrated planning foresees a stronger interlocking of all fields of activity that are relevant to the subject-matter of traffic. Sustainable solutions in the area of mobility, in particular for medium-sized cities, require comprehensive strategies relating to single resorts. This applies especially to a better integration of traffic- and spatial planning approaches. The demographic impacts on urban mobility, as well as requirements on local climate protection are likely to rise in the future.

Within the frame of the TRANSPOWER project, the Integrated Planning work package was therefore the cross-section work package. Integrated planning aspects were taken up in all work packages. The
experience of TRANSPOWER has shown that in the field of mobility synergetic effects can only be realized through a stronger perception of integrated approaches and projects.

In particular in European cities with their highly dynamic variations in urban- and traffic development, position of points for better sustainable city traffic can be attained by integrated approaches in politics, planning and projects. Plans and projects which determine these cities’ structures for middle- up to long-term horizons are listed on the cities’ short-term agendas.

3.1.1 Perspectives of Integrated Planning

The integrated planning approach can be divided into three dimensions:

On the horizontal also called the spatial dimension, the avoidance, the reduction or rather the spatial control of new traffic-generating uses is focussed. All the eastern European cities of the project are characterized by continuing suburbanization tendencies. The mainly unplanned residential constructions are primarily concentrated on arterial roads and partly cut across municipal borders. A lack of attractive public transportation systems leads to a strong expansion of private car usage. Therefore, the activation of inner city brown fields was initiated in many cases.

On the sectoral dimension, cross-departmental coordination of traffic-relevant spheres of activity stay in the front, especially the spatial regulation of retail development. It is especially in medium-sized, eastern European cities where currently new spatial retail patterns beyond the core of these cities emerge. In many cases, the political will to involve investors in the obligatory building of public transportation connections is missing.

The vertical dimension of integrated planning aspires for the integration of sustainable traffic strategies and ranges from the strategic planning level up to the concrete project level. Whereas in urban development visions and strategies sustainable traffic objectives are formulated in many cases, these objectives are barely included in concrete traffic-relevant projects.

In particular with regard to dynamic medium-sized eastern European cities, integrated planning approaches possess considerable advantages:

- Direction of dynamic residential constructions and retail expansion towards existing public transportation systems
- Fortification of a sense of environmentally/ climate friendly urban development- and traffic policies
- More efficient usage and financing of existing transportation infrastructures

The demographic and social change is a key topic in integrated planning. The overageing of the population, the transformation of household- and demand structures will have an influence on all spheres of activity relating to urban development and therefore on traffic matters. The differentiated analysis and prognosis of this tendency is essential for a crucial adjustment in local infrastructures. The dimensions and the pressure for action are in many cases still not sufficiently recognized. The necessary middle- to long-term consideration of altering demands in mobility does not exist.

3.1.2 Barriers to integrated strategies, planning and projects

The main hindrances can be identified in the ways of organisation and communication. Municipalities in medium-sized, eastern European cities feature strongly different sectoral structures. Headquarters or other strategic administration agencies do not exist. Traffic planning and urban planning are separated as a rule. The functions are strongly technically oriented. The cooperation between the field of urban planning and other traffic-relevant resorts is restricted.
In many cases, skilled and interdisciplinary trained labour is absent. In Romania for example, no interdisciplinary engineers are trained. Even external consultants merely provide technical traffic planning-, but no integrated planning services.

However, the main problem is the lack in awareness of methods, instruments and possible effects of integrated planning.

### 3.1.3 Steps forward

There are no standard formulas for a stronger appliance of integrated approaches in municipal traffic politics and planning. Different urban- and mobility patterns require individual solutions.

*Consolidation of strategic planning:* The challenges for a sustainable, climate friendly and efficient city traffic will grow even more. The demographical and social change outcomes can only be countervailed by a consolidation of strategic planning. Thus, master plans or rather integrated urban development concepts are key elements.

*Step by step towards regional cooperation:* Typical medium-sized cities feature strong settlement- and traffic linkages with neighbours. Step by step, a cooperation relating to these topics can be established.

*To learn how to plan integrated:* The development know-how should be fostered within the framework of European cooperatives. The TRANSPOWER internships have shown that by the transfer of staff between the municipalities, in short time transferable experiences can be generated.

*To control integrated planning:* The improvement of the cooperation within the municipalities requires the installation of cross-departmental workgroups or administrative departments (headquarters).

*Acceptance of integrated projects:* The obligatory change in awareness towards integrated planning must be accelerated through pilot projects in the area of traffic. For this kind of projects, a broad spectrum of transportation measures are adequate.

*The communication of integrated approaches:* The public interest in the development of sustainable urban traffic structures will be advanced. Shifted demands in mobility and local climate protection claims need to be advanced more strongly among the public. The participation of citizens, NGOs and further stakeholders has to be initiated and fostered.

### 3.2 Overall Project Report

#### 3.2.1 City Solutions

**Combined bus terminal and parking garage “Lorenzo Natali”, L’Aquila, Italy**

The proposed case study, Lorenzo Natali Bus Terminal and Parking Garage of L’Aquila (Italy), represents a good solution to the problems of parking and permeability inside historical cities with a compact urban structure. This *Autostation*, positioned outside of the urban walls, allows its users, through a completely underground pedestrian tunnel, direct access to the main square of the city.

**TWO IN ONE - Access restrictions but also social services for the citizens, L’Aquila, Italy**

The city of L’Aquila has an urban structure surrounded by walls and is still densely populated, not only with home business, institutional activities, hotels and tourist attractions, but even with its residential area. The municipal administration of L’Aquila which had already established the LTZ (Limited Traffic Zones) over fifteen years ago, in 2005 decided to divide the city centre in six LTZ for an even more
restricted car access in areas of the Old Town, allowing access in those identified areas only to authorized citizens and only on days and hours specified in the Municipal Regulation Plan. The solution adopted to allow residents find a parking space in the LTZ was to install electronic toll lanes “Barriers”. The barriers, special cylindrical bodies which sink under the street level allowing entry only to the vehicles equipped with a device "transponder" (device type Telepass of a highway) are installed along a toll lane at the beginning of the street, and are thus preventing the entry of all citizens without the specific "reserved" area permission. Furthermore, these gates can be controlled and allow for a supervision of what happens at each gate, 24 hours a day, 365 days a year.

**Pedestrianization and rationalization of the traffic flow in the area around the Fontana Luminosa and the Spanish Fortress, L’Aquila, Italy**

Due to increasing vehicular traffic flow and large construction sites in the city of L’Aquila, several problems have appeared. The following needs have been identified:

- To identify new areas for residential car parking of the area and for the users of the new university complex;
- To ensure the continuity between the flow of the pedestrian Gran Sasso boulevard (in the direction of Tower, the area of expansion of the modern city) and Vittorio Emanuele II boulevard (which represents a historic axis);
- To connect through walking trails, the two avenues that converge on the Fontana Luminosa (Ovidio Avenue and Gran Sasso Avenue) with Castle Avenue, with the square itself and recover the relationship with the castle and its park;
- To preserve where possible, the green areas between these two avenues that converge on the square;
- To respect if possible, the signs spontaneously outlined by the historical development of the urban area.

In June 2004, the Municipal Administration of L'Aquila has entrusted a group of technicians with the planning. They have acknowledged the need of revising the structure of the street node around the Fontana Luminosa, of separating the urban traffic flow from the extra-urban one, of affirming for the entire area the role of square again and restoring its links with the park of the castle.

