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DIRECTORATE GENERAL FOR INTERNAL POLICIES
POLICY DEPARTMENT B: STRUCTURAL AND COHESION POLICIES

TRANSPORT AND TOURISM

MOBILITY MANAGEMENT

NOTE

This document was requested by the European Parliament's Committee on Transport and Tourism.

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DIRECTORATE GENERAL FOR INTERNAL POLICIES
POLICY DEPARTMENT B: STRUCTURAL AND COHESION POLICIES

TRANSPORT AND TOURISM

MOBILITY MANAGEMENT

NOTE

Abstract

This note aims to provide an analysis of the concept of Mobility Management, an important instrument for dealing with urban traffic and congestion problems. It focuses on three main types of soft measure – car sharing, car pooling and travel plans – and presents some key experiences in selected European cities. It concludes by providing recommendations concerning the role of the EU and local authorities.

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LIST OF ABBREVIATIONS

ACT	Association for Commuter Transport
ATG	AutoTeilet Genossenschaft
ATOC	Association of Train Operating Companies
CIVITAS	City-VITAlity-Sustainability Initiative
CO₂	Carbon dioxide
CoR	Committee of the Regions
DB	Deutsche Bahn
DfT	Department for Transport
EC	European Commission
EEA	European Environment Agency
EESC	European Economic and Social Committee
ELTIS	European Local Transport Information Service
EP	European Parliament
EPOMM	European Platform on Mobility Management
EU	European Union
GDP	Gross domestic product
HOT	High Occupancy Toll
HOVs	High Occupancy Vehicles
ICS	Iniziativa Car sharing
ICT	Information and Communication Technology
IEEP	Institute for European Environmental Policy
ITS	Intelligent Transport Systems
MAX	Successful Travel Awareness Campaigns and Mobility Management Strategies
MOST	MObility management STRategies for the next decades

- MOVE** International Cluster for Mobility Management Development and Research Dissemination
- OECD** Organisation for Economic Co-operation and Development
- SBB** Schweizerische Bundesbahnen [Swiss Railways]
- SMS** Short Message Service
- SUTPs** Sustainable Urban Transport Plans
 - TL** Transports publics de la région Lausannoise [Lausanne Region Public Transport]
- UITP** International Association of Public Transport
 - UK** United Kingdom
 - UN** United Nations
- VMZ** Verkehrsmanagementzentrale
- WoW** Walk on Wednesday or Walk once a Week
- ZVV** Zürcher Verkehrsverbund [Zurich Transport Association]

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EXECUTIVE SUMMARY

Background

Mobility may be regarded as the ability to travel (Giuliano, Hu, & Lee, 2003), although its meaning could be much broader since mobility encompasses not only the activity of travel 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.

Although mobility plays a crucial role in contributing to the socioeconomic growth of urban areas, its positive effects have to be also weighed alongside the negative impacts which the increasing demand for mobility has rapidly generated over the last 20 years.

'More sustainable' is thus regarded as the main goal that underpins current approaches to and solutions for future mobility. Sustainability should lie at the heart of all policies and strategies for a more sustainable transport system in environmental (CO₂, air pollution, noise) and competitiveness (congestion) terms, while also addressing social concerns. This is why the concept of sustainability goes far beyond the need to respond to managing road traffic flows and their impacts, because it should also address, for instance, the cost of mobility in relation to social exclusion, economic and social cohesion, and the demographic changes that will shape the structure of European cities in the future.

Based on the background outlined, and even if local authorities are primarily responsible for urban policies according to the principle of subsidiarity, the European Union (EU) has taken an active role since the adoption of the White paper on transport policy (EC, 2001). The purpose of the EU action is to offer local authorities specific support for promoting a new culture of urban mobility, in which sustainable and affordable urban transportation is a key to making cities dynamic and vibrant. This also explains why EU support has taken several forms, through a combination of policy intervention and guidance support.

Aim

This briefing note is one of three dealing with urban mobility.² It aims to analyse the concept of Mobility Management, which is an important instrument for dealing with urban traffic and congestion problems.

The note highlights the main characteristics of Mobility Management and discusses the main instruments and services provided. The main goal of Mobility Management is to reduce dependency on private cars and to reduce the need for travel; it is a demand-orientated approach to passenger transport that involves a set of tools for supporting and encouraging a change in travellers' attitudes and travel behaviour to bring about sustainable modes of transport. These tools are usually based on information, organisation, and co-ordination, and require promotion and combination in a package of voluntary actions to reduce dependency on private cars and encourage the use of other transport modes. This goal can be achieved through the following three actions: car sharing, car pooling and travel plans.

² The two other briefing notes requested by the Committee on Transport and Tourism deal with 'Sustainable Urban Transport Plans (SUTPs)' and 'The promotion of cycling'.

Importantly, pricing schemes (including access and parking restrictions) are not covered in the analysis although they are important instruments within the framework of Mobility Management and could be used in combination with the ‘soft’ measures. In fact they both aim at influencing mobility behaviour and may complement each other: while soft measures try to persuade users to reduce car use by optimising their journeys, pricing schemes impact behaviour by restricting and/or regulating car access (congestion charging schemes, environmental zones, city tolls, parking schemes, etc.).

Finally, integration of Mobility Management measures – and of these measures with pricing schemes – is the key tool for the future. The note therefore stresses the central role of Mobility Centres, with their goal of promoting, enhancing and facilitating access to transport services.

Outline of contents

The note is structured into four chapters.

Following the introduction in Chapter One, Chapter Two presents the concept of Mobility Management by highlighting its main instruments and institutional framework.

The purpose of Mobility Management is to organise urban mobility more efficiently, with an emphasis on sustainable practices. The central idea is to promote a modal shift in favour of more sustainable transport modes, which may be valid alternatives to car ownership.

Mobility Management is a demand-orientated approach to passenger transport that involves a set of tools for supporting and encouraging a change in travellers’ attitudes and behaviours with regard to sustainable modes of transport. These tools are usually based on information, organisation and co-ordination, and require promotion and combination in a package of voluntary actions to reduce dependency on private cars and encourage the use of other transport modes.

Features of Mobility Management

Timing	Approach	Objectives	Implementation levels
Short term	Transport demand-orientated mechanism applicable as: <ul style="list-style-type: none"> - a strategic demand management tool; - a site-specific (or area-specific) measure 	Reducing demand for and use of cars by: <ul style="list-style-type: none"> - increasing attractiveness and practicality of other transport modes - changing travellers’ attitudes and behaviour 	<ul style="list-style-type: none"> - Management level (role of Mobility Centre) - Site level (role of Mobility Office, Mobility Manager and Mobility coordinator) - Intermediary role played by Mobility Consultant)

The core feature of Mobility Management is the implementation of 'soft measures'. The term 'soft' is used to distinguish these initiatives from the 'hard' measures that refer to physical improvements in transport infrastructure or operations, traffic engineering and control of road space. 'Soft' also refers to the nature of the travellers' response, with initiatives often addressing behavioural motivations for travel choice as well as economic ones. The emphasis is on management and marketing activities rather than operations and investments.

Chapter Three illustrates relevant current experiences of mobility: car sharing, car pooling and travel plans. This Chapter describes the concepts, benefits and problems of each soft measure, reviews case studies and analyses the main potential challenges.

