

Improving Urban Mobility

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Abstract

Over the past decade, there has been a shift in emphasis in many countries from overcoming congestion to improving mobility and accessibility. Improving urban mobility means focusing on the movement of people and goods (rather than the movement of vehicles). The objective is to create a highly-efficient, flexible, responsive, safe and affordable urban mobility system with the least amount of traffic, travel and effort while ensuring environmental sustainability. This means giving priority to public transport, goods vehicles, pedestrians and non-motorised vehicles. It means providing attractive and efficient public transport services and reducing the demand for motorised travel, by car or motorcycle. It also means fully exploiting what already exists in terms of road space and services before investing in new ones. This paper describes current approaches to improving urban mobility primarily in Europe (but also in Brazil and India) and the lessons learned from these experiences.

About the Author



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1. Introduction



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For many years, urban transport planners have attempted to reduce congestion by improving conditions for vehicles, especially motorised vehicles, be they private cars, trucks or public transport vehicles. The solution was simple; build the roads necessary to meet the demand. But something went wrong. The roads that were built stimulated even more growth in car ownership and usage. The results were ever-increasing congestion, economic inefficiencies, pollution and other forms of environmental degradation. Clearly this approach has not worked. Over the past decade, there has been a shift in emphasis in many countries from overcoming congestion to improving mobility.

Mobility may be regarded as the ability to travel, although its meaning could be much broader since mobility encompasses not only the travelling activity, but also, more importantly the possibility for the traveller to decide when and where to travel, by being aware and making use of an information set for optimising the journey.

Sustainable Urban Transport Plans, 2010, Directorate-General for Internal Policies, European Parliament

Improving urban mobility means focusing on the movement of people and goods (rather than the movement of vehicles). The objective is to create a highly-efficient, flexible, responsive, safe and affordable urban mobility system with the least amount of traffic, travel and effort while ensuring environmental sustainability. This means giving priority to public transport, goods vehicles, pedestrians and non-motorised vehicles. It means providing attractive and efficient public transport services and reducing the demand for motorised travel, by car or motorcycle. It also means fully exploiting what already exists in terms of road space and services before investing in new ones.

The capacity of individual car users to change their travel behaviour in a range of creative ways, when faced with the problem of severe traffic congestion, presents real opportunities for urban planners who seek to optimise the use of space and quality of life in the city.

Improving mobility is less about engineering and more about changing behaviour. It therefore has a very important social dimension and it involves many stakeholders who normally would not work together to “reduce congestion” because that is a transportation

issue. Improving mobility starts with public participation, consultation, focus group discussions, consensus building and cooperation among different stakeholders.

Improving urban mobility is more about outcomes, not outputs. For example, rather than measuring the number of kilometres of footpaths provided, it is more important to consider the use of footpaths and their effect on accessibility, safety, health, etc.

Improving mobility is more about working together than writing reports. It involves people sitting down together in the fields of transport, environment, economic and social development, city and town planning, employment and housing. It involves joining forces with social organisations and businesses to develop comprehensive approaches towards improving urban mobility. It is inclusive rather than exclusive and involves all sections of society.

There is increasing understanding that no single policy can solve the mobility challenges of any city. Rather, a mix of policies will be required to deliver integrated solutions impacting several sectors. After all, the city is a unit consisting of inter-relating systems, where measures affecting one sector will most likely affect others.¹

¹ ICLEI - Local Governments for Sustainability. 2011. *Strategising sustainable urban mobility in EU Neighbour Countries*. ICLEI, Freiburg, Germany.

2. Urban Mobility Policies and Programmes



Source: Plans de déplacements urbains: Panorama 2009, GART. Photo © Communauté d'Agglomération de Dijon

Efficient and effective urban mobility can significantly contribute to overall socio-economic objectives, energy dependency, or concerns over climate change. Urban mobility policies are designed to achieve sustainability and have been implemented in some countries at the national level but more frequently at the city level.

Europe



Source: European Commission

The European Commission's first policy proposals in the area of urban mobility, the "Citizens' Network", date back to 1995 and 1998. They resulted in the launch of a series of initiatives based upon a "best practice" approach. Since 2002, through its CIVITAS Initiative, the European Union made available € 180 million to cities across Europe to implement and evaluate a wide range of innovative measures to promote sustainable urban mobility.² As a result of this initiative, the European Commission adopted the Green Paper "Towards a new culture for urban mobility" on 25 September 2007.³ This consultation document opened a broad debate on the key issues of urban mobility: free-flowing and greener towns and cities, smarter urban mobility and urban transport, which is accessible, safe and secure for all European citizens (see Annexe 1 for an overview of main EC initiatives on urban mobility).

Recent surveys have shown that most EU citizens identify as a priority the need to address the issue of too many cars in urban areas, and the pollution, noise and dangers they present.

² CIVITAS-ELAN. 2009. *Final Evaluation Plan*. CIVITAS Secretariat, Szentendre, Hungary

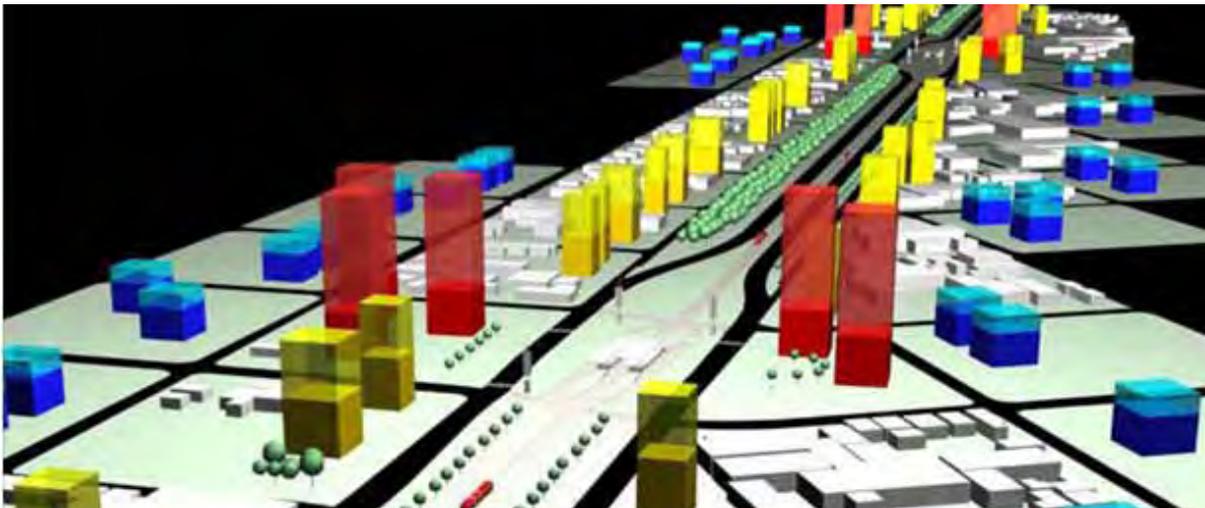
³ European Commission. 2007. *Towards a new culture for urban mobility: Green Paper*. European Commission, Brussels, Belgium.

Based upon the results of the consultation, the European Commission adopted the Action Plan on urban mobility on 30 September 2009. The actions foreseen will: ⁴

- Promote integrated policies to deal with the complexity of urban transport systems;
- Focus on citizens' needs by promoting reliable travel information and a high level of protection of passenger rights;
- Help to green urban transport by introducing new, clean vehicle technologies and alternative fuels and promoting smart charging to encourage transport users to change travel behaviour;
- Address funding by exploring existing funding opportunities, innovative public-private partnership schemes and possible new funding solutions;
- Support sharing experience and knowledge to enable better access to this information and help stakeholders to capitalize on these experiences and on relevant data and statistics;
- Optimize urban mobility to encourage effective integration, interoperability and interconnection between different transport networks; and
- Improve road safety to achieve a high level of road safety, especially for vulnerable road users such as young people and the elderly.

There are several funding instruments in the EU that are available to cities interested in implementing sustainable mobility measures (see Annexe 2 for more details).