The project was particularly developed in respect to the organization of the node, putting in place 4 solutions

**Traffic-Safe School Environments, Groningen, The Netherlands**

More often than not, the streets near primary schools are a scene of hustle and bustle in the morning and afternoon. Lots of children are usually milling around near the school entrance on foot or on their bikes, or are being fetched or delivered by car. Frequently, the children have to cross busy roads to get to their school gates. In addition, they may have to cover longer distances between home and school, as many schools have undergone a scaling up in the past few decades. Consequently, contacts with the neighbourhood of the school have often disappeared. These developments have led to an enhanced risk of accidents, and also to a rise in the perceived or subjective traffic danger. Because of this, children are increasingly being fetched and delivered by car, which causes even higher amounts of traffic during school peak hours. The Municipality of Groningen has witnessed an increase in the number of accidents among 12 to 14-year olds, which is largely based on the fact that children are becoming mobile under their own steam at a much later age than formerly, and do not acquire sufficient skills soon enough to hold their own in the traffic flows. Since 2006, traffic safety within school environments and safe routes to schools have been high on Groningen’s political
agenda. This has resulted in a budget of €1.4m for the period 2006-2011. With the ‘school environment’ project, the environments of primary schools and the routes to the schools will be made a great deal safer for pupils in the next few years. Furthermore, this should also cause a growth in the children’s independent mobility.

In co-operation with the schools, pupils, parents and police, traffic safety in the direct surroundings of the schools will be improved over a period of five years. In addition, an inventory will be made of which routes to schools are most frequently used in the different neighbourhoods. Apart from projects for recognizable and traffic-safe school environments, plans will be made for safe routes to schools per individual school, also indicating the most child-friendly routes.

Blue Zone and Green Parking Zone - Further extension of the parking zones, Graz, Austria

Graz City Council has taken a stand against a congestion charge and has chosen an alternative to this in the introduction of a comprehensive city-wide parking management integrated in its transport policy, a measure for which it obtained an international award called “Lebendige Stadt” - “Vital City”.

Through the constantly increasing volume of car traffic, conflicts in use of parking spaces aroused between resident population, commuters and other parkers. The pricing (parking management, congestion charge or similar systems) is increasingly used as a control tool for travel to the city centre. For this reason, the city of Graz introduced a concept for a graduated fee scale parking space management in 2003 - the “blue zones” and the “green zones”. Currently there are parking spaces in short-term parking zones (blue zone) and parking spaces in so called long-term parking zones (green zone). The revenues (after subtracting the costs for the private control-company) are committed to improvements in public-transport as well as intermodal infrastructure (e.g. Park & Ride).

3.2.2 Municipal Case Studies

Integrated Master Plan Process in Timisoara

Against the backdrop of the sweeping development the urban and traffic planning in the city of Timisoara and its area is currently undergoing, a long-standing Integrated Master Plan Process was launched in 2008. The foci of this Integrated Master Plan Process are on areas of increased urbanisation and on transport improvement.

The process has a twofold approach: On the one hand, it includes a detailed (regulatory) plan for the municipal district, on the other hand an informal strategic plan for the metropolitan area. The city’s first areas of concentration were the rehabilitation of the historic city centre and of the Bega Canal, as well as the improvement of the transportation network.

The following three measures were notably taken within the context of Timisoara’s Integrated Master Plan Process:

- The implementation of the 4th inner circle ring as a substitute for the belt of Timisoara in order to reduce the heavy traffic in the centre of the city.
- The creation of an info-system for public transport in Timisoara and the extension of public transportation into the surrounding area.
- The implementation of an integrated concept for the Bega Canal. This includes the rehabilitation of the river banks, cycling and footpaths along the river, and also of public transport on the Bega Canal.
Other measures aiming at the reduction of inner-city traffic, such as the introduction of a „park and ride system“ are currently under consideration. Several alternative measures have been rejected for cost-related reasons.

The following general results are to be expected from the Integrated Master Plan Process:

- A sustainable urban and traffic policy for the city and its metropolitan area
- The raising of awareness for metropolitan development and marketing
- Increased competence in integrated planning and implementation
- Identification and preparation of the key measures for a sustainable urban and transport development.

4 Work Package 6: Traffic Management

4.1 Inventory Report

The implementation of traffic management is an additional dimension of transport planning. It adds the aspect of **operation** to the aspects of strategic planning and general provision of road infrastructure. Traffic management ensures the (more) efficient use of existing and future networks in cities; it is crucial to make the maximum use of investments both in road infrastructure and public transport. Therefore, it is recommended to give the same priority to traffic management measures as to common infrastructure measures. This also comprises the recommendation to integrate the traffic management strategy into the overall transport planning strategy and to ensure the coordination between planning and operation.

In many cases, medium-size cities have a very large potential for improvement by traffic management and control. Additionally, if traffic management is downsized to the requirements of smaller communalities, even these surely have good chances for improvement by using elements of traffic management.

Examples for traffic management elements are traffic control and safety, information and guidance on urban and interurban highways and parking management including information and guidance as well as fee management. It is essential to regard strategic planning and traffic management as undividable elements of one acting strategy. Basic conditions to achieve a good standard of traffic management are the formulation of concepts, the selected soft- and hardware and the political and administrative framework.

Traffic management measures can be divided into three timelines:

**Short-term**: standard traffic management measures, the implementation of which should start immediately

**Medium-term**: measures of enhanced traffic management that need infrastructure implemented by short-term measures and certain prerequisites that have to be developed within the traffic management strategy with a time horizon of five years

**Long-term**: traffic management measures based on comprehensive traffic and transport demand management approaches for the management of the future infrastructure, which need a time horizon of about 10 to 15 years to be implemented

In many cases, even the short term activities are connected with the necessity of introduction of a central traffic management unit in order to monitor the network, collect the traffic information, to coordinate the traffic control by remote. Therefore, the following steps are necessary:
• Definition of a comprehensive traffic management strategy
• Improvement of intersection control (hardware and software) towards adaptive control and prioritisation of Public Transport vehicles
• Introduction of detection devices (loop detectors, infra-red and other technology)
• Developing a technical standard for prioritisation (definition of common rules for all intersections)
• Traffic light pre-emption devices
• Introduction of a traffic management centre (monitoring, controlling, guiding) dealing integrative with road management, park management, public transport operation and emergency services
• Central traffic control units and communication infrastructure (connecting junction control and measurement devices to centre)

In a second phase, enhanced traffic management measures should be implemented which will enable the management of the network with dynamic guidance (based on traffic volumes, incidents, events and parking space management). Furthermore, link control and dynamic lane management should be part of the measures set. These measures should in detail be based on the state-of-the-art which will be available in ten years' time, but in principle it should be based on the overall traffic management strategy which is to be defined in the next one to two years.

The second phase of traffic management will furthermore have to comprise measures for Public Transport. Although it is the responsibility of the Public Transport operators to introduce vehicle equipment and stop site information, there are important interfaces with the road operation in terms of traffic control (communication between PT vehicles and controllers) and in terms of mutual management, since PT is using the road space as well. Therefore, an integrated management is useful and recommended. Major elements of such integrated management include:

• Automatic vehicle location systems
• Communication infrastructure
• Passenger Information systems
• Operation Centre (integrated into a traffic management centre)

Transport demand behaviour such as choice of mode, route choice, departure time choice and to some extent also destination choice is based on the users’ information. With growing motorisation, the degree of freedom of choice will grow and the number of captive users of Public Transport will decrease. Information is a key factor for traffic management. With a dense network of detection and a comprehensive monitoring of networks, an information platform should be provided serving as information centre (via Internet, TMC, Digital radio, Mobile phone etc.) both for end users and traffic operators by e.g.

• Collecting all relevant information (state of traffic, incidents, traffic volumes etc.)
• Providing information to road users (forecasts, warnings, recommendations)
• Providing information to the traffic management centre
• Providing multimodal information (routing on road and on public transport).