Car sharing refers to vehicle rental services intended substitute for private vehicle ownership. It makes the occasional use of a vehicle affordable while providing an incentive to minimise driving and rely on alternative travel options as much as possible. Its major features are: accessibility, affordability, convenience and reliability.

Car pooling, also known as ride sharing, is a scheme where two or more people who travel in the same direction or to the same location share car journeys in a private vehicle. It differs from car sharing because it is based on the concept of sharing the use of a car, instead of sharing the car ownership.

A *travel plan* is a management strategy designed by a workplace, school or other organisation to encourage safe, healthy and sustainable travel options. It is a planning instrument aimed at reducing car use and encouraging commuters to make greater use of other transport modes like public transport, cycling, car sharing and car pooling instead. It may also promote flexible working practices, such as remote access and working from home.

This Chapter also stresses the role of the *Mobility Centre*, which may be considered as the focal point for both the supply side and the demand side. Firstly, it allows different transport providers to cooperate and, secondly, it integrates different mobility services. A Mobility Centre concentrates all services and thus serves as a platform for data communication and exchange.

Chapter Four concludes with comments based on the analyses in the previous chapters, integrating these with some recommendations about the possible future role of the EU in this field. Being mindful of the subsidiarity principle, the EU may provide a valuable contribution to Mobility Management by playing a guiding role in setting up common frameworks and approaches, where each city may have the opportunity to select the tools and methodologies that best suit its specific context. In particular, the EU may have a role to play in mainstreaming Mobility Management policy at local levels. More specifically, its contribution would focus on:

- integrating Mobility Management into the broader planning process. This requires a parallel development in terms of evaluation method, especially from an economic perspective, and a common evaluation framework may be proposed;
- promoting the internalisation of external costs to pave the way for a level playing field for all transport modes, particularly in order to enhance a greater competitiveness of those transport modes that present a valid alternative to car use. Apart from

congestion charging systems, it would be relevant to explore the use of market-based instruments and economic incentives;

- introducing Intelligent Transport Systems (ITS) and technical standards to help foster the compatibility of transport system solutions across Member States and the further integration of ITS into the planning process;
- disseminating good practice and supporting the exchange of knowledge through existing platforms and initiatives (e.g. EPOMM, ELTIS, European Mobility Week).

Finally, the four annexes attached to this note address the following issues: examples of car sharing and car pooling in Europe (one annex each); an overview of recent EU research projects and travel plan schemes; and a description of the integrated approach implemented in Bremen.

1. INTRODUCTION

1.1. Urban mobility

Mobility may be regarded as the ability to travel (Giuliano, Hu, & Lee, 2003), although its meaning may be much broader since mobility encompasses not only travel activity but also, more importantly, the possibility for the traveller to decide when and where to travel, by being aware and making use of a set of information for optimising the journey.

Since mobility is crucial to quality of life, it is inextricably linked with the urban transport system. Both directly influence people's daily life and activities and play a key role in all functions of society. They also influence opportunities to engage in social activities and interact with social communities.

However, though mobility makes a crucial contribution to socioeconomic growth in urban areas, its positive effects have to be also weighed alongside the negative impacts which the increasing demand for mobility has generated over the last 20 years. This is particularly important when the demand for mobility is observed at local and city levels.

Cities are a critical part of the transport system, not least because, as pointed out by the recently adopted European Commission (EC) Action Plan on urban mobility, more than 72% (UN, 2007) of Europeans live in an urban area and this percentage is expected to increase.

Cities are the powerhouse of economic growth and development, since around 85% of the EU's GDP is generated in urban areas. At the same time, 40% of total CO₂ emissions and 70% of emissions of other pollutants are caused by urban traffic.

Challenges like road traffic congestion, road safety, environmental impacts (any discussion on the future urban mobility and urban transportation system must take account of policies aimed at reaching the EU's ambitious CO₂ reduction targets of '20-20-20'), urban sprawl, increasing demand for mobility (mainly satisfied by private car ownership) are common to many European cities. The need to solve these problems has become even more crucial to maintaining a high quality of life in a sustainable way and competitive, smooth mobility of people and goods. Urban mobility is crucially embedded in the daily life of EU citizens and is thus of primary concern for them. This was shown by a survey conducted by Eurobarometer in July 2007, in which 90% of Europeans said that the traffic situation in their area should be improved (Eurobarometer, 2007).

'More sustainable' is thus the main goal that underpins current approaches to and solutions for future mobility. Sustainability should lie at the heart of all policies and strategies for achieving a more sustainable transport system in environmental (CO₂, air pollution, noise) and competitiveness (congestion) terms, while also addressing social concerns. This is why the concept of sustainability goes far beyond the need to respond by managing road traffic flows and their impacts, because it should also address, for instance, the cost of mobility in relation to social exclusion, economic and social cohesion, and the demographic changes that will shape the structure of European cities in the future.

Making urban mobility more accessible, efficient, environmentally friendly and inclusive is not easy. It has to consider all the factors that depend on how urban transport itself develops in the future, and the directions in which it will move based on technological

progress, demographic changes, socioeconomic and environmental development and the effects they will generate.

1.2. EU initiatives

Based on the background outlined in Section 1.1, and even if local authorities are primarily responsible for urban policies according to the principle of subsidiarity, the European Union has taken an active role since the adoption of the White paper on transport policy (EC, 2001). The purpose of EU action is to offer local authorities specific support for promoting a new culture of urban mobility in which sustainable, affordable urban transportation is a key to making cities dynamic and vibrant. This also explains why EU support has taken several forms, through a combination of policy interventions and guidance support.

At a policy level, the Green paper 'Towards a new culture of urban mobility' (EC, 2007a) and the Action plan on urban mobility (EC, 2009) both represent a cornerstone by putting in place a comprehensive endeavour for addressing the different dimensions of urban mobility. With these two documents, the EC acknowledges the differences that exist between European cities – even though they all face common and similar challenges – and stresses the need to implement an approach that should be as integrated as possible and should optimise the use of all modes of transport (concept of co-modality).

The EC has been backed by the other EU institutions. The resolution on the Green paper (EP, 2008a) and the own-initiative report on the Action Plan on urban mobility (EP, 2008b) adopted by the European Parliament (EP), the two opinions adopted by the European Economic and Social Committee (EESC) (EESC, 2008) and the Committee of the Regions (CoR) (CoR, 2008) respectively, and the discussion held by the Council confirm that urban transport and urban mobility should be fully part of the European transport system, and that the EU objectives set in the cohesion, environment, health and economic policies are not achievable if urban mobility is not appropriately taken into account.

Based on existing policy developments, the EC has also undertaken a number of guidance initiatives. Of these, CIVITAS (CItY-VITAlity-Sustainability Initiative) is probably the best-known tool for helping European cities implement better integrated sustainable urban transport strategies. Other initiatives (such as EPOMM, ELTIS) have come in the form of platforms for exchanging best practice, databases and guideline services. The added value of all these tools is that they provide local authorities with an opportunity to be (i) definitely and successfully involved, and (ii) financially supported when they participate in demonstration projects and campaigns.