Brazil



Source: IPPUC

The Brazilian National Policy on Sustainable Urban Mobility requires that each city with over 500,000 inhabitants establish a Master Plan of Transport and Mobility (PlanMob).⁵ The basic concepts of the mobility plan are:

- Transportation must be part of a wider context, that of urban mobility, which considers quality of life, social inclusion and access to the opportunities of the cities;
- The mobility policy must be ever more associated with urban policies, and subjected to the directives of urban planning as expressed in the Master Plans;

⁴ European Commission. 2009. *Action Plan on Urban Mobility*. European Commission, Brussels, Belgium.

⁵ Xavier, J.C. & Boareto, R. 2005. *The Implementation of Brazil Sustainable Urban Mobility Policy*. Ministry of Cities, Brasilia, Brazil.

- Mobility planning, treated in a wider fashion and in particular considering the sustainability of cities, must dedicate special attention to mass transit and non-motorized modes and offer universal accessibility;
- Mobility planning must be carried out with maximum participation of the society in the elaboration of its plans and projects, so as to guarantee support and political legitimacy in its implementation and continuity. This new concept of mobility planning, with a wider scope, needs to be incorporated by municipalities.

France



Source: Yan Le Gal

The French national urban mobility policy aims at coordinating the initiatives of the different agencies concerned with public transport, roads, parking and urban planning in collaboration with the commercial sector and the general public. The objective is to reconcile apparently contradictory requirements: ensuring mobility and access for all, while protecting the environment, and satisfying personal needs but not at the expense of the community or of present and future generations. In this respect, the urban mobility policy is designed to achieve sustainability. Since mobility is a factor of personal fulfilment and greater social cohesion, it is less a question of reducing travel than of encouraging alternatives to the car, alternatives that use less fuel and cause less pollution – such as public transport, walking and the bicycle.⁶

Each city in France is required to have an Urban Travel Plan that is compatible with the national sustainable development objectives (the effect on air quality, noise, climate, the landscape, human health). Preparing the Urban Travel Plan involves assessing the situation, then evolving a number of scenarios and deciding on a strategy leading to specific actions that are fundable and programmed over the long term. These actions are submitted for approval to the regional, provincial and municipal councils concerned. Each plan defines the travel policy to be followed to improve urban mobility in the context of safety, health, social cohesion and urban development, parking, goods deliveries, fares, etc. and it is reviewed

⁶ Ministry of Ecology and Sustainable Planning and Development. 2008. *Urban transport in France*. Ministry of Ecology and Sustainable Planning and Development, Paris, France.

every five years. Cities that adopt an Urban Travel Plan are allowed to collect public transport fees from companies (Versement Transport).

The plan should be designed such that the public is made aware of the importance of the issues involved (travel, life style, public space, urban planning, local planning and development). It should change mindsets – an essential prerequisite if behaviour is to improve. In this sense, it is an essential tool of national French sustainable mobility policy.

India



Source: Meena Kadri

The objective of the National Urban Transport Policy (NUTP) for India is to ensure safe, affordable, quick, comfortable, reliable and sustainable access for the growing number of city residents to jobs, education and recreation. The salient features of this policy include incorporating urban transportation as an important parameter at the urban planning stage, rather than being a consequential requirement. Apart from this, NUTP will encourage integrated land use and transport planning in all cities, so that travel distances are minimised, and access to livelihood, education and other social needs, especially for the marginal segments of the urban population, is improved.⁷ The national policy stresses the importance of public consultation and the need to “learn by doing” through pilot projects.

Urban transport policies cannot succeed without the fullest co-operation of all the city residents. Such cooperation can be best secured if the objective of any initiative is made clearly known to them. It is, therefore, necessary to launch intensive awareness campaigns that educate people on the ill effects of the growing transport problems in urban areas - especially on their health and well-being.

⁷ Ministry of Urban Development. 2006. *National Urban Transport Policy*. Ministry of Urban Development, Delhi, India.

Italy



Source: Comune di Spinea

In Italy the national policy establishes a comprehensive perspective, integrating all modes of transport and giving balanced consideration to the needs of all stakeholders. It required that local plans should be based on clear and concerted policies aimed at reducing the market share of private motorised traffic by providing more environmentally friendly ways to travel. The Piano Urbano del Traffico (Urban Traffic Plan) is mandatory for municipalities with more than 30,000 inhabitants and consists of a coordinated package of measures for the improvement of traffic conditions (pedestrians, public transport and private vehicles) in the short term and without investing in new infrastructure. The Piano Urbano della Mobilità (Urban Mobility Plan) is voluntary. It usually covers a period of 10 years, and involves investments in infrastructure and innovations both at an urban and metropolitan scale.⁸

Urban Mobility Plans are designed to meet the following objectives:

- Promote integrated policies to deal with the complexity of urban transport systems, governance issues and the necessary coherence between different policies, for example between urban mobility and cohesion policy, environment policy or health policy;
- Help to green urban transport by introducing new, clean vehicle technologies and alternative fuels and promoting smart charging to encourage transport users to change travel behaviour;
- Support sharing experience and knowledge to enable better access to this information and help stakeholders to capitalize on these experiences and on relevant data and statistics;
- Optimize urban mobility to encourage effective integration, interoperability and interconnection between different transport networks; and
- Improve road safety to achieve a high level of road safety, especially for vulnerable road users such as young people and the elderly.

⁸ Secondini, P. 2002. *Sustainable mobility: a few considerations about the Italian experience*. Università di Bologna, Bologna, Italy

3. Urban Mobility Plans



Source: Odense Municipality

The practice of adopting Urban Mobility Plans has emerged in the past ten years within Europe as a means for developing sustainable mobility solutions. The elaboration of an Urban Mobility Plan is a process which involves all relevant authorities, citizens and stakeholders at all stages and which takes full advantage of available knowledge and good practice. Targets and indicators are elaborated to monitor progress and assess results. Most Urban Mobility Plans combine a clear vision and political leadership with a view to influence modal shift from private car to public transport or non motorised means.

Urban Mobility Plans are comprehensive in scope and involve the integration and coordination of actions and policies between different sectors. They cover the promotion of public transport and non-motorised modes (walking and cycling), the transport and distribution of goods, and the management of road traffic (especially demand management) and the organisation of parking. Guidelines have been developed to facilitate planning and implementation by municipalities.

Urban Mobility Plans refer to a wider national strategy and not only do they have to be compatible with national targets but they even become an important tool at local level to fulfil the national effort in combating climate change and supporting economic and social challenges.

The EC's Action Plan on Urban Mobility calls for an increase in the take-up of Urban Mobility Plans throughout Europe. To meet this need, the ELTIS project has produced guidelines that explain how to develop and implement Sustainable Urban Mobility Plans (see Annex 3). They build on existing practices and regulatory frameworks and have the following basic characteristics:⁹

- **A participatory approach:** involving citizens and stakeholders from the outset and throughout the process of decision making, implementation and evaluation, building local capacities for handling complex planning issues, and ensuring gender equity;
- **A pledge for sustainability:** balancing social equity, environmental quality and economic development;

⁹ Rupprecht Consult. 2011. *Developing and Implementing a Sustainable Urban Mobility Plan*. Rupprecht Consult, Cologne, Germany

- **An integrated approach:** of practices and policies between policy sectors (e.g. transport, land-use, environment, economic development, social inclusion, health, safety), between authority levels (e.g. district, municipality, agglomeration, region, national), and between neighbouring authorities (inter-municipal, inter-regional, trans-national, etc.);
- **A focus on the achievement of measurable targets:** derived from short term objectives, aligned with a vision for transport and embedded in an overall sustainable development strategy;
- **A review of transport costs and benefits:** taking into account wider societal costs and benefits, also across policy sectors; and
- **A process comprising the following tasks:**
 - 1) status analysis and baseline scenario;
 - 2) definition of a vision, objectives and targets;
 - 3) selection of policies and measures;
 - 4) assignment of responsibilities and resources; and
 - 5) monitoring and evaluation arrangements.