4.2 Overall Project Report

The exchange between different sized cities in Eastern and Western Europe showed various approaches to be subject of discussion. Experience is transferred and solutions downsized from
bigger cities. Some pilot projects for traffic management have been attended and monitored during the project.

4.2.1 City Solutions

Traffic flow and traffic safety along Boulevard 12 February, Niš, Serbia

Boulevard 12 February is an important entrance-exit direction for the City of Niš. The Boulevard passes through the industrial zone and links some outlying residential areas to the city. Although it passes through the city, it is a second category state road. Because of problems according to traffic flow and traffic safety, it is necessary to redesign the road and to improve traffic management in this area.

The total length of the boulevard is 4 km and the cross-section varies from 18 m to 35 m. At the beginning of the project, the current traffic volume was not known but there was the strong impression of a dominant main stream along Boulevard 12 February.

Corresponding to the solution in Dimitrija Tucovica Street (see City Solution), the state authority proposed a solution with several roundabouts and a collector road at least at one side of the boulevard. Because of the experiences with the redesign of Dimitrija Tucovica Street, it has become evident that a diligent analysis of the situation is of major importance for the success of the planning. Therefore, the aim of this case study is to conduct a traffic analysis and to make an optimised proposal for the redesign of the Boulevard.

Street Design of Dimitrija Tucovica Street, Niš, Serbia

Dimitrija Tucovica Street is a very important entering-exit direction used by public transport and numerous freight vehicles with a high traffic load. Because there appeared traffic safety problems at the crossings with Dimitrija Tucovica Street, it was necessary to reconstruct the crossings. The decision was taken to build several roundabouts and to reconstruct the sections between these crossings, too.

PUC „Parking service Niš“, Niš, Serbia

PUC "Parking service" Niš, was established in 2006 with the aim to regulate parking in the City of Nis. PUC is a public company that is required to work economically. Whereas it was very hard to find a free and legal parking space before PUC was established, the situation today has improved very much. Before the company started its work, the City of Nis had ordered a Parking Study, which was elaborated by the Institute of the Faculty of Traffic and Transport Engineering, Belgrade. Based on the study, the central city area was divided into two zones with separate time limits: Since, until then, parking in the City was not charged at all, PUC “Parking service” had to introduce the payment conditions and the benefit they will have from regulated parking to the citizens. People can pay for parking either by a parking ticket (which can be bought on a traffic stand) or via SMS. Residents can buy monthly or annual tickets at a reduced price and are allowed to park their cars in the zone they are living in without any time limits.

Perspective of Dynamic Traffic Management, Skopje, FYRO Macedonia

The main objective is to alleviate traffic congestion and pollution in the city centre of Skopje by implementing intelligent traffic management systems (ITS). Traffic will be monitored and controlled in real-time by receiving real-time traffic information. The traffic will be controlled through vehicle-actuated traffic signals, variable message signs, thus creating a system of automatic traffic
management. The ultimate goal is to enable safe, efficient and sustainable mobility of individual motor vehicle users as well as of public transport vehicles.

Within this project, an intelligent solution pattern of urban traffic congestion problems will be established. Traffic experts and domestic companies should be animated to manufacture traffic control equipment based on modern technologies that support ITS.

The City of Skopje is partner in the EU FP7 funded project named RENAISSANCE, which is focused on testing innovative strategies for clean urban transport for historic European cities. Traffic management and software infrastructure for its function are of high interest for the city of Skopje. The implementation of a traffic management system requires the cooperation of personnel from universities, technical faculties, and public enterprise for transport, but also international business and experts

**Bicycle-friendly Traffic lights, Groningen, The Netherlands**

One of the main objectives of the Municipality of Groningen’s traffic policy is the promotion of bicycle use. Although Groningen is constantly growing in size and distances to the suburbs are increasing, the aim is to have bicycles account for sixty per cent of all travelling within the city. Obviously, delays for cyclists at traffic lights do not help matters much. For this reason the Municipality of Groningen have come up with various solutions to minimize cyclist waiting times at traffic lights. The primary concern is that bicycle traffic in Groningen should function smoothly and safely, certainly at crossroads, a primary source of danger. The basic principle here is that cyclists should have sufficient green time to cross without having to wait for a second green sequence. At places where the green sequence is too short it will be extended – at places where bicycle flows can be intense, for example.

**GSM Parking, The Netherlands**

For the city as a whole, for the province and for the surrounding regions, Groningen’s city centre exerts a great power of attraction when it comes to work, shopping and recreation. At the same time, the Municipality wishes to keep the city liveable and accessible. Hence part of its policy is to keep journeys to the city by car at an acceptable level and to reduce the number of cars in the street. For this very reason paid parking was introduced in the city centre and the shell districts. Until 2002 visitors could only use a ticket machine to pay their fee. But since 2002 they have also been able to use the so-called ‘GSM parking system’. This is a quick and safe way to pay for street parking in Groningen. It is done by cell phone, irrespective of the kind of subscription or provider, after a one-off registration. The Municipality of Groningen was actually the first to introduce GSM parking in the Netherlands.

**City-wide 30 km/h speed limit, Graz, Austria**

In 1992, Graz was the first city in Europe which introduced speed limits for the whole city: 30 km/h (18.75mph) in all residential areas / side roads, covering around 80% of the whole city, and 50 km/h (31.25mph) for all priority roads. The aim of this measure was to increase road safety, reduce pollution as well as noise.

For the priority roads, a traffic-safety-monitoring group (city-experts, police, road safety board, consultants) identified dangerous spots and came up with solutions. Those included changes at programs for traffic-lights, reconstruction of roads and/or traffic-lights, reconstruction of roads and/or intersection, additional speed-limits, etc. At the most important city accesses, additional four-language info panels were installed, which draw the user's attention to the regulations applicable in Graz.
### 4.2.2 Municipal Case Studies

**Traffic flow and traffic safety along Boulevard 12 February in Niš, Serbia**

Boulevard 12 February is an important entrance-exit direction for the City of Niš. Although it passes through the city, it is a second-category state road. Because of problems relating to traffic flow and traffic safety, it is necessary to redesign the road and to improve traffic management in this area.

To tackle Boulevard 12’s problems, a preliminary design was put up by the competent state authority. The present case study’s overall aim is to scrutinize the suitability of the proposed state measures by means of a traffic analysis in order to make an optimised proposal for Boulevard 12’s redesign. The following measures have been put up by the state authority:

- The bus stops are converted into bus bays. Where necessary, “yellow lanes” dedicated to public transport are introduced.
- The number of intersections with left turns is reduced. All intersections with necessary left turns are remodelled as roundabouts.
- The number of accesses leading directly to the boulevard is reduced by concentrating the accesses by means of a collector road. The collected traffic from the side entries is brought on the boulevard at the main intersections.

The case study by the municipality has found several important disadvantages in the preliminary design by the state authority. A new design will accordingly be developed on the basis of data derived from a detailed analysis of the situation on Boulevard 12. It has already become clear that one of the design’s main features will be the intensified use of coordinated traffic lights with the aim of improving traffic flow and traffic safety.

**Perspective of Dynamic Traffic Management, Skopje, Former Yugoslav Republic of Macedonia**

The main objective is to alleviate traffic congestion and pollution in the city centre of Skopje by implementing intelligent traffic management systems (ITS). Traffic will be monitored and controlled in real-time by getting real-time traffic information. The traffic will be controlled through vehicle-actuated traffic signals, variable message signs, thus creating a system of automatic traffic management. The ultimate goal is to enable safe, efficient and sustainable mobility of individual motor vehicle users as well as of public transport vehicles.