1.3. This briefing note

The Committee on Transport and Tourism of the European Parliament has requested briefing notes on three policy issues that play a key role in the discussion on sustainable mobility at urban level. These three policies (sustainable urban transport plans, mobility management and the promotion of cycling) will be examined in three notes, with a focus on current challenges and future opportunities. Table 1 summarises the main features of each note.

Table 1: Main features of SUTPs, Mobility Management and Cycling

Topic	Timing	Approach	Main features	EU role
Sustainable Urban Transport Plans (SUTPs)	- Medium and long term	- Strategic (long-term vision of sustainable mobility)	<ul style="list-style-type: none"> - Consistency between SUTPs' objectives and broader national strategies in the reduction of mobility problems - Monitoring is a crucial step in all plans in order to check the progress status of the targets and the measures implemented - Integration, which is intended both horizontally (between policies) and vertically (between government levels). This is a pre-requisite, from which objectives, targets and measures are later derived - Public involvement and acceptance is key to success 	<i>(Common to all topics)</i> <ul style="list-style-type: none"> - Guidance - Policy development - Financial support - Dissemination and exchange of best practice - Policy mainstreaming of sustainable mobility concepts into planning processes - Policy support for developing sustainable mobility targets (e.g. reduction of road accident casualties and injuries including vulnerable road users, reduction of pollutant emissions, reduction of noise levels in urban areas from road traffic)
Mobility management	- Short to medium term	- Operational (better and more efficient coordination between existing transport modes and services)	<ul style="list-style-type: none"> - Use of mainly 'soft' measures - Integration of 'soft' and 'hard' measures - Technological Innovation 	
Cycling	- Short to medium term	- Operational (integration with sustainable mobility policies and demand Mobility Management)	<ul style="list-style-type: none"> - Implementation of 'hard' measures in the medium term and of 'soft' measures in the short term - Improvement of cyclists' safety 	

This briefing note analyses the concept of Mobility Management, the main goal of which is to reduce dependency on private cars and reduce the need for travel. Mobility Management schemes and strategies encompass a variety of measures for dealing with urban traffic and congestion problems. The note focuses on three main types of 'soft measure': car sharing, car pooling and travel plans.

Importantly, pricing schemes (including access and parking restrictions) are not covered in the analysis although they are important instruments within the framework of Mobility Management and could be used in combination with the soft measures. They both aim at influencing mobility behaviour and may complement each other: while soft measures try to persuade people to reduce car use by optimising their journeys, pricing schemes impact on behaviour by restricting and/or regulating access (e.g. congestion charging schemes, environmental zones, city tolls, parking schemes).

It must also be considered that setting up a soft measure is less complex and requires a lower level of investment and regulation in comparison to pricing schemes which, although more effective, have stronger implications in terms of public acceptability. Acceptability can be a major barrier to the implementation of pricing schemes, as demonstrated by a number of studies (Jones, 1991; Thorpe et al., 2000; AFFORD, 2001; Ison, 2000). However, there is also some research (Jaensirisak et al., 2005) that has found that a public 'no' to road user charges is not inevitable, since acceptability depends on a set of factors (demographic, attitudinal, and political factors, as well as public involvement), which may change user perceptions. A different example is given by a field experiment conducted in Stockholm where a congestion charge trial was introduced in 2006. Results show that acceptance of the congestion charge was higher after the trial as opposed to opinions about its acceptability before the trial,³ showing that acceptance of the congestion charge had increased because people experienced its positive consequences (Schuitemaa et al., 2010).

For each measure – car sharing, car pooling and travel plans – the note presents the main characteristics and some examples from selected European cities or Member States, and summarises some of the main future challenges for these measures.

Finally, the integration of Mobility Management measures – and of these measures with pricing schemes – is the key tool for the future. The note therefore stresses the central role of Mobility Centres with their goal of promoting, enhancing and facilitating access to transport services.

1.4. The structure of this briefing note

After this introduction, the note has four chapters. Chapter Two presents the concept of Mobility Management, highlighting its main instruments and institutional framework. Chapter Three illustrates relevant current experiences of mobility: car sharing, car pooling, travel plans and Mobility Centres. It describes the concepts, benefits and problems of each soft measure, reviews case studies and analyses the main potential challenges. Chapter Four concludes with comments based on the analyses of the previous chapters, integrating these with some recommendations about the future potential role of the EU in this field. Finally, the four annexes attached to this note address the following issues: examples of car sharing and car pooling in Europe (one annex each); an overview of recent EU research projects and travel plan schemes; and a description of the integrated approach implemented in Bremen.

³ Respondents, who completed a questionnaire before and after the trial, believed the charge had more positive consequences (fewer parking problems, less congestion, and pollution) and fewer negative consequences (financial) after the trial than they had expected beforehand.

2. MOBILITY MANAGEMENT: CONCEPTS AND CURRENT PROBLEMS

KEY FINDINGS

- Mobility Management may be a valuable solution for dealing with the traffic and environmental problems caused by an increase in car use at the urban level.
- Mobility Management is a demand-orientated approach to passenger transport that involves a set of tools for supporting and encouraging a change in travellers' attitudes and travel behaviours in relation to sustainable modes of transport.
- Soft measures consist of initiatives that address behavioural and economic motivations for travel choice. They refer to a variety of actions and services that provide alternatives to using a private car.

Mobility Management is an important instrument for dealing with urban traffic and congestion problems. This Chapter provides a definition of the concept, highlighting the concept of 'soft' measures that it encompasses and the institutional framework in which it operates.

2.1 The concept

According to the EU-funded MAX project (Successful Travel Awareness Campaigns and Mobility Management Strategies, MAX 2006), Mobility Management (also called Transport Demand Management – TDM) may be defined as 'a concept 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'.

The purpose of Mobility Management is to organise urban mobility more efficiently with an emphasis on sustainable practices. The central idea is to promote a modal shift in favour of more sustainable transport modes, which may be a valid alternative to car ownership, the levels of which have steadily grown across Europe from 1995 to 2007, as described in Box 1 and illustrated in Figure 1.

Following the above definition, two main features of Mobility Management are worthy of note: change in travel behaviour and integration.

A change in travel behaviour and attitudes is regarded as crucial for successful Mobility Management schemes. This means that the existing citizens' and organisations' mobility needs shall be met consistent with the achievement of important sustainability-related goals, including environmental integrity, social equity and economic efficiency.