Examples of Urban Mobility Planning in selected European cities are presented below.

Barcelona



Source: Ajuntament de Barcelona

Barcelona's Urban Mobility Plan 2006-2010 is the planning tool used to trace the strategic lines for transport. Its priorities include safe, sustainable, fair and efficient transport, achieved by reducing transport requirements and emissions, and promoting the use of renewable energies. In recent years, and as a result of previous Urban Mobility Plans, more than 70% of travel is now carried out on foot, by bicycle or on public transport. The current plan aims by 2015 to cut overall CO² emissions by 20.5% and CO² emissions from the transport sector by 7.5%. Work is being carried out throughout the entire metropolitan area of Barcelona to improve and promote public transport, to foster clean, non-polluting means of transport (the city has developed a bicycle-sharing system with 6,000 bicycles and a comprehensive cycle path network throughout the city), to create areas that are safe for pedestrians and to reduce the environmental impact caused by traffic. An estimated

investment of €1,260,000 is needed to improve public transport; €12,199,000 for improved pedestrian traffic; €28,755,000 for bicycle traffic; and €28,755,000 for private vehicles.¹⁰

Bordeaux



Source: Agence d'Urbanisme de Bordeaux

The Urban Mobility Plan implemented in Bordeaux has created an extensive network of pedestrian shopping streets and a car-restricted zone in the centre coupled the construction of a modern tramway network serving residential areas and sub-centres. The city has developed a comprehensive cycle path network throughout the city and is experimenting with “car-on-demand” services to link outlying residential areas with tram stations. Within three years, Bordeaux completed a transit revolution, changing the car-dominated nature of the city centre, by building 3 tram lines with total length of 27 miles and 88 stations. The city is making significant enhancements to improve conditions for pedestrians and cyclists (the number of cyclists in Bordeaux has tripled in ten years). Car-free zones have been created in the main plazas, along major streets and in the historical inner area. Bordeaux has managed to improve pedestrian connectivity and walkability through major streetscape improvement projects (planting trees, widening sidewalks, upgrading street lights and providing high quality street furniture). The city has also implemented other initiatives such as Car Free Days, a traffic information service (that provides real-time traffic information through the web or by phone), employer mobility management plans (that promote alternative commuting options).¹¹

Milan



¹⁰ Municipality of Barcelona.2010. *European Green Capital Application 2012-2013: Barcelona*. European Green Capital, European Commission, Brussels, Belgium.

¹¹ McCormick Rankin. 2008. *Downtown San Diego: complete community mobility (Appendix A – Case Study Assessment: Bordeaux)*. San Diego Centre City Development Corporation, San Diego, CA., USA.

Milan has drawn up an Urban Mobility Plan to improve the quality of life of those living and working in the Milan area. The plan is the result of an in-depth study and analysis on mobility in the Milan district. It is designed to protect health and improve the environment by reducing atmospheric and acoustic pollution, reducing emissions, upgrading open spaces (pedestrian areas, public parks and gardens, etc.). The planned actions aim to reduce the quantity of motor vehicles entering Milan by 30% and the quantity of car movements inside Milan by 20%. In addition, the Urban Mobility Plan is designed to improve mobility, reduce congestion and travel time, save energy and improve the frequency, regularity and punctuality of public transport (and increase public transport modal share to over 50%).¹²

¹² Milan City Council. 2006. *Strategy for Sustainable Mobility, Health and Environment in Milan 2006-2011*. Comune di Milano, Milan, Italy.

4. Measures



Source: La voirie, un patrimoine à réhabiliter, 2002, Yan Le Gal, Nantes

Rather than applying a "one size fits all" approach, urban mobility planning relies on a mix of measures that will vary according to city specific objectives. The following table shows the distribution of urban mobility measures applied to meet such objectives with the EU funded CIVITAS program.¹³

Figure 1: CIVITAS measures related to city specific mobility objectives

Objectives	Reduce Congestion	Reduce Energy & Emissions	Reduce Parking Pressure	Improve Quality of Life	Increase Clean Vehicles	Improve System Efficiency	Improve Public Transport
Access restriction	✓			✓	✓		✓
Car sharing / pooling		✓	✓		✓	✓	✓
Clean vehicles & fuels		✓			✓		
Cycling & walking		✓	✓			✓	
Goods distribution	✓			✓		✓	
Mobility management	✓	✓	✓			✓	✓
Multimodal interchanges						✓	✓
Parking management	✓		✓	✓	✓		
Public transport promotion	✓	✓				✓	✓
Information & management	✓						✓
Urban pricing	✓	✓					✓

Source: Midgley, P. 2008. *Sustainable Urban Mobility in Europe*. global Transport Knowledge Partnership, Geneva, Switzerland.

Available evidence and experience from the CIVITAS program and other initiatives in Europe and elsewhere show that there is a need in most cases for a set of consistent “push” and “pull” measures from within the following ten groups:

- Coordinated land use and transport planning;
- Promoting and improving public transport;
- Encouraging cycling and walking;
- Urban freight management;

¹³ Midgley, P. 2008. *Sustainable Urban Mobility in Europe*. global Transport Knowledge Partnership, Geneva, Switzerland.

- Parking management;
- Urban road pricing;
- Traffic calming and reallocation of road space to most environmentally friendly vehicles and modes of transport;
- Restricting access for the most polluting road vehicles (low emission zones);
- Fostering the use of cleaner, quieter and lower CO² road vehicles; and
- Soft and smart measures (car-sharing, business and school travel plans, mobility management centres, awareness raising campaigns).

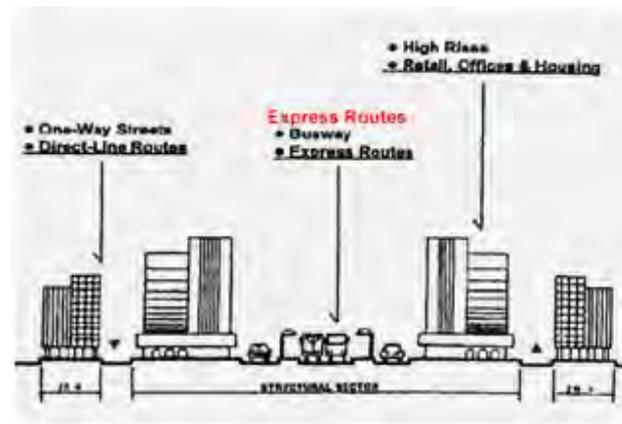
Coordinated land use and transport planning

Figure 2: Curitiba: BRT High Density Corridor



Source: IPPUC

Figure 3: Curitiba: BRT Corridor Cross Section



Source: The Transit Metropolis (Cervero, 1998)

One of the earliest and most successful examples of coordinated land use and transport planning is Curitiba, in Brazil. High-density development was planned to take place along high capacity Bus Rapid Transit (BRT) corridors very early in its history (1972). The key features are:

- Land use and transport are integrated; the “structural axes” concept of high-intensity development has created corridors with a travel demand that is well suited to BRT (high demand, short walking distances, etc.);
- Land within two blocks of the BRT has been zoned for mixed commercial and residential uses. Beyond these two blocks, residential densities decrease with distance from the BRT;
- Most importantly, the zoning within the corridors has been achieved by a combination of controls and incentives; and
- The BRT system has been instrumental in driving land use development and has been used to stimulate development along the corridors.

Promoting and improving public transport

According to a recent survey, nearly half of the citizens in the European Union (49%) think that better public transport could significantly improve the traffic situation in their city.¹⁴ Improving public transport involves providing priority for vehicles, ensuring quality and reliability, and attractiveness. It also involves obtaining good coordination and co-operation between the range of involved actors, transport authorities, public transport companies and

¹⁴ Eurobarometer. 2007. *Attitudes on issues related to EU Transport Policy*. The Gallop Organization, Hungary.

operators, and counting on politicians with a long-term mobility strategy in mind. It is also crucial to listen to passengers' needs and opinions, for public transport should be capable of adapting its service to the expectations of customers.