Within this project, an intelligent solution pattern of urban traffic congestion problems will be established. Traffic experts and domestic companies should be animated to manufacture traffic control equipment based on modern technologies that support ITS.

The City of Skopje is partner in the EU FP7 funded project named RENAISSANCE, which is focused on testing innovative strategies for clean urban transport for historic European cities. Traffic management and software infrastructure for its function are of high interest for the city of Skopje. The implementation of a traffic management system needs the cooperation of personnel from universities, technical faculties, and public enterprise for transport but also international business and experts.

### 5 Work Package 7: Non-Motorised Transport

#### 5.1 Inventory Report

In the context of urban transport, non-motorised transport is human powered mobility, i.e. walking, cycling and other means of transport such as cycle rickshaws (velotaxis), for instance. While many
European towns and cities have developed concepts for furthering pedestrian modes, at least in the inner-cities (pedestrian zones for example), genuine cycling approaches are still rare and often do not exceed one or two bicycle lane. This is also true for TRANSPOWER cities. The work package activities therefore concentrated on cycling.

5.1.1 The advantages of NMT

The advantages of NMT mainly relate to the following areas:

- ecology/environment (noise and air pollution)
- space (less land-use intensive)
- architecture/ built environment/ aesthetics
- health and safety
- economy (reduced uses of energy / natural resources)
- financial issues (cheaper for all)
- time and commuting issues (short and medium trips: time saving)
- social issues

Some of these aspects can be briefly substantiated:

**Environment, health and safety:** NMT causes no direct air pollution and little noise. Emissions are not only most critical for densely populated areas but - in the case of greenhouse gases - also for climate change and global warming. In some cases, they have negative effects on human health, well-being and rates of performance. The WHO for instance that traffic noise alone endangers the health – or at least the well-being – of almost one in three European citizens and diminishes the person's ability to concentrate. In Germany, 4000 cardiac arrests may be attributed to traffic noise annually. In addition, NMT is a key element in fulfilling European legal requirements (such as the Environmental Noise or the Clean Air Directive(s)). In those member states and in towns and cities where cycling is well integrated into the overall traffic and transport system, accident statistics involving cyclists are in decline. In addition, walking and bicycling furthers the health of the individual traveller.

**Urban space:** The infrastructure for NMT is much less land consuming than that for motorised transport. Space needed for parking a bicycle, for instance, is 15 times less than that needed for parking a car. In many cities, land is already a limiting factor in inner-urban development, the economy and urban living conditions (reducing public open space for example). In Berlin, a city with relatively good provision of green and open spaces, space for roads and other traffic infrastructure exceeds the space required for housing.

**Financial and social aspects:** Constructing and maintaining bicycle infrastructure is considerably less expensive than comparable provisions required for motorised transport and traffic. In supporting pedestrian and cycling modes of transport, municipalities are thus able to reduce expenditure. At the same time, as cost-benefit studies for noise abatement measures or tourism studies have shown, they can increase their revenues from taxation. As for the individual road user or traveller, there are also quite clear benefits arising. NMT enables almost all persons to participate in urban life on the basis of individual and independent mobility patterns.

**Commuting issues:** In many towns and cities, 60 to 80 per cent of trips are under 3 km long - a distance that can easily be covered by walking or cycling. Most small and medium-sized cities have a surface area that does not exceed the abilities of even unfit or young cyclists. For short and medium trips, cycling is normally less time-consuming than driving.
5.1.2 Barriers to NMT

Frequently, when extending NMT, a number of difficulties or hindrances need to be overcome and also be taken into account at the planning stage. The majority of barriers to a resolute cycle and pedestrian-friendly policy and traffic and transport planning are linked to the 'motor car'-friendly urban and traffic planning in the 60s and 70s of the last century, stem from socio-psychological roots or are attributable to a lack of political courage amongst decision makers. In this way, physical separation of urban functions has led to much longer transport routes, local supply facilities -even for everyday commodities- have been located at municipal peripheries and cannot, or only with much difficulty, be reached without a car. Municipal areas have been intersected by wide traffic routes and thus hamper non-motorised traffic and transport. Indeed, in former Communist countries, owning a private motor car is still an important symbol of individual freedom and economic prosperity. Overcoming barriers like these and maintaining an environmentally friendly traffic and transport policy is generally speaking a long-term process, one which does not allow for short-term political advantage to be derived from it. Sustainable traffic and transport policy needs commitment and also great "stickability".

5.1.3 Steps forward

It is certain that merely creating infrastructure (cycle routes, parking facilities for bicycles) is not sufficient in order to encourage pedestrian traffic and bicycle transport. There is no recipe book for sustainable traffic and transport planning: points of departure in municipalities differ too greatly. Nevertheless, some aspects may be mentioned which play a part in a more NMT-friendly traffic and transport policy and planning (and which seem to be sensible principles for Transpower towns and cities):

**Overcoming fragmented decision-making and planning:** In most municipalities, planning processes are not integrated. Environmental planning, town planning and traffic and transport planning are normally located in different departments with specific subject-based interests. Integrating non-motorised planning into all transport and land use planning activities is a pre-condition for an advanced and sustainable mobility policy. It requires the political will to do this, and also further education and training (in-house training for instance) in non-motorised transport planning principles for all transport professionals and spatial planners.

**Overcoming psychological barriers:** Public campaigns and other activities (bicycle days, car free days, bicycle training in schools etc.) can contribute to the development of a "bicycle culture" and can help overcome prejudices and anxiety (cycling is unsafe, takes too much time etc.). However, all these activities will come to nothing unless NMT is given priority in the real world as well.

**Give way to non-motorised transport:** Non-motorised transport planning should at least be funded at a comparable rate as other travel modes. When and wherever possible, pedestrian and bicycle traffic should receive priority - and right of way - over and above or in front of other modes of transport. In order to implement this, there are numerous technical and planning solutions (waiting spaces for cyclists at traffic lights; give way rules; traffic calming etc.) which shorten travelling times. Closing certain parts of urban areas (for example, the city centre) to (private) motorised traffic encourages NMT and furthermore increases attractiveness and amenity values in these areas.

**Enhancing accessibility for NMT-means:** Important and/or frequently used institutions need to be easily accessible on foot or by bicycle, urban sub-areas and districts need to be linked by means of footpaths and cycle paths (this does not necessarily require separate and dedicated paths or tracks, but, for example, can be achieved by permitting bicycling in pedestrian zones). It should be ensured that all roads are suitable for walking and cycling unless these modes are not possible for safety reasons, for instance. In these cases suitable alternatives should be available.

**Overcoming the separation of means of transport:** Towns and cities in which bicycle transport is well-connected to other modes of transport, generally have a modal split with a higher proportion for NMT.
Thus, in some municipalities, for example, it is permitted to take a bicycle on public transport vehicles (in some instances even in a bus), secure bicycle parking facilities (or even multi-storey cycle parks) are available to cyclists at all important traffic and transport locations.

*Overcoming the separation of thoroughfares:* Separate cycle tracks or paths which are separated from a road have frequently proven - especially at road junctions – to be conducive to traffic accidents. Very often these systems are rejected by cyclists, because the normal roadways often enable the shortest connections to be used. Generally speaking, it has proven to be advisable (including from the aspect of road safety) to insert cycle tracks or lanes on road surfaces or to have bus lanes which cyclists are allowed to use. These solutions not only give value for money, they also usually increase road safety and acceptability. With only very few exceptions (in a limited area), all pedestrian zones should be opened up to cycling. This has the effect not only of improving accessibility, but it in general also assists in increasing road safety (many cyclists use these pedestrian zones despite prohibitions, and as this is not anticipated accidents may be higher). In those cases where it is intended to still permit some motorised traffic, the concept of shared space has proven effective in some sub-areas in particular in towns and cities in the Netherlands. Shared space increases communication between all road users or travellers, reduces the forest of road traffic signs in our towns and cities and helps to increase amenity value and road safety.