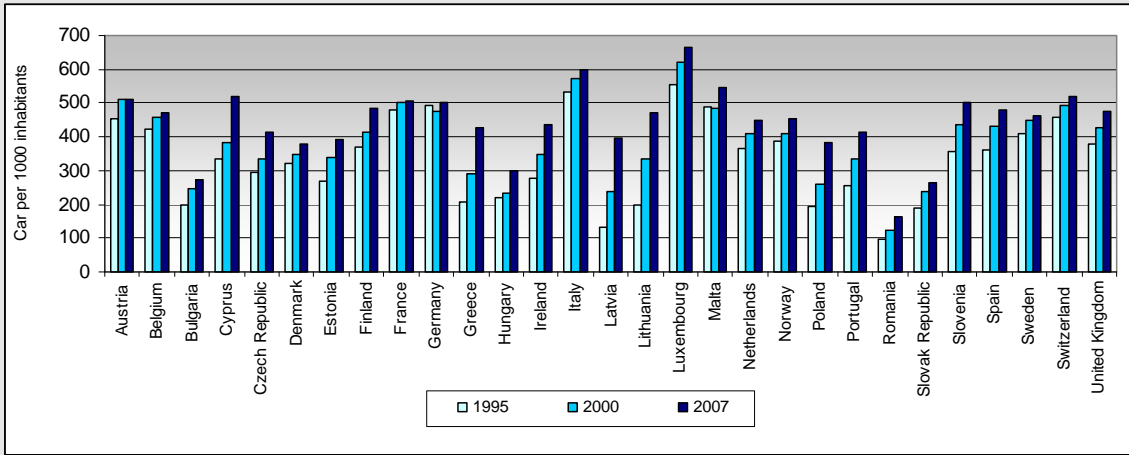
Box 1: Car ownership rates and modal split in Europe

Around 80% of European citizens live in an urban environment. For their mobility, they daily share the same space and the same infrastructure. Their mobility accounts for 40% of all CO₂ emissions of road transport and up to 70% of other pollutants from transport.

European cities are increasingly facing problems caused by transport and road traffic. Therefore, the issue is how to enhance mobility while also reducing congestion, accidents and pollution, and this is a challenge common to all major cities in Europe.

As illustrated in Figure 1, car ownership levels have increased considerably across Europe, especially in central and eastern European Member States, which are now approaching a level of car ownership similar to that of western European countries.

Figure 1: Passenger cars per thousand people in Europe



Source: DG TREN, 2009

The dominance of private cars clearly has negative environmental impacts. For instance, passenger transport strongly contributes to air and noise pollution, fragmentation of habitat and greenhouse gas emissions.

The growth in car use results not only from a growth in the number of trips, but also from an increase in the length of the average trip, which is still growing in most urban areas. On the other hand, the market share of public transport has been decreasing in most urban areas. Here, as public transport improves, there is an unintended effect, whereby public transport attracts pedestrians and cyclists. The modal shift from private car to public transport is often rather low and public transport measures are not very successful in reducing car use.

More specifically, this should lead to:

- encouraging a change of attitude and behaviour in favour of a greater use of sustainable transport modes like public transport, collective transport, walking, cycling and intermodal combinations;
- improving sustainable access for all people and organisations by strengthening the conditions for sustainable modes;
- satisfying mobility needs by using existing transport more efficiently and in a more integrated way;
- reducing traffic growth by limiting the number and length of motorised vehicle trips and the need for such trips;
- improving co-operation between transport modes and facilitating the interconnection and interoperability of existing transport networks;
- making the transport system more efficient economically.

Because soft measures aim at behavioural change, it is very important that the relationship between acceptability and effectiveness is taken into account when developing policies aimed at behavioural change (OECD, 2004).

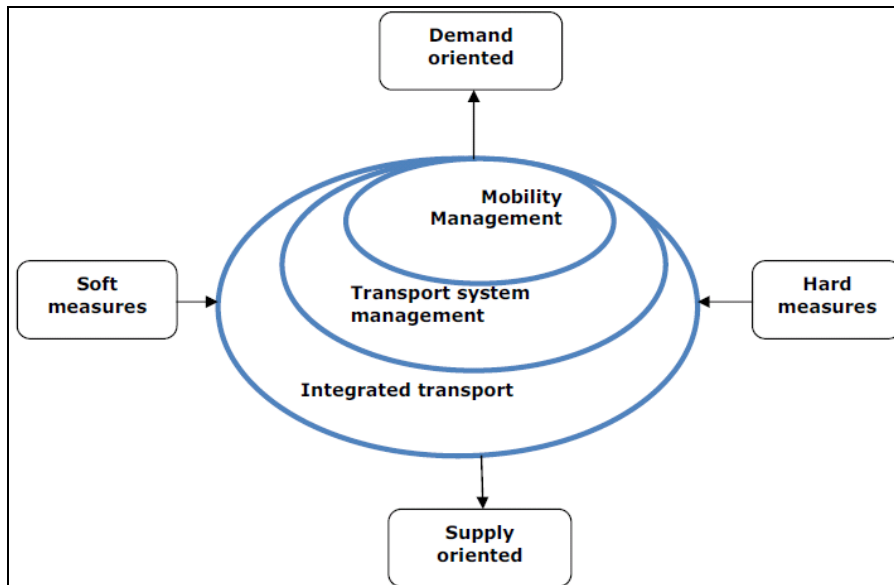
Behaviour has predominantly a habitual nature (as is the case with transport), which may make it difficult to convince people to change their behaviour. An analysis of (i) the context where the behaviour takes place, (ii) the degree of acceptability of a certain measure and (iii) to what extent a change in behaviour may be influenced, are all prerequisites for designing effective interventions. A policy that calls for only minor changes in behaviour or even fits in with present behaviour is more easily accepted than a policy which aims at massive changes (OECD, 2004).

Therefore, it is essential that practical interventions are attuned to diagnoses of the behaviour of target groups by answering the following questions:

- why is behavioural change necessary?
- what is the present behaviour, and what is the desired new behaviour?
- what the target groups have to change their behaviour?
- at which specific moment is change the most likely?
- how much change is necessary for a measure to be effective?
- who is the best actor to stimulate the change?

With regard to integration, Mobility Management should be seen as a part of the overall planning and policy process, as well as a constructive component for organising mobility at the local level, as illustrated by Figure 2.

Figure 2: Levels of the integrated transport planning process



Source: TRT Elaboration based on Raeva, 2007

Mobility Management combines various elements of transport management into an integrated approach to increase travel options by giving users the possibility of choosing the most efficient mode of transport for a specific trip. Looking specifically at car use, this means that Mobility Management does not intend to eliminate car travel, but rather, to considerably reduce the (still increasing) amount of personal vehicle travel, particularly in urban areas.

In summary, Mobility Management is a demand-orientated approach to passenger transport that involves a set of tools for supporting and encouraging a change in travellers' attitudes and travel behaviour with regard to sustainable modes of transport. These tools are usually based on information, organisation, and co-ordination, and require promotion and combination in a package of voluntary actions to reduce dependency on private cars and encourage the use of other transport modes.

Table 2 summarises the main features of the analysis conducted in this note.

Table 2: Mobility Management features

Timing	Approach	Objectives	Implementation levels
Short term	Transport demand-orientated mechanism applicable as: <ul style="list-style-type: none"> - a strategic demand management tool; - a site-specific (or area-specific) measure 	Reducing demand for and use of cars by: <ul style="list-style-type: none"> - increasing attractiveness and practicality of other transport modes - changing travellers' attitudes and behaviour 	<ul style="list-style-type: none"> - Management level (role of Mobility Centre) - Site level (role of Mobility Office, Mobility Manager and Mobility coordinator) - Intermediary role played by Mobility Consultant)

2.2 Soft measures

The core feature of Mobility Management is its use of ‘soft’ measures. This term is used to distinguish these initiatives from hard measures, which refers to physical improvements to transport infrastructure or operations, traffic engineering, and control of road space. ‘Soft’ also refers to the nature of the travellers’ response, with initiatives often addressing behavioural and economic motivations for travel choice. The emphasis is on management and marketing activities rather than operations and investment.