Combining improvements to public transport with a marketing and information campaign can prove more effective in increasing ridership than by service improvements alone. Promotion should therefore be an important component of any public transport improvement programme.

► Bus Rapid Transit

Figure 4: Bus Rapid Transit in Nantes



Source: ITDP (Karl Fjellstrom)

Figure 5: Bus Rapid Transit in Brisbane



Source: BTI (Bill Vincent)

Bus Rapid Transit (BRT) is a high-quality bus-based transit system that delivers fast, comfortable, and cost-effective urban mobility. It is one of the most important transportation initiatives today and is increasingly being used by cities looking for cost-effective mass transport solutions. There are currently 82 BRT systems operating worldwide, with the most extensive systems being in Latin America, and 60 systems under consideration. BRT systems can enhance bus efficiency through segregated bus lanes, designs that make boarding and exiting buses quick, bus priority at intersections, and effective coordination at stations and terminals.¹⁵

► Integrated Ticketing

In La Rochelle the entire transport system is accessible through a single electronic ticket — the “Yélo” card — which allows its users to ride buses and the ferry, to rent bicycles, taxis and electric vehicles (the “Liselec” system), to pay for park & ride, and all other services available as part of the public transport system. Customers can top-up the credit in their cards on a website, which also offers a very wide array of information. Most services can be either paid on a subscription or pay-per-use basis. Moreover, subscribers benefit from a vast range of savings on all included transport modes.¹⁶ Similar systems have been introduced in Freiburg, Toulouse and, recently, Melbourne.

¹⁵ Midgley, P. 2010. *Bus Rapid Transit Topic Information Sheet*. global Transport Knowledge Partnership, Geneva, Switzerland.

¹⁶ ICLEI - Local Governments for Sustainability. 2011. *Strategising sustainable urban mobility in EU Neighbour Countries*. ICLEI, Freiburg, Germany.

Figure 6: La Rochelle “Yélo” Integrated Ticketing System



Source: Communauté d'Agglomération de la Rochelle Web Site

Figure 7: Melbourne Myki Integrated Ticket



Source: Government of Victoria, Australia

Encouraging cycling and walking

The majority of trips in cities in Europe are short enough that this distance is more efficiently covered by bicycle or walking than by car. Encouraging people to walk and cycle by developing appropriate infrastructure and policies, and educating motorists to act with respect and caution toward pedestrians and cyclists will also likely spontaneously bring people to using these means of transport.

► Walking

Figure 8: No pedestrian connectivity

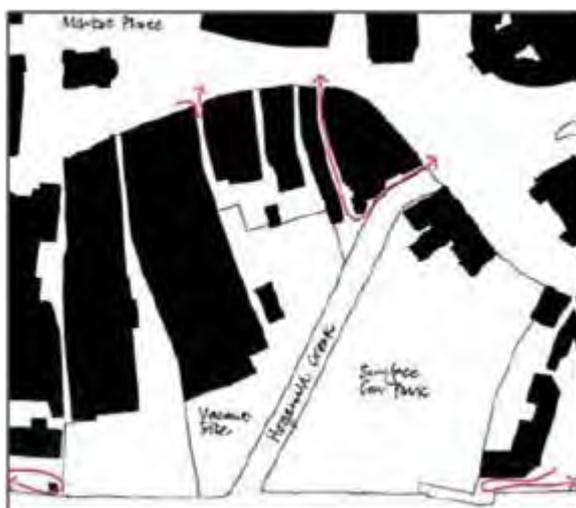
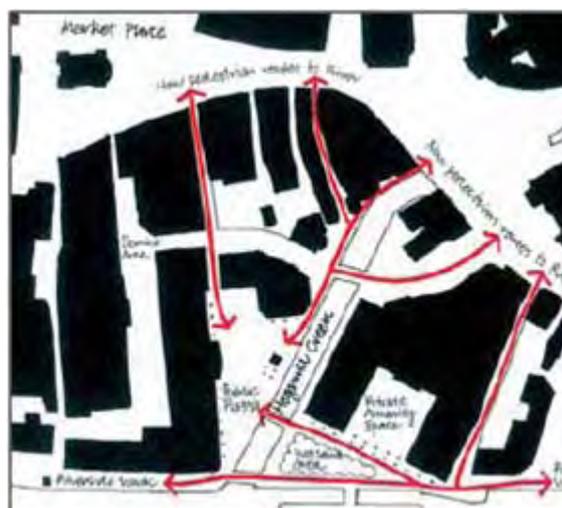


Figure 9: Improved pedestrian connectivity



Source: Improving walkability: Good practice guidance on improving pedestrian conditions as part of development opportunities, 2005, Transport for London, UK

Every journey begins and ends with an element of walking and every traveller is a pedestrian at various points during their trip.¹⁷ The extent to which walking is both possible and enjoyable is termed ‘walkability’ and it can be characterised by the ‘5Cs’: walking networks should be Connected, Convivial, Conspicuous, Comfortable and Convenient:

¹⁷ Transport for London. 2004. *Making London a walkable city: The Walking Plan for London*. Transport for London, London, UK.

- **Connected:** Walking routes should connect each area with other areas and with key 'attractors' such as public transport stops, schools, work, and leisure destinations forming a comprehensive network;
- **Convivial:** Walking routes and public spaces should be pleasant to use, allowing social interaction between people, including other road users; they should be safe and inviting, with diversity of activity and continuous interest at ground floor level;
- **Conspicuous:** Routes should be clear and legible, if necessary with the help of signposting and waymarking;
- **Comfortable:** Walking should be enjoyed through high quality pavement surfaces, attractive landscape design and architecture, and as much freedom as possible from the noise and fumes and harassment arising from proximity to motor traffic; opportunities for rest and shelter should be provided; and
- **Convenient:** Routes should be direct, and designed for the convenience of those on foot, including those whose mobility is impaired; road crossing opportunities should be provided as of right, located in relation to desire lines.

► Cycling

Figure 10: Segregated bike lane in Barcelona



Source: ITDP (Karl Fjellstrom)

Figure 11: Bike lane integrated with bus stop Utrecht



Source: ITDP (Karl Fjellstrom)

The key to achieving high levels of cycling appears to be the provision of separate cycling facilities along heavily travelled roads and at intersections, combined with traffic calming of most residential neighbourhoods. Extensive cycling rights of way need to be complemented by ample bicycle parking, full integration with public transport, comprehensive traffic education and training of both cyclists and motorists, and a wide range of promotional events intended to generate enthusiasm and wide public support for cycling. In addition to pro-bike policies and programmes, many cities make driving expensive as well as inconvenient through a host of taxes and restrictions on car ownership, use and parking. It is the coordinated implementation of this multi-faceted, mutually reinforcing set of policies that best explains success in promoting cycling.¹⁸

¹⁸ Pucher, J. & Buehler, R. 2008. *Making Cycling Irresistible: Lessons from The Netherlands, Denmark and Germany*. Bloustein School of Planning and Public Policy, Rutgers University, New Brunswick, New Jersey, USA.

Urban Freight Management

Urban freight transport and logistics operations are concerned with the activities of delivering and collecting goods in town and city centres. These activities are often referred to as 'city logistics' as they entail the processes of transportation, handling and storage of goods, the management of inventory, waste and returns as well as home delivery services.

The 'Best Urban Freight Solutions' (BESTUFS) European project has provided the following recommendations on how best to improve the urban environment through the more environmentally friendly use of freight transport vehicles:¹⁹

- Vehicle technology and alternative fuels;
- Access restrictions;
- Infrastructure, traffic management and trip planning;
- Exemption regulations;
- Last mile solutions;
- Cooperation between local stakeholders and transport operators; and
- Innovative / creative solutions (Urban Consolidation Centres, Unattended delivery systems, Night Delivery, Lorry Lanes,

In Bordeaux, a system was established in 2003 to ease the delivery of goods in the city centre, involving the creation of 'nearby delivery areas' (Espace de livraison de proximité - ELP). Goods are unloaded from incoming vehicles, and can be loaded onto trolleys, carts, electric vehicles and bicycles for final distribution.