5.2 Overall Project Report

5.2.1 City Solutions

**Cycling tracks in Volos, Greece**

The city of Volos, with its 115,000 inhabitants and its harbour, is the capital city and the commercial centre of the Magnesia prefecture and the starting point for tourists travelling to the mountains. Consequently, the city is dominated by motorised traffic. There is only a very limited cycle lane network that mainly consists of one lane along the seafront. Moreover, this existing network is not in accordance with safety measures as described by the Road Traffic Act. Two studies have been performed so far with the aim of enhancing non-motorised traffic and reducing problems related to the extensive car and heavy vehicle traffic. The proposals in these studies have not been implemented so far for several reasons.

**Clean Urban Transport through the use of coleseed as fuel, Volos, Greece**

The Municipality of Volos is trying to implement new technologies and strategies to reduce carbon dioxide emission in the transport sector and is carrying out a pilot project on the use of alternative fuels to diesel in public transport (buses). The Volos interurban Coach Company is taking part in this effort and is operating a bus using coleseed oil. The oil is used directly without refining into biodiesel, so as to reduce process and disposal networks. The pilot project will last for one year and started in November 2007. The aim of the project in Volos is to investigate whether unrefined coleseed oil could be an alternative to fossil fuels. Initial results are promising.

**Cycling in the Historical City, Sibiu, Romania**

Sibiu is one of the largest cities in Transylvania, Romania with a population of about 160,000. During the past few years, the economic development and the constantly growing population in Sibiu has led to an increase of car ownership that caused a heavier motorized traffic and a high pollution level in Sibiu. Therefore, the Municipality of Sibiu aims to increase bicycle use in the city. In 2007, Sibiu was to become the European Capital of Culture. Accordingly, the number of tourists would start rising,
meaning that the number of cyclists would rise as well. As a result, the cycling factor became one of the main priorities for Sibiu and the municipality managed to implement a bicycle lane of 1320 meters near the centre of the city; One-way streets that facilitate the NMT; Speed limit for cars in the Historical Centre of Sibiu (30 km/h); Bicycle storage facilities at the entrances in the Historical Centre

Parking in the Historical Centre, Sibiu, Romania

The densely populated historical centre, the narrow street network and the constantly increasing number of private cars, put great pressure on the urban fabric, thus reducing the quality of this unique site considerably. The increase in the number of vehicles that pass through and park in the historical centre of Sibiu has compelled the Municipality of Sibiu to elaborate a traffic study that would lead to the fluidization of the traffic. The basic idea is to restrict parking within the historical centre mainly to residential and short-term parking, and to encourage visitors to park along the edge of the historical centre. For this reason, the historical centre has been subdivided into different parking zones based on the idea that the closer one wants to park to the centre, the more expensive it will be and the shorter the amount of time that one is allowed to stay.

Implementation of Bicycle Master Plan, Skopje, Former Yugoslav Republic of Macedonia

Both the population and the volume of motorized traffic are constantly growing in Skopje. During the past few years, the economic development caused an increase of car ownership which in turn caused heavier motorized traffic and a high pollution level in Skopje. In order to reduce these problems, the city of Skopje aims to increase bicycle use in the city. In the year 2003, the city of Skopje developed a bicycle master plan for Skopje, supported by the Ministry of Ecology. The implementation of the bicycle master plan is of high priority for the city of Skopje. The City’s activities are focused on the improvement of the infrastructure and on the promotion of bicycling in different campaigns. To this end, the city of Skopje works together with the NGO PROAKTIVA.

Cycling Paths, Timisoara, Romania

Being a cheap and environmentally friendly way of transportation within short distances, cycling had been promoted by the municipality as an alternative solution to the constant growth of traffic in Timisoara. The establishment and interlinking of bicycle lanes was the goal of the municipality.

The strategy is to build up cycling paths along the Bega river on both sides (from east to west) as a part of the master plan and also from north to south of the city - the latter is already being implemented.

All the cycling paths will be connected with the Green Forest located in the north of the city, as the largest natural green area and with a great potential for leisure.

The municipality is now elaborating the technical project for special lines for public transport including cycling paths; the first will connect the village Sag with the city centre.

Bicycle-friendly traffic lights, Groningen, The Netherlands

One of the main objectives of the Municipality of Groningen’s traffic policy is the promotion of bicycle use. Although Groningen is constantly growing in size and distances to the suburbs are increasing, the aim is to have bicycles account for sixty per cent of all travels within the city. Obviously, delays for cyclists at traffic lights do not help matters much. For this reason, the Municipality of Groningen has come up with various solutions to minimize cyclists’ waiting times at traffic lights. The primary concern is that bicycle traffic in Groningen should function smoothly and safely, certainly at crossroads - a primary source of danger. The basic principle here is that cyclists should have sufficient green time to
cross without having to wait for a second green sequence. At places where the green sequence is too short it will be extended – at places where bicycle flows can be intense, for example.

**Bicycle-Parking Facilities in the City Centre, Groningen, The Netherlands**

Groningen is a true cycling city. Every day a great many Groningen residents mount their bikes, a fact that makes the bike the most important means of transport in the city. The bicycle accounts for no less than 60% of all travelling in the city. As the bike is so popular in Groningen, there are many special facilities for its users: cycle paths and lanes, guarded parking facilities, cycle bridges, and bicycle-friendly traffic lights. In addition, there are bike couriers and even cycling trainings for newcomers to this country. For many years, the Municipality went to great lengths to promote the bike and thanks to these efforts Groningen received the prestigious award of ‘City of Cycles’ in 2002!

The city of Groningen has a long tradition in the field of bicycle policy. In the last few decades the municipal bicycle policy has focused on creating a good bicycle infrastructure. The laying of cycle paths and lanes was a central issue. The Bicycle Traffic 2000 policy document was an ambitious drive to boost the implementation of bicycle-oriented measures.

In several places in the town centre, cyclists can park their bikes either in the street or in a guarded facility. Parking a bike in a guarded facility reduces the chance of bike theft. Because of this, citizens naturally feel inclined to use the bike more often to visit the city centre, and to show greater readiness to purchase a high-quality bike. Moreover, this tends to prevent people from parking their bikes at random everywhere in the streets. In spite of this, there is no getting around the conclusion that the number of bicycles parked in public spaces has risen considerably the last few years, causing inconvenience or even dangerous situations at various locations.

### 5.2.2 Municipal Case Studies

**Cycling in the Historical City, Sibiu, Romania**

Sibiu faces a great traffic problem as the city’s narrow streets are daily invaded by an alarming number of cars with people switching to private motor vehicles as a regular means of transport. Traffic conditions accordingly worsened while air pollution, noise and car accidents soared. Thus, the cycling factor became one of the main priorities for traffic planning. After identifying and analysing the main factors that impede the development of a non-motorised transport, the municipality came to the conclusion that the success of the bicycle policy in Sibiu depends to a large extend on changes in the road and traffic infrastructure.

An essential step towards more sustainable and feasible transport planning was done in 2003 by elaborating a traffic study “Improvement of the Traffic Situation in Sibiu” to find solutions for the heavy traffic flows and parking problems. As a result, the historical centre was pedestrianized, new parking spaces were built and a number of streets were turned into one-way streets. The speed limit on these streets was decreased from 50 km/h to 30 km/h. After turning the historical centre in a pedestrian zone delimited by fixed and mobile poles, bicycle stands were installed.