Furthermore, in comparison with hard measures, soft measures do not necessarily require new infrastructure and substantial financial investment, though they also have the potential to enhance the effectiveness of the former within urban transport. Table 3 illustrates the main features of soft and hard measures.

Table 3: Soft and hard measures

Soft measures	Hard measures
Lower level of investment needed	Higher level of investment needed
Short-term implementation	Medium to long term implementation
More easily reversible	More difficult and costly to reverse
Planned and integrated in the mobility plan	Planned and integrated in the mobility plan

Soft measures cover several actions and services that are regarded as an alternative to private car use: cycling,⁴ car sharing and car pooling, and even travel plans⁵ are good examples. Nevertheless, they are sometimes criticised for placing unfair restrictions on vehicle travel, but this is not necessarily true. Without careful Mobility Management, car traffic will regulate itself in an inefficient way through congestion, parking problems and crash risk. A good Mobility Management plan rations road and parking space more efficiently, and improves travel options, ultimately making everybody better off, including those who shift to alternative modes and those who continue to drive.

After in-depth analysis of the situation and with a well-designed strategy, soft measures may be able to shift behaviours. Often a combination of hard and soft measures is also useful, taking into account different behaviour processes.

However, changing behaviour in the context of transport requires an approach that considers the needs and expectations of the people involved. Then, Mobility Management services like information, promotion and education may represent the most suitable solutions, as they may be adapted to the particular users’ needs and mobility demands.

⁴ Cycling will be analysed separately. See the note ‘The promotion of cycling’ which gives an overview of the problems and challenges for cycling.

⁵ The purpose of travel plans is to increase the average occupancy of a passenger car at urban level, especially in peak hours.

2.3 Mobility Management instruments

The role played by Mobility Management must be analysed and understood within the context of some awareness of its institutional framework.

Firstly, to implement a proper mobility management strategy, establishing a solid partnership among all the relevant stakeholders (including transport operators, community groups, local authorities and local businesses) is of the utmost importance. This is especially applicable when setting up of a Mobility Centre, which works as a common platform for coordinating mobility measures and services while also securing communication and information flows.

Institutionally, three different organisational levels exist within Mobility Management (see Figure 3):

- a **policy level**: where the Mobility Management process is initiated and then supported;
- a **management level**: where Mobility Management is organised in Mobility Offices and Mobility Centres and by Mobility Consultants;
- a **user level**: where Mobility Management is in direct contact with the end-user. This level includes the implementation of all the mobility services that are offered to end users.

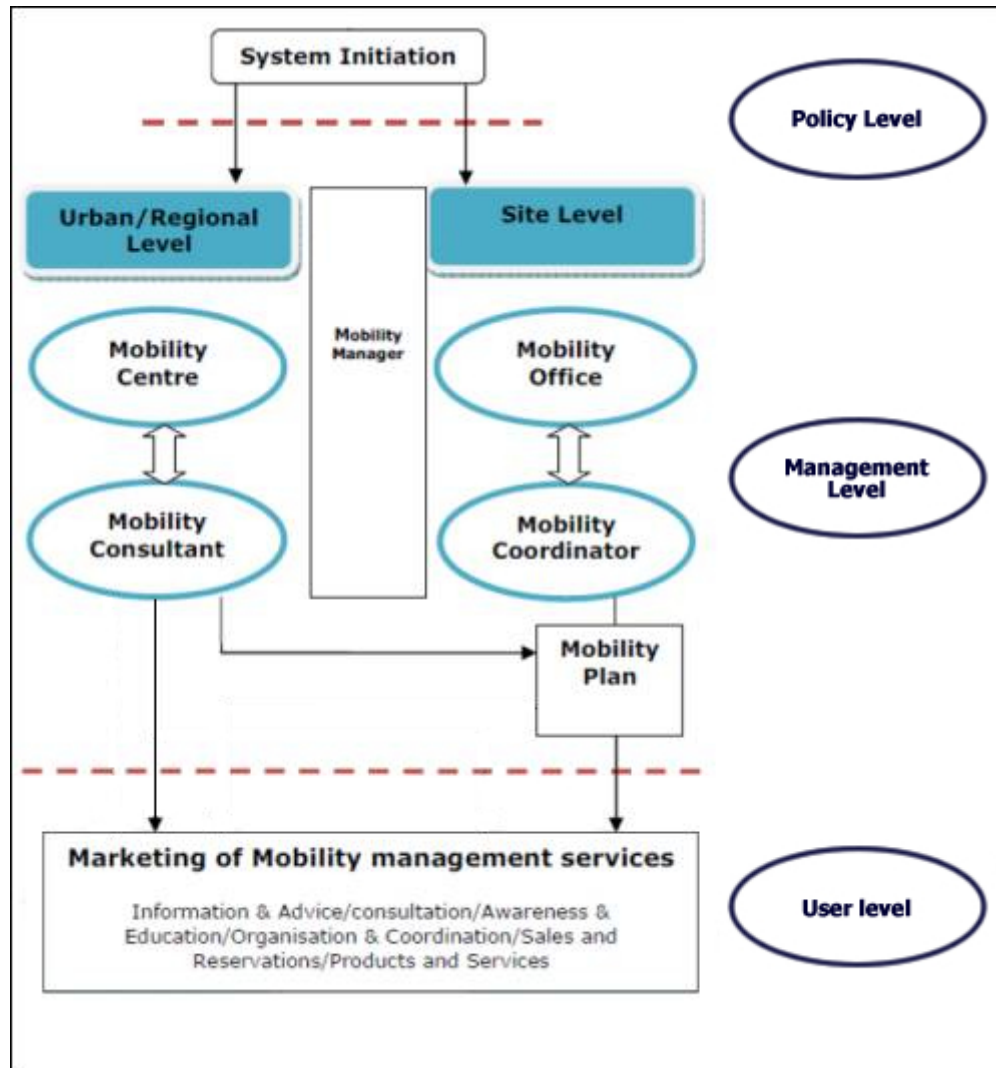
Importantly, these levels are translated into the mobility plan, a comprehensive guidance document that indicates how a Mobility Management scheme for a specific site should be implemented.

A mobility plan is based on an analysis of a site's travel patterns and transport situation, which leads to the elaboration of specific concrete goals, setting of a time plan and detailing of exact measures and methods of implementation. A Mobility Plan:

- establishes the objectives to be reached and the measures to be taken;
- identifies how the measures will be put into practice and who is responsible for their implementation within a certain period of time;
- sets the final framework for intervention;
- provides a base for later evaluation.

It may apply to all measures that support the reduction of motorised vehicle usage at site level, or, alternatively, may be limited to certain trip purposes, such as a company's visitor or commuter traffic.

Moreover, and from a more organisational perspective, these levels also envisage roles for the various technical and professional skills of the Mobility Managers, Consultants and Coordinators.

Figure 3: Organisational levels of Mobility Management


Source: TRT Elaboration based on Raeva, 2007

At policy level, as already pointed out in the introductory Chapter, the European Union has acknowledged the importance of Mobility Management and has taken action through both legislative and guidance intervention and financial support.