Figure 12: DHL PackStation in Germany



Photo: Siemens AG

Figure 13: ELP bicycles in Bordeaux



Photo: Bernard Gérardin Conseil

Parking Management

Parking management is designed to make more efficient use of parking resources by sharing, regulating and pricing; using off-site parking facilities; implementing overflow-parking plans; improving user information; and improving walking and cycling conditions. It also involves reducing parking demand by encouraging use of alternative modes of transportation and improving enforcement and control of parking regulations.

Many cities in Europe are introducing innovative parking management approaches, such as the following²⁰:

¹⁹ Allen, J., Thorne, G. and Browne, M. 2007. *Good Practice Guide on Urban Freight Transport*. BESTUFS, Rijswijk, The Netherlands.

²⁰ Kodransky, M. & Hermann, G. 2011. *Europe's Parking U-Turn: From Accommodation to Regulation*. ITDP Europe, Hamburg, Germany.

- Electronic Parking Guidance Systems: Real-time message boards direct drivers into nearby parking facilities;
- Pay-by-phone: Pay-by-phone services can eliminate some of the problems associated with parking fee collection, like theft and spillage;
- Smart Meters: Using magnetic induction to recognize vehicles can lead to more efficient enforcement when drivers overstay their allotted time in a parking space;
- Scan Cars: Digitizing license plate registrations and using a scan car to monitor parking compliance can improve the performance of a parking program.

Figure 14: Paying parking by mobile phone (Antwerp)



Source: Michael Kodransky and Gabrielle Hermann, ITDP

Figure 15: Real-time parking guidance (Dresden)



Source: Tom Rye, GTZ

Urban road pricing

Road pricing means charging for the use of roads in a way that reflects the costs of using them - paying more when roads are congested and less when traffic is light. Congestion charging is a form of road pricing that aims to reduce motor vehicle travel into congested urban areas. It works because it changes behaviour. Motorists are encouraged to change their habits, travelling at different times or by different routes or making their journey by public transport and/or non-motorized transport (on foot or by cycle). Road pricing works best when applied in parallel with other measures, such as public transport improvements and provisions for cyclists and pedestrians. The most famous examples are the Singapore Electronic Road Pricing (ERP) scheme and the London Congestion Charge.²¹

Figure 16: Electronic Road Pricing (Singapore)



Source: OneShift, Singapore, 2011

Figure 17: Congestion Charging (London)



Source: Wikimedia Commons, 2005

²¹ Midgley, P. 2010. *Road Pricing Topic Information Sheet*. global Transport Knowledge Partnership, Geneva, Switzerland.

Traffic calming

Traffic calming aims to reduce the speed and volume of traffic to improve safety for pedestrians and cyclists, as well as improve the environment. Traffic Calming programmes range from minor modifications to individual streets to comprehensive redesigns of whole networks. Traffic calming measures comprise volume control measures (that reduce through traffic by blocking certain movements and diverting traffic to other streets) and speed control measures (that slow down traffic by changing vertical or horizontal alignment or narrowing the roadway). This distinction is not absolute, since speed control measures frequently divert traffic to alternate routes and volume control measures slow traffic.²²

Figure 18: Blocking through traffic



Source: South Central Regional Council of Governments, CT, USA

Figure 19: Reducing speed



Source: Project for Public Spaces (www.pps.org)

Reallocation of road space

Figure 20: Road space reallocation in San Sebastian



Source: EMBARQ

Figure 21: Home Zone in Dewsbury (UK)



Source: Home Zones, 2006, DfT, UK

Reallocating road space to public transport, cycling, or increased walking space can help achieve equity and efficiency objectives by improving mobility options. Many European cities have gone ahead with road space reallocation schemes despite predictions that traffic chaos would result. However, in each case any initial problems of traffic congestion were short-lived, and after a 'settling-in' period a proportion of the traffic was found to have 'evaporated'. In the attractive car-free spaces created in these cities, pedestrians and cyclists now enjoy a cleaner, quieter and safer environment. The Home Zones concept in the

²² Midgley, P. 2010. *Traffic Calming Topic Information Sheet*. global Transport Knowledge Partnership, Geneva, Switzerland.

UK aims to extend the benefits of slow traffic speeds within residential areas and give greater priority to non-motorised users.

Restricting access

Figure 22: Access Restriction “Gate” Rome



Source: CIVITAS Trendsetter

Figure 23: Low Emission Zone London



Photograph: Daniel Berehulak/Getty Images

According to a recent survey²³, over 300 European cities are engaged in the design and implementation of demand management strategies based upon the concept of ‘controlled access’, which entails the more or less gradual interdiction of selected urban areas to traffic.

Access Restriction Schemes (ARS) vary a great deal, depending on the chosen exclusion criteria. Popular examples include closure of inner city areas and other sensitive zones to less clean and energy efficient vehicles or to freight vehicles above a certain weight, to private vehicles owned by non-residents in the restricted area, or to motorized vehicles altogether. In the case of Low Emission Zones (LEZs), the main objective is environmental quality, whereas in toll ring schemes the main objective (after traffic reduction) is revenue generation to finance transport infrastructure. ARSs can broadly be classified into four types:

- Point-based (e.g. restriction to cross a bridge or to enter a small section of city);
- Cordon-based: a restriction is applied for crossing a cordon, and may vary with time of day, direction of travel, vehicle type and location on the cordon;
- Area-licence based pricing: a restriction is applied for driving within an area during a period of time. The rules may vary with time and vehicle type; and
- Distance- or time-based: it is essentially a pricing restriction based upon the distance or time a vehicle travels along a congested route or in a specified area, and may vary with time, vehicle type and location.

The survey data from 58 participating cities reveals that the area licensed and cordon-based schemes achieved an average decrease in traffic of 23%, while the point-based schemes achieved significantly higher percentages of decrease in vehicles crossing the charging points - close to 73% on average. In the analysed access restriction schemes, the top-three groups of ‘winners’ are the residents in the restricted zone (30%), the public transport users (21%) and the shop keepers/retailers (16%). On the opposite side, private motorised users

²³ Directorate General for Mobility and Transport. 2010. *Study on Urban Access Restrictions*. European Commission, Brussels, Belgium.

represent the primary scheme 'losers' (44%), followed by freight distributors (21%) and residents outside the restricted zone (11%).

Fostering the use of cleaner, quieter and lower CO² road vehicles

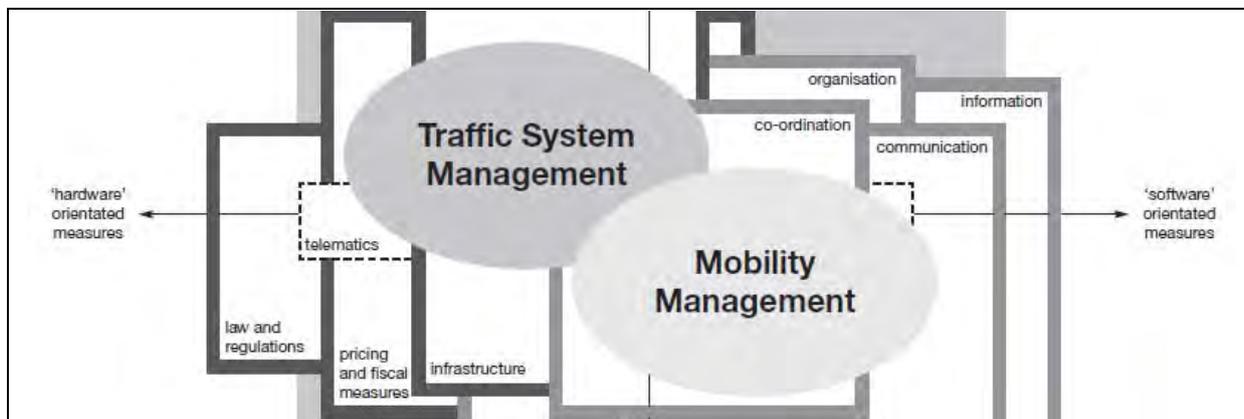
Several cities in Europe are paving the way by developing ambitious strategies aiming at including environmental performances in every day to day practice or decision with a view to foster use and ownership of cleaner, quieter and lower CO₂ – thus more energy efficient - vehicles. Such strategies have a great potential to bring about decisive noise or emissions abatements.