This, however, was only a limited and first step towards a cycling policy. In order to find solutions towards a healthier environment, the municipality had to determine the existing barriers for cycling. The main problems that the city faces in this respect focus on the absence of a bicycle lane network; the lack of an adapted traffic signalling system; the safety problem of cycling; the narrow streets and the lack of respect for cyclists in traffic.
To overcome these barriers and to mitigate problems, the following measures and guiding principles were accepted unanimously by the City Council and the municipality decided to initiate in 2007 the implementation of a bicycle network in Sibiu:

- Design of one-way systems;
- Introduction of various traffic calming measures (pedestrianization of certain streets, speed limits);
- Implementation of parking management measures;
- Reorganisation of street spaces for a separation as efficient as possible between the non-motorised and motorised traffic, assuring a fast and comfortable access to the main interest points of the city;
- A bicycle lane network to cover all the city areas;
- Facilitating the cyclists’ access to the public transport. This way cyclist gain a greater flexibility and can go longer distances;
- Assuring visible, easy to access bicycle parking spaces near major destinations and interest points.

6 Work Package 8: Mobility Management

6.1 Inventory Report

Mobility management and Travel Awareness – a short definition

Mobility Management (MM) is a concept which aims to promote sustainable transport and manage the demand for car use by changing travellers’ attitudes and behaviour. At the core of Mobility Management are “soft” measures like information and communication, organising services and coordinating activities of different partners. “Soft” measures most often enhance the effectiveness of “hard” measures within urban transport (e.g., new tram lines, new roads and new bike lanes). Mobility Management measures (in comparison to “hard” measures) do not necessarily require large financial investments and may have a high benefit-cost ratio.

To give an impression what this means in practice, in a city where MM is implemented:

- You would notice campaigns and promotions for walking, cycling and public transport;
- You could be offered personalised travel assistance to help you see where and how you might be able to reduce your car use;
- Your employer might pay your public transport tickets to encourage you not to drive to work by car;
- At home, you might have a car sharing service available on the street outside your house,
- At your childrens’ school, there could be a mobility plan organising safe walking for the childrens’ trip to school,
- For leisure trips by public transport you would have the option of using the consulting services of the local mobility centre;
- Building permits might be connected to certain requirements to minimise the mobility impact of the new development, for example the development of a mobility plan for employees, visitors, and goods transport around the building site or limiting the number of parking spaces provided.
Typically, MM measures are rarely isolated. Instead they often come as a bundle of measures, i.e. information campaigns combined with infrastructure, pricing policy or regulations.

What kind of measures are Mobility Management?

**Information measures**

These measures are essentially driven by demand from the traveller and they provide the (potential) traveller with information and advice through many possible media.

**Promotional measures**

This category of measures has at its core the idea of encouraging voluntary behaviour change through awareness raising, promotion of alternatives to the car, and the provision of information. This means that this group of measures does not actually provide any additional alternatives to the private car, but rather tries to actively raise awareness and encourage the use of the alternatives that are already in place. The measures include:

- Personalised Travel Assistance (PTA) to help travellers see, in relation to their own personal travel patterns, how they might be able to reduce their car use.
- Advertising campaigns and other types of promotions (e.g. “European Car Free Day”) to encourage people to try walking, cycling and/or public transport (sometimes linked to health promotion).
- Targeted promotion of alternative modes and trip reduction/chaining. This might include projects where public transport agencies run projects with schoolchildren, or approaching all households in a given area and offering them a variety of “resources” (e.g. local travel guides, local shopping guides), to help them think about ways to change their travel behaviour.

Real-life examples would include such things as the “bike to work” campaign which are implemented on a large scale in Denmark, Germany (Cycling to work campaign: www.eltis.org) and Austria, or also the Travel Awareness and behaviour change programme for new residents as implemented in Munich.

**Organisation and coordination measures**

As its name suggests, this category offers, organises and coordinates various types of Mobility Management service across an area to provide an alternative to driving ones’ car alone.

- Car Pooling
- Carsharing
- On-demand public transport services, sometimes also called paratransit.

**Education and training measures**

This category of measures refers to the integration of MM into education, and the training of staff in MM issues. Examples include:

- The training of, for example, hotel or shopping centre personnel to provide mobility information to customers.
- MM courses for target groups such as Mobility Centre staff, or mobility coordinators.
- Mobility education, where mobility, and how to manage it to reduce car use, becomes a part of the educational curriculum in schools and elsewhere.

**Site-based measures**
In many countries, MM is predominantly a site-based activity connected to a traffic generating sites such as a company, a school, concerts, sports matches, fairs, hospitals, entire administrations based in a number of locations, recreational sites etc. In these cases, MM seeks to manage the way in which people travel to the site in question. A large number of measures fall into this category.

- A school mobility plan is similar to other site-based MM activities, except that it typically includes a greater level of involvement of children and parents/employer and employees in both planning and implementation.
- Site-based services and infrastructure – chosen to suit the nature of the site and the people who travel there – such as bicycle parking, on-site pedestrian facilities, tram stops, car parking, a bus shuttle service, works buses, strengthened service buses, park and ride, and/or van pools. A more exhaustive list of measures is offered in the next section.

**Telecommunications and flexible time organisation**

Certain measures can be taken by organisations and others to reduce the need to travel by substituting telecommunications for travel, or reorganising working practices, or both.

**Supportive/integrating actions**

These measures may not be implemented directly to manage mobility, but they can have significant impacts on the effectiveness of MM. They can affect the cost of travel by car or other modes, or make the environment more conducive to the introduction of MM measures. These actions may not be seen directly by the end user, but they will nonetheless have an impact on their travel behaviour. For these reasons they are here referred to as supportive/integrating actions.

- Parking management (pricing, rationing, limiting, cash-out) in order to reduce parking supply and/or manage reduced supply, to influence the number of people choosing to travel to a site by car.
- Tax changes to make employer-provided travel benefits more or less attractive. For example, making a company-provided parking space liable for income tax as a benefit in kind would reduce its attractiveness to the employee and may act as a disincentive to drive to work. Taxing reimbursement for commuting by train more highly than the equivalent by car makes the train more attractive.
- Congestion charging (of roads that were previously free at the point of use).

There is a huge amount on good practise case studies available on ELTIS (Europe’s biggest information platform on urban transport) as well as on EPOMM (European Platform on Mobility Management).

See [www.eltis.org](http://www.eltis.org) and [www.epomm.org](http://www.epomm.org)

### 6.2 Overall Project Report

Mobility management is a topic that could and should be implemented in each city. As mentioned above, it is a horizontal activity that causes best results when it is implemented in a bundle of measures accompanying (new) infrastructure or legal measures such as pricing or regulations (e.g. access restrictions).

Therefore, Mobility management measures, actions and campaigns have been suggested for each TRANSPOWER City. Since budget and time was limited for an implementation in most of the cases only first ideas and rough concepts have been a result of the project. The topic is very new for this geographical area (southern Europe and New Member States) so that the focus was set to transfer
the overall idea of mobility management to the decision-makers and stakeholders in the participating cities.

6.2.1 City Solutions

Combined bus terminal and parking garage “Lorenzo Natali”, L’Aquila, Italy
The proposed case study, Lorenzo Natali Bus Terminal and Parking Garage of L’Aquila (Italy), represents a good solution to the problems of parking and permeability inside historical cities with a compact urban structure. Through a completely underground pedestrian tunnel, this Autostation positioned outside of the urban walls allows its users, a direct access to the main square of the city.