At present, there are no financial or legal frameworks in terms of urban mobility and transport management measures at national level that could serve as a reference tool. Sustainable Urban Transport Plans (SUTPs) are amongst the most promising tools for setting up coherent urban mobility strategies and policies within a framework of adequate financial resources and appropriate administrative and regulatory mechanisms. They offer a combination of long-term political vision on urban mobility with shorter-term Mobility Management measures. For more details, see the briefing note about SUTPs.

At management level, the Mobility Centre is the unit responsible for managing mobility strategies locally or regionally. This level is where mobility services are initiated, organised and provided.

At site level, mobility services are offered to site users only and not to the general public. A mobility office is therefore not the same as a mobility centre and its form may vary from simple help desks in a company (accessible to employees by phone) to a 'drop-in' advice centre with its own room (MOST, 2003).

The various Mobility Management activities and tasks are coordinated by the Mobility Manager, who represents the key point of reference and link between the policy and the operational levels in the implementation of Mobility Management. The Mobility Manager is then responsible for the strategic development, implementation and promotion of the Mobility Management scheme.

Within the Mobility Centres, an intermediary role is fulfilled by the Mobility Consultant, who is in charge of getting into contact with clients who are not yet implementing Mobility Management in order to offer them the necessary support and assistance by providing information about the implementation and the expected positive outcomes that will flow from a mobility plan. Finally, the Mobility Consultant is also in charge of organising awareness campaigns and undertaking mobility education initiatives.

At the site level, the work of the Mobility Office is further supported by a Mobility Coordinator, whose main tasks involve practical work at the site (e.g. surveying site users to develop specific services), so as to ensure support and coordination among target groups, stakeholders, and the local authority.

3. CURRENT EXPERIENCES

KEY FINDINGS

- Car sharing, car pooling and travel plans represent valid alternatives for achieving more sustainable mobility.
- Major features of **car sharing** are: accessibility, affordability, convenience and reliability. However, integration with other transport modes and integration of pricing systems are the main challenges to its full development.
- **Car pooling** consists of initiatives for sharing journeys. Trip chains and the lack of appropriate legislation are the main limitations on the real development of car pooling.
- **Travel plans** are designed by a workplace, school or other organisation to encourage safe, healthy and sustainable travel options. The main challenge for the development of travel plans is to achieve greater use and integration of other transport modes (i.e. walking and cycling) with private car use for reaching schools or workplaces.
- **Mobility centres** play an essential role in promoting sustainable mobility actions and providing information to promote communal change in behaviour.
- The case studies for the cities of Graz (Austria) and Münster (Germany) are significant examples of the important role mobility centres may have in addressing urban mobility concerns.
- The city of Bremen provides an interesting case study, where the local administration has succeeded in introducing an **integrated approach** for achieving more sustainable mobility.

This Chapter analyses the most relevant Mobility Management measures currently implemented: car sharing, car pooling and travel plans. It describes the concepts, benefits and problems of each measure, reviews the case studies and analyses the main potential challenges.

3.1 Car sharing

3.1.1 Characteristics

Car sharing⁶ refers to vehicle rental services intended to substitute for private vehicle ownership. It makes the occasional use of a vehicle affordable, while providing an incentive to minimise driving and rely on alternative travel options as much as possible.

⁶ In the United Kingdom the term 'car clubs' is used to indicate car sharing services, while 'car sharing' refers to a car pooling service.

Major features of car sharing are as follows:

- **accessibility:** car sharing should be located in or near residential neighbourhoods;
- **affordability:** services should be available at reasonable rates, and suitable for short trips;
- **convenience:** vehicles should be easy to check in and out at any time;
- **reliability:** vehicles should usually be available and have minimal mechanical failures.

Car sharing enables the rental and use of a vehicle for short periods (less than an hour). The innovation of this system is that clients can use a car when they wish and do not need to own a car. Clients must be registered in a car sharing company system and pay a subscription. In turn, the car sharing company offers a vehicle fleet that is generally available 24 hours a day, seven days a week. Cars can be booked either by phone or by Internet.

Car sharing differs from traditional car rental in that:

- it is not limited by office hours;
- reservation, pick-up, and return is all self-service;
- vehicles can be rented by the hour as well as by the day;
- users are members and have been pre-approved to drive (background driving checks have been performed and a payment mechanism has been established);
- vehicle locations are distributed throughout the service area, and often located close to public transport;
- insurance and fuel costs are included in the rates;
- vehicles are serviced (cleaned, petrol topped up) after each use.

The advantages of car sharing may be considered from a twofold perspective: users and sustainability.

For the users, the greatest advantage of car sharing consists of it being a valid alternative to owning a private car or, in most cases, to owning multiple cars for households with more than one driver. As well as reducing the number of vehicles, it reduces some of the costs that the owning of vehicles generates and that are independent of how much the car is driven (such as original purchase, insurance, registration and some maintenance).

In terms of sustainability, car sharing reduces car ownership. The impact is twofold: directly, it reduces the demand for parking; indirectly, it decreases the cost of transport. The fact that only a certain number of cars can be in use at the same time may reduce pollution and traffic congestion at peak hours. This provides a cost incentive to drive less and also increases the attractiveness of public transport.

Even if the advantages are clear, the potential of car sharing has not been fully exploited as yet, but more and more Europeans are reconsidering car use in the light of increasing maintenance and energy costs.

Table 4: Users of car sharing around the world (2007)

Country	Number of users	Users/100 000 population
United States	134 000	45
Germany	100 000	122
Switzerland	76 000	972
United Kingdom	29 000	48
Canada	22 000	66
Netherlands	20 000	121
Austria	16 000	192
Italy	9 500	16
Singapore	8 000	178
Belgium	6 000	57
France	4 400	7
Denmark	4 000	73
Japan	3 000	2
Spain	1 400	3

Source: CERTU, 2008

A number of factors may hamper the diffusion of car sharing. In particular, the availability and easy accessibility of car sharing areas from the workplace or home is crucial. This, however, impacts on the availability of adequate parking areas and facilities, and therefore on the overall parking policy adopted by the local authority which, in turn, is also strictly dependent upon the diffusion of the car sharing service.

Obviously, there are possibilities of on-street parking, parking with free or reduced costs or dedicated park zones, as shown in Table 5. Moreover, in many cities, shared cars may enter the areas designated free from regular traffic as zones of commercial activity.

Table 5: Overview of international car sharing parking policies

	On-Street Parking	Free / Reduced Cost	Dedicated Parking Zones
Asia			
Japan	No		
Singapore	No		
Australia			
Australia	Yes	Free	Yes
Europe			
Austria	Yes		Yes
Belgium	Yes		Yes
France	No		
Germany	Yes	Free and Reduced	
Italy	Yes	Free	Yes
Netherlands	Yes	Free and Reduced	
Spain	No		
Sweden	Yes	Free and Reduced	
Switzerland	No		
UK	Yes	Free and Reduced	Yes
North America			
Canada	Yes	Free	
US	Yes	Free and Reduced	Yes

Source: Shaheen, S. A., Cohen, A. P., Roberts, J. D., 2006

3.1.2 Significant case studies

The first car sharing scheme was established in 1986 in Zurich. There has been impressive growth since the late 1980s.

Annex A provides an overview of different schemes in Europe, from **Switzerland**, which must be considered to be a pioneer country, and **Belgium**, which has a nationwide company, to **Germany**, with several regional car sharing providers, to **Italy** and the **UK**, which have a national organisation and some companies. Also worthy of mention are the **Netherlands** and **Spain**, where public transport foundations have implemented car sharing services.