The possible instruments in hands of local or regional authorities are numerous: programmes on retrofitting, retiring, and replacing polluting engines; increasing the use of cleaner fuels and vehicles in public fleets; designing and enforcing local regulations favouring cleanest, quietest and most energy-efficient vehicles; and investing in pollution control technologies, public education etc.²⁴

Studies have indicated that reduced parking fees can be a strong incentive for using clean vehicles. Stockholm has strict parking rules with high parking fees in the inner city zones during business hours. Citizens driving clean vehicle and living in the central part of the city can however apply for a free parking permit. In Graz (Austria) low emission vehicles can get a 30 percent reduction of parking fees. Drivers of non low emission vehicles have to pay € 1.20 per hour, whereas low emission vehicles pay € 0.80 per hour. Hence, the scheme gives real benefits to low emission vehicles and provides a popular selling point of the new system.

Soft and smart measures

► Mobility Management (MM)



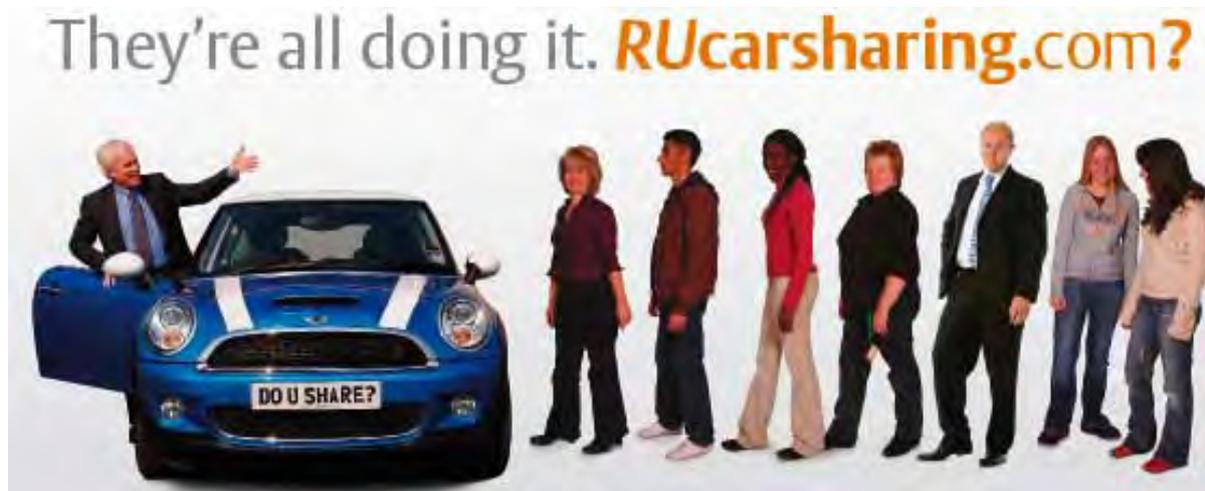
Source: Mobility Management User manual: EPOMM

Mobility management involves providing information services and co-ordination mechanisms to promote sustainable transport and manage the demand for car use by changing travellers' attitudes and behaviour. This can minimise the number of vehicle trips to major sites such as workplaces, schools, hospitals and shopping centres. At the core of Mobility Management are "soft" measures like information and communication, organising services, developing commuter plans and coordinating activities of different partners

²⁴ Sustainable Urban Transport in Davao City. 2011. *Promoting low-emissions and low-noise road vehicles*. Sutradavao.org, Davao, Philippines.

(private companies, universities, hospitals, schools, etc.). By giving people information on alternatives to private car use, mobility behaviour can be influenced and a modal shift towards sustainable transport modes can be stimulated. For example, a travel plan was established for a business park in Malaga, which caused a decrease of 12% in the number of people coming to work by car.²⁵

► Car Sharing



Source: University of Reading, UK

Car sharing can help reduce congestion and pollution. There are more than 600 cities in the world where people can car-share. The fact that only a certain number of cars can be in use at any one time may reduce traffic congestion at peak times. Even more important for congestion, the strong metering of costs provides a cost incentive to drive less. Replacing private automobiles with shared ones directly reduces demand for parking spaces. Car sharing systems use GPS systems to track availability. Zipcar's available vehicles report their positions to a control centre so that members of the scheme can find nearby vehicles through a web or phone interface. Cars are unlocked by holding a card, containing a wireless chip, up against the windscreen. Integrating cars and back-office systems via wireless links allows Zipcar to repackage cars as a flexible transport service. Each vehicle operated by Zipcar is equivalent to taking 20 cars off the road.²⁶

► Bicycle Sharing

Also called "Public-Use Bicycles" (PUBs), "Bicycle Transit", "Bikesharing" or "Smart Bikes", bicycle-sharing schemes comprise short-term urban bicycle rental schemes that enable bicycles to be picked up at any self-serve bicycle station and returned to any other bicycle station, which makes bicycle-sharing ideal for point-to-point trips. The principle of bicycle-sharing is simple: individuals use bicycles on an "as-needed" basis without the costs and responsibilities of bicycle ownership.

Over the past ten years, bicycle-sharing schemes have developed from being interesting experiments in urban mobility to mainstream public transport options in cities as large and complex as Paris and London. Following the success of the bicycle-sharing system in Paris,

²⁵ CIVITAS. 2010. *Smart mobility management measures*. Institute for Transport Studies, University of Natural Resources and Applied Life Sciences (BOKU), Vienna, Austria.

²⁶ The Economist. 4 June 2009. "The connected car".

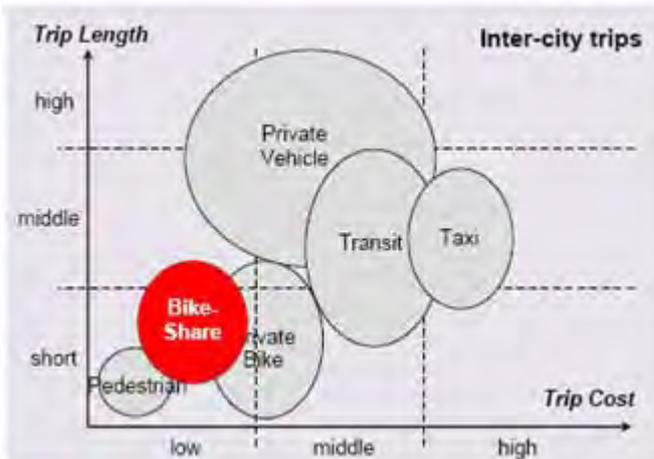
these systems are rapidly being introduced in many cities for daily mobility. The basic premise of the bicycle-sharing concept is sustainable transportation. Such systems often operate as part of the city's public transport system. They provide fast and easy access, have diverse business models and make use of applied technology (smart cards and/or mobile phones). Most bicycle-sharing schemes have been introduced in cities that have established sustainable urban transport policies and plans. Today there are an estimated 375 bicycle-sharing schemes using around 236,000 bicycles operating in 33 countries in almost every region of the world.²⁷

Figure 24: Bike-sharing in Toulouse



Source: Peter Midgley

Figure 25: Bicycle-sharing and urban mobility



Source: Quay Communications Inc.

²⁷ Midgley, P. 2011. *Bicycle-sharing Schemes*. UN Department of Economic and Social Affairs, New York, USA.