Safe on the streets, safe in the city, L’Aquila, Italy
With the law n°144/1999, the Italian Legislation has foreseen implementation of the measures for cooperation through administrations on public road safety. For this reason, three provincial capitals (L’Aquila, Chieti and Teramo) have come together in the project subsequently approved and financed, “Safe on the streets, safe in the city.”

The objectives of the project are to raise awareness among the citizens, improve street circulation and increase road safety through the actions described above, carried out by the three provinces together in perfect synergy.

The project by the name “Safe on the streets safe in the city” provides for the implementation of various actions related to mobility. The actions envisaged in the project are divided into:

- Design and construction works that must to be carried out on the roads;
- Information campaign and awareness raising on the values of road safety (awareness campaign relating to the use of public transport - road safety week);
- Road safety education in schools and in the adult population with the following measures:
  - Support for the public transport in order to strengthen its contribution in road safety (analysis, information and drafting of the plan);
  - Realization of a monitoring centre (GIS computerization - accidents section - section cadaster - signalling section - section on street pavement – route surveying).

TWO IN ONE - Access restrictions but also social services for the citizens, L’Aquila, Italy

The city of L’Aquila has an urban structure surrounded by walls and is still densely populated, not only with home business, institutional activities, hotels and tourist attractions, but even in its residential area. The municipal administration of L’Aquila which had already established the LTZ (Limited Traffic Zones) over fifteen years ago, in 2005 decided to divide the city centre in six LTZ for an even more restricted car access in areas of the Old Town. Access by car in those identified areas was thenceforth only allowed, to authorized citizens and only on days and hours specified in the Municipal Regulation Plan. The solution adopted to allow residents find a parking space in the LTZ was to install electronic toll lanes "barriers". The barriers, special cylindrical bodies which sink under the street level allowing entry only to the vehicles equipped with a device "transponder" (device type Telepass of a highway) are installed along a toll lane at the beginning of the street, and are thus preventing the entry of all citizens without the specific "reserved" area permission. Furthermore, these gates can be controlled and allow for a supervision of what happens at each gate, 24 hours a day, 365 days a year.
National Day of Urban Trekking, L'Aquila, Italy

Urban Trekking under the organization of the Municipality of Siena, in which the capital of Abruzzi participates for the first time, involves thirty other provincial Italian capitals. The event has been dedicated to retrace paths backwards in time. It is no coincidence that the theme of the first day of October 2006 has been: "Walking backwards: looking for places, crafts, tastes and sounds lost in time." The urban trek gives the possibility to visit the city step by step, through suggestive ups and downs of streets, stairs, steps and alleys, and toning heart, brain and muscles. The intention of the event is to propose to the participants, tourists and residents, a healthier lifestyle and an alternative way to appreciate the city better. In cooperation with the National Association of Tourist guides, the city of L'Aquila has studied a particularly pleasant route, easy walking trails and streets in the heart of the old city, which grandparents and children can also follow. The route traces the history of the foundation of L'Aquila.

Park and Ride (P&R), Groningen, The Netherlands

Groningen is a compact city with limited space. Consequently, its centre neither offers the space nor the capacity to meet the demand for parking facilities, which are becoming increasingly scarce. To solve this problem, various forms of parking accommodation have been developed, each with its own target group and rates. The objective of the Municipality's parking policy is that both the city in general and the centre in particular remain accessible to all economically essential motorized traffic. In the city centre and in the districts immediately surrounding it - the so-called 'shell' districts - all non-essential motorized traffic (commuter traffic as well as socio-recreational traffic) must be restricted as much as possible. As an auxiliary facility, Groningen has developed a well-functioning Park and Ride (P&R) system.

There are several P&R areas with a total capacity of over 2,000 free parking places. Keynote of the Citybus system is convenience. This means that there are no complicated fare systems, that the buses run with high frequency, and that the user can reach the city centre in no time at all.

Blue Zone and Green Parking Zone - Further extension of the parking zones, Graz, Austria

Graz City Council has taken a stand against a congestion charge and has chosen an alternative to this in the introduction of a comprehensive city-wide parking management integrated in its transport policy, a measure for which it obtained an international award called “Lebendige Stadt” - “Vital City”.

Through the constantly increasing volume of car traffic, conflicts in use of parking spaces aroused between resident population, commuters and other parkers. The pricing (parking management, congestion charge or similar systems) is increasingly used as a control tool for travel to the city centre. For this reason, the city of Graz introduced a concept for a graduated fee scale parking space management in 2003 - the “blue zones” and the “green zones”. Currently there are parking spaces in short-term parking zones (blue zone) and parking spaces in so called long-term parking zones (green zone). The revenues (after subtracting the costs for the private control-company) are committed to improvements in public-transport as well as intermodal infrastructure (e.g. Park & Ride).

City-wide 30 km/h speed limit, Graz, Austria

In 1992, Graz was the first city in Europe which introduced speed limits for the whole city: 30 km/h (18.75mph) in all residential areas / side roads, covering around 80% of the whole city, and 50 km/h (31.25mph) for all priority roads. The aim of this measure was to increase road safety, reduce pollution as well as noise.
For the priority roads, a traffic-safety-monitoring group (city-experts, police, road safety board, consultants) identified dangerous spots and came up with solutions. Those included changes at programs for traffic-lights, reconstruction of roads and/or traffic-lights, reconstruction of roads and/or intersection, additional speed-limits, etc. At the most important city accesses, additional four-language info panels were installed, which draw the user's attention to the regulations applicable in Graz.

**Bicycle Training for Children in Real Traffic Conditions, Graz, Austria**

Transport education and the preparation for the bicycle examination usually are carried out in a protected area and bicycle training courses focus mainly on theoretical aspects. The children do not learn how to behave in transport reality. Therefore. Too much is demanded from them in real traffic situations. The Bicycle Training for Children in Real Traffic Conditions in Graz prepares them for these dangerous situations.

**The first Austrian Mobility Centre, Graz, Austria**

In Graz, the first Austrian Mobility Centre Mobil Zentral (MZ) was established in 1997 with the aim to ease the receiving of information, especially about public transport but also for other modes than public transport, e.g. carsharing, carpooling, bicycle renting. The MZ offers mainly information consultancy for public transport like tariffs and timetables, but also reservation and sale of tickets. Furthermore, other sustainable modes of transport are within the offer of MZ. Another intention is the joining of forces of companies and institutions of one region thereby opening the possibility of saving money and providing a much better service - i.e. shorter waiting periods, longer opening hours, more information, additional services and this for the whole range of mobility.

6.2.2 Municipal Case Studies

**Mobility planning by traffic calming measures in Volos**

Volos, an intermediate size city of about 115,000 residents (60% of the population of Magnesia Prefecture) faces, like most Greek cities, severe urban transport problems due mainly to 1) absence of a ring road around the city 2) Insufficient numbers of parking space / lots (private or municipal) 3) disorganised urban transport network 4) insufficient legislation / imposition of fines for infringement. Traffic volumes in Volos city are growing faster than infrastructure development can sustain, particularly on the main road network and in the city centre. This has led to congestion and contributed to road accidents, resulting in significant costs to the community and the environment.

The City of Volos has implemented a set of measures to ensure sustainable transport. Amongst others these include measures to punish illegal parking, decrease traffic through the city centre, increase the attractiveness of public transport and biking, and mitigate the negative environmental and health effects of car emissions.

Further supportive measures have been planned by local stakeholders to accompany efforts for mobility planning in the city. The plan will consist of a city model which reinforces the city as a central focus for the sub-centres, connecting them by means of pedestrian and cycle routes, so as to enable car/bicycle ‘cohabitation’. The plan will reflect strong emphasis on public transport and on intermodality with inter-urban transport.