To solve the problem of urban parking space, some experiments have been put in place with positive results: project Car2Go in Ulm, Germany, Austin, Texas and now also in Tel Aviv, Israel (see Box 2).

Box 2: Car2go: rent a car anywhere and anytime

Car2go encompasses the idea of an easy and flexible car sharing service, ideally making a reliable vehicle available at any time, just a few minutes walk away. A user can reserve a car online or by phone. Fifteen minutes before the booking, the user receives an SMS about the exact location of the car. With Car2go, users do not need to return the car to a specific spot but can simply leave the vehicle in a parking space within the city. Car2go is also more convenient: only 19 cents per minute, including all costs for fuel, service, taxes, insurance and maintenance.

With Car2go all cars are connected by a central database that monitors car use, users can pay by bank debit or credit card, and a service team cleans the vehicles on a regular basis and handles all the technical maintenance. This guarantees that every user receives a clean, tidy and undamaged vehicle for every trip. The service team is also responsible for refuelling, because users have no obligation to refuel the car.

3.1.3 Main challenges

The main challenge for the future of car sharing is integrating it with other transport modes: car sharing has the potential to become either a part of the mobility card, or part of an card used to access different mobility services such as public transport and rail or parking services.

Car sharing may be a complementary service to public transport as it may not be fully effective without a good public transport system. Hence, organisations offering innovative mobility services often work with a range of other organisations, particularly providers of traditional public transport. This may represent a way increase car sharing services in the future. For example, the Swiss Mobility car sharing company cooperates with a number of different partners, including local and national public transport operators and car rental companies, as shown in Annex A.1.

Another important challenge is integrating pricing systems between the car sharing card (which gives access and enables payment for the service) and public transport ticket. Mobility Offices can make sure that all transport modes are linked.

Over recent decades, advanced ticketing solutions have developed rapidly in Europe, from the first machine-readable magnetic tickets in the 1980s to today's contactless smartcards, Internet and mobile phone ticketing. Electronic ticketing systems are found in France, Germany, Italy, Norway, Portugal, Poland and Switzerland, among others. These systems are able to count passengers and record their travel behaviour and often offer additional, useful functionalities, such as an 'electronic purse'.

On the other hand, modern urban transport systems are encountering different challenges: passengers expect seamless ticketing, no matter which operator they are using or in which municipality they are boarding the vehicle. Full tariff integration is only possible where a single authority gathers the competencies of all regional and local authorities and operators into one unique entity.

In addition, new mobility services (car sharing, parking and bicycle sharing) need to be integrated into the pricing structures in order to enable seamless travel. In a multimodal and multi-operator environment, intelligent integrated ticketing is a key to user-friendly transport and the fair sharing of revenues between operators.

3.2 Car pooling

3.2.1 Characteristics

Car pooling, also known as ride sharing, is a scheme whereby two or more people who are travelling in the same direction or to the same location share car journeys in a private vehicle.

Car pooling differs from car sharing in that it is based on the concept of sharing the use of the car, instead of sharing the ownership. The main feature of car pooling is the increase in the vehicle occupancy rate, which may lead to more efficient car use.

Car pooling schemes can be divided into two main categories:

- schemes that are available to the public, whereby people (e.g. friends or neighbours) share their journeys, matching their compatible needs in terms of routes and times;
- schemes aimed at employees that allow them to get to and from their workplace and then share their journeys; these schemes are often provided and promoted by a company that wants to encourage car pooling schemes among employees.

Car pooling is a 'win-win' measure, because it enables:

- individuals to save the costs related to car use;
- the community as a whole to benefit from reduced congestion, reduced environmental damage, etc.;
- decision-makers to save costs related to maintenance of, and investments in, infrastructure and services.

Hence, the main advantages of car pooling are:

- economic benefits, since the cost of car use is split among the participating travellers;
- a saving in terms of tiredness and stress, because people typically alternate driving over the day and the week, with a consequent enhancement of concentration and a lower risk of car accidents;
- faster journey times and reduced traffic volumes and congestion;
- a decrease in vehicle emissions, with positive environmental effects.

Car pooling is regarded positively by private companies. This type of scheme makes better use of employee parking, creates a better social climate and a more friendly and talkative atmosphere amongst employees and a less stressful and competitive working environment, with long-term social and psychological benefits.

In terms of factors that may limit the potential development of car pooling, the main aspects to be considered are linked to rigidity in the trip chain. It may not be possible to match people's mobility needs because of different working times, or different routes. Therefore, without designing appropriate incentive schemes, it is likely to be difficult to overcome these barriers and enhance the use of car pooling.

Insurance mechanisms and the consequent legal issues in the case of accidents are another potential problem. In many countries, a prerequisite to success in car pooling is national action to remove obstacles and amend legislation. As an example, the tax status of reimbursements of costs between car poolers may need to be defined and the insurance situation for car pooling clarified.

These two drawbacks could be critical points that may hamper the real development of car pooling.

3.2.2 Significant case studies

In recent years, there has been growing interest in car pooling schemes in European countries. Important developments are occurring in Germany, Belgium, France, Italy and the Netherlands, while in the United States High Occupancy Vehicle (HOV) lanes are a technique that dates back as far as the early 1990s.

Nevertheless, it should be noted that an HOV facility assumes the use of congestion or priority pricing by, for example, allowing vehicles with three or more occupants (3+) to use the facility for free but charging vehicles with two or more occupants (2+) to use the lane, or charging single occupancy vehicles a fee but allowing 2+ carpools to travel for free (Turnbull, 2007). A more detailed explanation of the United States experience is found in Box 3.

As previously mentioned, there are car pooling initiatives in some European countries. The best practices are in Belgium and United Kingdom.

In **Belgium**, nationwide car pooling has been organised since 1978 by the non-profit organisation *Taxistop*. The service began in Flanders, but has since spread to the other two regions, Wallonia and Brussels. *Taxistop* is also a partner of *Cambio*, the Belgian car

sharing provider and its membership amounts to 41 000 members, of whom 11 000 are regular users (2007 data).

Box 3: HOV (High Occupancy Vehicle) lanes

In the United States, to encourage the use of shared cars and reduce car use by single persons, public authorities have encouraged experimentation with HOV (high occupancy vehicle) lanes. Some highways have HOV lanes reserved for vehicles with a driver and one or more passengers. Even if HOV lanes are in non-urban areas, they are useful for dealing with traffic and congestion caused by vehicles entering the city during peak hours.

HOV lanes may be 24-hour lanes or designated only for peak hours, which means other vehicles can use them outside peak hours. Some HOV lanes are built on completely separate roadways from their corresponding general use lanes, some are constructed on parallel roads separated by a concrete barrier, while others are built on grade-separated (i.e. elevated or underground) roadways.

In order to allow more vehicles to use HOV lanes, many HOV lanes are now being changed into HOT (High Occupancy Toll) lanes. These are freeway lanes restricted to a combination of high occupancy vehicles and others willing to pay a toll. HOV or HOT lanes are an incentive for drivers or passengers to find someone who wants to share car travel. They may encourage car pooling: the toll provides an incentive to avoid the toll by forming a three-person car.