5. Results and Impacts



Photo : J. Ch. Poutchy-Tixier

Most cities that have implemented sustainable urban mobility plans and measures have experienced the following types of benefits:

- Decrease of traffic jams and congestion followed by a diminution of noise; atmospheric contamination, contribution to the greenhouse effect and accidents.
- Lower energy consumption;
- Reduction of travel time;
- Improvement of the public transport services;
- More public spaces available;
- A general improvement of accessibility, included for disabled;
- Reduction of external costs;
- Increased health among the inhabitants because of less contamination and increased use of bicycle and walking; and
- Increased quality of the urban environment and quality of life among the citizens.

Urban Mobility Plans have emerged as a local response to unacceptable levels of pollution and congestion, of unnecessary damaging consumption of energy and also as a response to the economic and social inefficiency in the dispersion of planning authorities each of them running after its own goals.

Mobility Plans: the way forward for a sustainable urban mobility, 2009, European Metropolitan Transport Authorities, Paris, France

The CIVITAS programme has achieved significant results in terms of reduced congestion, better public transport, improved conditions for cyclists and pedestrians, and many other advantages that are all contributing to improvements in the quality of urban life. In terms of concrete results, a several noteworthy accomplishments were made possible by CIVITAS I. These include²⁸:

- Around 8,000 new, clean vehicles circulating in ten CIVITAS cities (Barcelona, Berlin, Cork, Graz, Lille, Nantes, Rome, Rotterdam, Stockholm and Winchester);
- A 10% traffic reduction induced by the Bristol Home Zone project;
- 44,000 passengers carried daily by the new electric bus lines in Rome;

²⁸ CIVITAS. 2007. *CIVITAS in Europe*. Istituto di Studi per l'Integrazione dei Sistemi, Rome

- A 30% reduction of transport movements fostered by the coordination of goods delivery in Göteborg;
- An important leap in cycling share in Graz thanks to an integrated package of bike-supporting measures;
- A 55% reduction in PM levels in the new Clear Zone of Cork; and
- Remarkable improvements in public satisfaction with public transport services in Rome (+10%), Nantes (+28%) and Stockholm (+8%).

A number of factors had positive or negative effects on implementation (see Figure 27, below). Planning technicalities, the lack of firm and reliable funding sources, and strong political opposition were significant barriers faced by the CIVITAS cities. On the other hand, the strong commitment of responsible politicians, synergies between policies, the promotion of local partnerships, and the involvement of final users were identified as the main drivers of successful projects.

Consultation and integration are the trademarks of urban mobility planning and the CIVITAS initiative. Experience seems to confirm this, with packages of policies yielding greater effects than the sum of policy elements implemented in isolation.

Finally, developing sustainable urban mobility involves knowledge sharing (good and not so good experiences) and the willingness to admit “I don’t know...” and to ask for help.

For more information on urban mobility, visit the following pages on the gTKP website:

Urban Mobility	http://www.gtkp.com/theme.php?themepgid=12
Mobility Management	http://www.gtkp.com/theme.php?themepgid=32
Mobility Plans	http://www.gtkp.com/theme.php?themepgid=214
Mobility Policies	http://www.gtkp.com/theme.php?themepgid=280

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ANNEX 1: Overview of main EC initiatives on urban mobility

White paper ‘European transport policy for 2010: time to decide’

Released by the EC in 2001 (EC, 2001), the White paper on transport policy has been a cornerstone in the Communities’ approach to making EU transport policy more sustainable. For the first time, the EC was paying attention to the traffic management problems local authorities have to deal with, though it reaffirmed that the responsibility for urban transport still lay at the local level (the principle of subsidiarity). The mid-term review of the White paper (EC, 2006) has further encouraged local authorities to address the problems of road traffic congestion, pollution and road safety more effectively.

Thematic Strategy on the Urban Environment

The Thematic Strategy on the Urban Environment (EC, 2006) was adopted by the EC in 2006. This document states the goal of *‘contributing to a better quality of life through an integrated approach concentrating on urban areas’* and *‘to a high level of quality of life and social well-being for citizens by providing an environment where the level of pollution does not give rise to harmful effects on human health and the environment and by encouraging sustainable urban development’*.

The Thematic strategy was defined after wide consultation with stakeholders and is based on the previous EU policy initiatives for improving the quality of the urban environment. In particular, it affirmed the need to implement appropriate land use policies and land use planning approaches for reducing urban sprawl and for preparing SUTPs, and provided new measures for easing the use of integrated approaches for the management of the urban environment at all government levels (national, regional, local).

Green paper ‘Towards a new culture for urban mobility’

Adopted by the EC in 2007, the Green paper on urban mobility (EC, 2007a) was another major step towards a comprehensive endeavour to address the different dimensions of urban mobility.

The Green paper may be considered the result of a long policy process that started in 1995 with the release of the Green paper and Communication on the Citizens' Network, followed in 2000 by the launch of the ‘City of Tomorrow’ research programme and CIVITAS demonstration project under the 5th Framework programme for RDT. In 2006, with the mid-term review of White Paper on transport, the EC expressed its intention to publish a Green paper on urban transport which, after wide public consultation conducted between 2006-2007, led to the adoption of the Green paper on urban mobility on 25 September 2007.

The added value of the Green paper may be summarised as follows:

- promoting exchange of best practice;
- assisting with the harmonisation of standards when necessary;
- providing financial support for those that need it most;
- enabling common standards to be defined;
- simplifying or repealing existing legislation or introducing new legislation.

The Green paper acknowledges that European cities differ from each other even though they face common and similar challenges. It states that the non-sustainability of European

cities is a major barrier to be overcome in achieving the European targets set by the Lisbon and Gothenburg strategies. It therefore stresses the need to implement as integrated an approach as possible, which optimises the use of all modes of transport (the concept of co modality).

Action plan on urban mobility

More importantly, the Green paper has paved the way to the adoption by the EC, on 30 September 2009, of the Action Plan on urban mobility (EC, 2009). In the view of the EC, the Action plan both creates a coherent framework for EU initiatives in the area of urban mobility and respects the principle of subsidiarity.

In the Action Paper, the EC proposes a comprehensive support package in the field of urban mobility. The main objective is to provide local, regional and national authorities with a tool that will help them address the challenge of sustainable urban mobility and to facilitate their policy making. The actions included in the Action plan align to the six following thematic topics:

- promoting integrated policies;
- focusing on citizens;
- greening urban transport;
- strengthening funding;
- sharing experience and knowledge;
- optimising urban mobility.

The Action Plan proposes a set of short and medium term practical actions to be launched progressively from now until 2012, addressing specific issues related to urban mobility through an integrated approach.

Other guidance initiatives

A considerable contribution has also been made by other initiatives and good practice guidance, such as:

- CIVITAS;
- European Platform on Mobility Management;
- European Local Transport Information Service;
- European Mobility Week;
- SMILE.

City-VITALity-Sustainability Initiative (CIVITAS) under its programming schemes (CIVITAS I, CIVITAS II, and the current CIVITAS PLUS) is at the frontline, funding projects proposed by the European cities and aiming for better integrated sustainable urban transport strategies. Its added value consists in the exchange between cities of best practice and experience. More information is available at: www.civitas-initiative.org

The European Platform on Mobility Management (EPOMM) is a network of governments in European countries that are engaged in Mobility Management (MM). EPOMM is organised as an international non-profit organisation, based in Brussels, and aims to (i) promote and develop Mobility Management in Europe, and (ii) support active information exchange and learning about Mobility Management between European countries. More information is available at: www.epomm.org

European Local Transport Information Service (ELTIS) is a web portal for local transport news and events, transport measures, policies and practices implemented in cities and regions across Europe. The aim is to provide information and support a practical transfer of knowledge and exchange of experience in the field of urban and regional transport in Europe. More information is available at: www.eltis.org

European Mobility Week (EMW) influences mobility and urban transport issues for the long term, enhances the health and quality of life of European citizens, and helps meet important environmental objectives. The EMW is an ideal platform for local authorities and other associations and organisations to:

- promote existing policies, initiatives and best practice related to sustainable urban mobility;
- raise awareness of the detrimental effect that current urban mobility trends have on the environment and their quality of life;
- establish effective partnerships with local stakeholders;
- be part of a European wide campaign, sharing a common goal and a common identity with other towns and cities;
- emphasise the local commitment towards sustainable urban mobility.