The case study’s findings suggest as a first step in improving mobility it is necessary is to focus on public information activities, increasing awareness, promoting sustainable transport and managing demand for private car use by changing people's attitudes and behaviour.
"Bicycle Day" event organised by the Prefecture of Magnesia, Greece.

The city of Volos is a relatively small city in Greece with approximately 85,000 inhabitants. It features a temperate climate and is built on a flat surface. Furthermore, the distances that the inhabitants have to travel every day are short due to the city’s small scale. But the city’s most popular means of transportation - even in the town centre - is the automobile. Given these facts, it is clear that an immediate solution to Volos’ traffic problems could be the use of bicycles, especially for movement in the centre of the city. But nowadays, the use of bicycle tends to be abandoned. The use of bicycles by the inhabitants, in replacement to their private cars, would be a part for the solution of the problem immediately and effectively. For this reason the Prefecture of Magnesia in cooperation with other environmental organizations and with the Development Company of Magnesia (ANEM S.A.) organized an event on 28 March 2009 to celebrate the formal initiation of a new action which includes free bicycle use. The main activity was a city tour by bike together with politicians, local authorities and representatives of environmental organisations. About 150 people participated. The "test new behaviour" tour was combined with an awarding ceremony for high school students that dealt with environmental issues within a campaign named "Ecmobility". During this tour, people used their own bike or were offered a rental bike for free use which was placed on one of various spots in the city. People wanting to make use of this free rental service were issued a card with a unique number and their details that could be used to unlock the bicycles. Following this event, free to use bikes remained available (for up to two hours). Since the demand is higher than the supply, there are plans to add additional bikes. The reaction of the users was mainly positive.

A general awareness raising activity like the "Bicycle Day" is a very good starting point. However, such initiatives need to be multiplied in order to remind the general public of cycling and in order to allow all those who did not support in the first “Bicycle Day” the opportunity to join the action the next time. Therefore, it would make sense to use the well-established "European" or "World Wide" days like the "Environmental Protection Day, the Energy Saving Day, the World Health Day, the Car Free Day etc. to start publicity actions.

Besides, such action is deemed necessary for raising the awareness of those individuals in charge of transport and budget allocation for transport (i.e. politicians, city department managers, other authorities. They have to be convinced to take up measures for cycling and walking in their overall concepts. Two main arguments can be found for this:

- The investment in non motorised transport modes is a promising one as there is a big potential to shift short trips from car to cycling.
- It is not necessary to build big infrastructure - e.g. bicycle paths - to foster the use of cycling. Smaller actions and measures such as the reduction of speed to 30 km/h is mostly effective but only if there is an enforcement of this speed limit.
- The latter one is generally an easy to implement measure. Nonetheless, it is hardly ever implemented, especially in Greece. A change of mentality is therefore required. It is important that such a measure should not be regarded (and sold) as one to harass car drivers, but to protect (potential) cyclists.

A study visit to cities that have already implemented these kinds of measures is highly recommended. Politicians and planners should take part in this study visit. Groningen and Graz from the TRANSPOWER Cities are recommended but also Odense in Denmark or Muenster in Germany.

To promote the bicycle use in cities like Volos where the temperatures are high during the summer months, the use of pedelecs should be promoted. Pedelecs are bicycles with an attached motor used to power the vehicle, but instead of replacing the need to paddle, they are only used to assist with paddling.
Campaigns and measures for the topic of parking in the historical centre of L’Aquila

**Status Quo:**
- PUM speaks about a demand of 2000 new parking spaces around the city centre and suggests the building of several underground parkings.
- In the city centre, up to 40% of parked cars are illegally parked ones.
- Limited traffic zones in the city centre exist
- Access and parking to the city centre and the LTZ is almost not controlled / enforced.
- At the same time, there exists a huge parking garage which is nearly empty. Parking fees are not very high. The connection to the main square in the city centre (distance 500 m) via underground band conveyor takes about 6 minutes when walking on it slowly.

**Objective:**
- Increase the acceptance and use of the existing parking garage instead of building new garages for reasons of financial efficiency.

**Strategy:**
- Push & Pull (= encouraging of desired behaviour and simultaneously creating barriers for non-wanted (unsustainable) behaviour)

**Possible measures / campaigns:**
Remove cars from the centre by access restrictions and enforcement
Motivate people to use the garage by:
- information on access and tariffs
- test-phase of parking with reduced price
- design of the tunnel in an attractive way to keep people occupied while walking

*The campaigns could be:*
- Children / school classes paint the walls along the mid part (where the additional exit was planned).
- Exhibitions (non permanent) along the band conveyor (photos / paintings / advertisings etc.)
- Car free city centre for one day
- Car free week for one square (as planned) and alternative use of space
- cafes and restaurants
- schools contests (e.g. street paintings)
- cycle parcours
- concerts / theatre plays etc.
- Tow illegal parked cars and deliver them in the lowest level of the park garage. The owners would have to get them back there. So they (maybe) enter this garage the first time and make an experience about access and handling. The removal of the cars should be free of fee. The
owners pay only the parking tariff. The action should be carried out on one day and should be announced in the newspaper and media.

- Shop owners present themselves and their goods on the streets.

Other mobility management and travel awareness measures for L'Aquila could be:

As a result of the presentation of the PUM the following discussion points came up / activities were suggested.

- Paid parking + enforcement seems to be a better solution for the city centre of L'Aquila than the building of new underground parking spaces (as there exists a city-near parking garage which is not very much used).
- It would make sense to take a closer look (analysis) on short distance car trips which might be easily shifted to other modes of transport.
- The strategy of push & pull should be implemented, which means on the one hand to foster environmental friendly traffic behaviour and on the other hand to make access for e.g. solo car trips more difficult.
- The modelling activities should take up the demand of all user groups and not only those of the car users. In the presentation of the PUM, only the traffic flow and the demand on parking was presented (maybe the other demands have been analysed but were not presented).
- Several motivation programs could be implemented to “test new behaviour”. In this connection, the idea of a “parents’ stop” has been mentioned. A parents’ stop is a place were parents can deliver their children when driving them to school but which requires the children to walk the last e.g. 300 m alone (instead of bringing them directly to the entrance of the school).
- To change (mental) deficiencies in information and estimation is in many cases much cheaper than making changes in the objective / actual situation. E.g. if people think that the use of public transport takes much longer than the use of the car, one should first check if the estimation is correct before starting an acceleration of public transport. To inform people and raise awareness is cheaper and easier that to implement technical solutions (which one would anyway have to inform the potential users about).

Action Day for cyclists and pedestrians in Graz, Austria.

Encouraged by the activities of TRANSPOWER, the City of Graz organised an Action Day for cyclists and pedestrians on the 8th of May 2009. Accompanied by the publication of a new cycle map and the opening of parts of the pedestrian zone for cyclists, it was the main objective to award cyclists and pedestrians as users of clean and sustainable modes of transport. Therefore, on two different hot spots of the city (main railway station where the bicycle parking garage is situated and on the biggest bridge which is the entrance to the inner city centre) party events for the citizens were organised. These events included bicycle coding activities, winning games, the dissemination of gadgets (bicycle bells in the form of a lady bird) and information material (e.g. the brand-new bicycle map), music, food and drinks. A main focus has been set on the peaceful co-existence of cyclists and pedestrians as the opening of parts of the pedestrian zones for cyclists might cause a potential of conflicts between these two groups.
Graz has already a very good strategic planning including a comprehensive bundle of measures for fostering cycling and walking, but also for public transport. It plans a well-balanced share of infrastructural and organisational measures (including campaigns) in order to raise the use of sustainable modes of transport. The latest evaluation shows an increase of cycling by a reduction of solo car drivers.