More information is available at: www.mobilityweek.eu

Sustainable Mobility Initiatives for Local Environment (SMILE) is a project to help local authorities reconcile residents' mobility needs with their quality of life and the environment by presenting good practices and introducing innovative approaches to mobility. SMILE has produced a database with 170 successful and replicable practices for sustainable urban mobility. More information is available at: www.smile-europe.org

ANNEX 2: Urban Mobility Funding Instruments in the EU

Intelligent Energy- Europe (IEE)

Intelligent Energy- Europe (IEE) is the EU's tool for funding actions to save energy, encourage the use of renewable energy sources and create the necessary transition towards a more energy intelligent continent. Its original budget was intended to cover the period 2003-2006, and it has been extended to at least 2013 with a budget of €730 million. IEE concentrates on the promotion of best practices, institutional capacity building, accelerating learning curves, information dissemination, education and training of market actors. Funding for mobility actions are included under STEER projects (energy efficiency and use of new and renewable energy resources in transport) and under ALTENER (new and renewable energy resources). IEE supports European projects, one-off events, covering up to 50% of the costs.

LIFE+

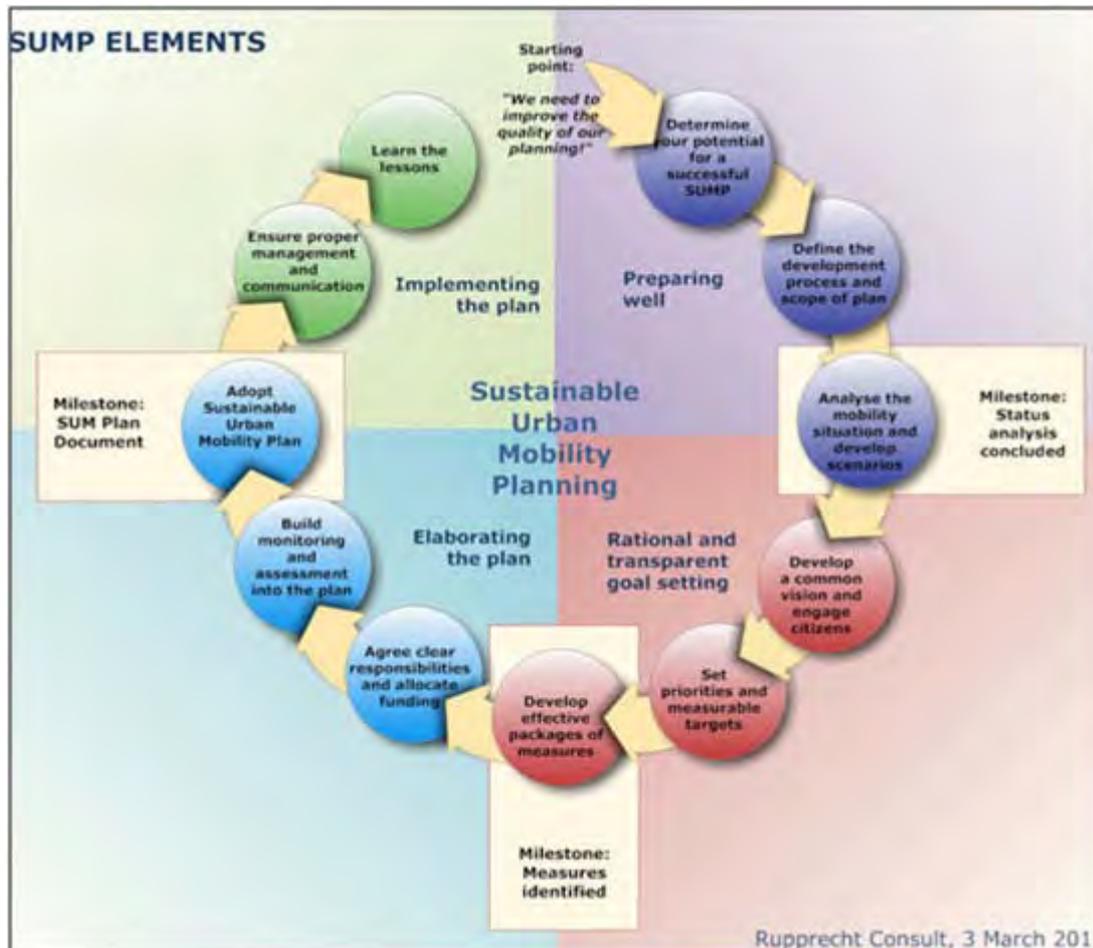
LIFE+ is the acronym for the Financial Instrument for the Environment, the environment related funding instrument of the EU. Its goal is to contribute to the implementation, updating and development of EU environmental policy and legislation by co-financing pilot or demonstration projects with European added value. Depending on the project, third countries are also eligible for funding. In May 2010 the fourth call for proposal was announced, with a sum of up to €243 million for projects within the field of nature and biodiversity, information and communication and environmental policy and governance. The latter includes funding for measures in sustainable urban transport.

7th Framework Programme (FP7)

FP7 is the short name for the Seventh Framework Programme for Research and Technological Development. This is the EU's main instrument for funding research in Europe and it runs from 2007 to 2013 (some calls are eligible for cooperation beyond the EU). FP7 is also designed to respond to Europe's employment needs, competitiveness and quality of life. The Transport Theme under FP7 is aimed to develop safer, greener and smarter transport systems for Europe in order to increase the quality of life of citizens, develop a mobility system which respects the environment and increase the global competitiveness of European industry. The budget foreseen within the FP7 for this theme amounts to over €4 billion for the period 2007-2013, which addresses sustainable urban mobility, among others. CIVITAS, for instance, is an initiative that has been financed under the 5th (CIVITAS I), the 6th (CIVITAS II) and the 7th (CIVITAS Plus, the current phase) Framework Programmes. Successful cities which applied for each phase receive EU contribution (ca. 50%) to implement measures related to sustainable transport. An important part of the initiative is research, innovation and transferability, as cities should implement innovative measures that can then serve as examples to other European cities.

ANNEX 3: Sustainable Urban Mobility Plans

The guidelines for developing and implementing Sustainable Urban Mobility Plan (SUMP) are illustrated and summarized below.²⁹



Source: Rupprecht Consult. 2011. *Developing and Implementing a Sustainable Urban Mobility Plan*. Rupprecht Consult, Cologne, Germany.

Determine your potential for a successful SUMP

- Commit to overall sustainable mobility principles
- Assess impact of regional/national framework
- Conduct self-assessment
- Review availability of resources
- Define basic timeline
- Identify key actors and stakeholders

Define the development process and scope of plan

- Look beyond own boundaries and responsibilities
- Strive for policy coordination through actor cooperation
- Plan stakeholder and citizen involvement
- Agree on work plan and management arrangements

Analyse the mobility situation and develop scenarios

²⁹ Developing and Implementing a Sustainable Urban Mobility Plan, 2011, Rupprecht Consult, Cologne, Germany.

- Prepare a status analysis
- Develop scenarios

Develop a common vision and engage citizens

- Develop a common vision of mobility and beyond
- Actively inform the public

Set priorities and measurable targets

- Identify the priorities for mobility
- Develop SMART targets

Develop effective packages of measures

- Identify the most effective measures
- Learn from others' experiences
- Consider best value for money
- Use synergies and create integrated packages of measures

Agree clear responsibilities and allocate funding

- Assign responsibilities and resources
- Prepare an action and budget plan

Build monitoring and assessment into the plan

- Arrange for monitoring and evaluation

Adopt Sustainable Urban Mobility Plan

- Check the quality of the plan
- Adopt the plan
- Create ownership of the plan

Ensure proper management and communication (when implementing the plan)

- Manage plan implementation
- Inform and engage citizens
- Check progress towards achieving the objectives

Learn the lessons

- Update current plan regularly
- Review achievements - understand success and failure
- Identify new challenges for next SUMP generation