HOV lanes are a successful measure that has also spread in **Europe**. Some examples are in Madrid, Amsterdam, Leeds, Linz and Trondheim. An HOV lane is planned for Barcelona.

In 2009 Autostrade per l'Italia, the main motorway operator in Italy, promoted a car pooling scheme on the A8-A9 motorway, which connects Varese, Como and Milan. It is the first initiative in Italy to improve traffic flow and reduce pollution levels. The measures adopted are: (i) lanes dedicated to cars with at least four passengers; (ii) 62% discount on tolls for cars with at least four passengers from Monday to Friday during peak hours; (iii) an Internet platform to organise and share travel, which can also be used by companies.

Liftshare is the largest car share network in the **United Kingdom**. A national provider of car sharing and car pooling services, it offers services for individuals and for 300 companies. In 2007 its website had 200 000 members. The system matches individuals wanting to travel in the same direction so that they can share the journey and the costs. Members simply register their journey and the system automatically lists all potential matches in table and map format. The user then simply sends an automated email to any likely matches and arranges the shared travel.

In these two examples, software and the use of the Internet are without doubt the main feature that has enabled car pooling services to develop. As well as allowing users to organise journeys in a way that best suits their needs, the software makes it possible to overcome problems deriving from the first-time use of the car sharing service. It also guarantees system security by using a password-protected, secure information database.

A more detailed description of these providers and the services they offer is provided in Annex A.2

3.2.3 Main challenges

The software used by the car pooling schemes is crucial to the development of these initiatives. It can be used to ensure safety checks (see Box 4), because security and trust are the most important factors in the success of a car pooling service.

Box 4: Safety checks on car pooling services in Germany

Mitfahrzentrale, the German car pooling service, provides a 'safety check'. Passengers can send an email or telephone the driver to arrange the pick-up and drop-off details. They are encouraged to share the driver's phone number and personal data with others. Moreover, passengers and drivers may write reviews and testimonials about each other, to make knowledge about drivers and passengers available. And finally, users can validate their identity card by fax in a photo ID card, which gives them a 'safe user' status.

It is also possible to create a link to a car pooling scheme in a social network: people may have met already or may suggest to friends a person who can offer or wants to find a seat in a car for a journey, to prevent security and safety problems.

Mobile telephony provides another technological option. Dynamic car pooling, also known as dynamic ride sharing, is a specific and flexible service. It is a real time network service and it has particular features:

- the use of mobile telephones for placing carpooling requests and offers through a data service;
- instant automatic matching of rides through a network service.

Dynamic car pooling differs from the traditional service in two important ways. The first major difference is how the traveller's schedule is handled. Traditional systems assume that the traveller has a fixed schedule and a fixed origin and destination. A dynamic system considers each trip individually and must be able to accommodate trips to arbitrary points at arbitrary times by matching users' individual trips without regard to trip purpose. The second major difference is that dynamic car pooling systems must provide matched information to the user quickly in order to accommodate imminent (same day) travel as well as long-term (subsequent days or weeks) trips.

However, the main impediment to this type of car pooling is the need to make large investments in new software, which explains why the few experiments so far were not a success. There is a critical need to establish partnerships (between car pooling companies, local authorities, mobile telephone companies and public transport operators, for example) to finance the service and the technologies.

Pilot projects were implemented in 2004 at Amsterdam airport, in 2006 at Frankfurt airport, and in 2008 in Ile-de-France. All provide mobile telephone services for users, a website and a call centre and are funded by sponsors (a mobile phone company, the

German Ministry for Research and Transport and the French Environment and Energy Management Agency respectively).

As in the case of car sharing schemes, the Mobility Centre could play an important informative and coordinating role.

3.3 Travel plans

3.3.1 Characteristics

A travel plan is a management strategy designed by a workplace, school or other organisation to encourage safe, healthy and sustainable travel options. It is a planning instrument aimed at reducing car use and encouraging commuters to make greater use of other transport modes like public transport, cycling, car sharing and car pooling. It may also promote flexible working practices such as remote access and home working.

Travel plans have followed a structured development process:

- **setup:** the decision to develop and implement a travel plan should be a formal commitment at the highest level of the organisation, often with the assistance of another organisation such as the local authority;
- **research:** a travel plan may address the organisation's specific travel issues and hence involves people and their ideas to improve local travel choices. Research tools include surveys of staff and, in the case of schools, of students and their parents;
- **action planning:** the travel plan is developed and approved, with a set of priority actions, deadlines and costs;
- **implementation and monitoring:** implementation begins. It is useful to schedule regular reviews of travel behaviour through surveys, monitoring of progress in implementing the travel plan, and an ongoing process for considering new ideas and improvements.

Travel plans may offer real benefits not only to the company and its employees, but also to the external environment (people and community). Travel plans may help relieve local parking or congestion problems, or improve public transport connections across the area. They may also reduce stress on employees through reducing delays or providing the opportunity to cut their travel commitments by working from home on occasion.

Travel plans are therefore important for: supporting greater choice of travel mode; promoting and achieving access by sustainable modes; responding to the growing concern about environmental issues, congestion and pollution; promoting a partnership between the authorities and the entities developing the travel plans.

3.3.2 Significant case studies

The travel plan concept is becoming widespread in Europe. An increasing number of public institutions and private companies are implementing travel schemes and many others are considering their introduction.

A common problem, however, is that many institutions do not have the expertise that is required to develop such a plan. So far, EC funded research projects have contributed the most to facilitating the introduction of such plans, by supporting the sharing of experiences

and best practice and providing guidance. Three projects, **MOVE**, **MAX** and **CIVITAS**, merit particular attention. Their purpose is to encourage various forms of travel plan (to work or school) by promoting car sharing and car pooling as well as other innovative forms of travel plan, as shown in detail in Annex A.3.

At national level, a valuable example is offered by the United Kingdom, where the Department for Transport (DfT) produces guidance (e.g. *Good Practice Guidelines*, DfT 2009) for employers to assist them in drafting and implementing travel plans. The DfT also promotes initiatives that favour the creation of ad hoc associations, like ACT TravelWise and ATOC for workplace travel plans and the School Travel Adviser Toolkit and School Life for school travel plans.

Finally, thanks to the implementation of travel plans, some UK companies (e.g. Orange, Plymouth Hospital, Nottingham City Hospital, University of Bristol) have achieved an average reduction of 18% in the proportion of car based commuter journeys, so doubling travel by other modes (Cairns, S., et al, 2004).

3.3.3 Main challenges

The main challenge for a travel plan is to increase the use of other transport modes (i.e. walking and cycling) rather than simply reduce the use of private cars for transport to work or school.

At present, there are 'Cycle to Work' campaigns that promote cycling for commuting in Austria, Denmark, Germany and the United Kingdom. The UK campaign is the most efficient cycle to work scheme, as it was introduced by the 1999 Finance Act as an annual tax exemption. The UK also has a 'Cycle to School' campaign.

A **walking bus** is a group of schoolchildren who walk to school chaperoned by two adults (a 'driver' leads and a 'conductor' follows), in much the same way a school bus would drive them to school. Like a traditional bus, walking buses have a fixed route with designated 'bus stops' and 'pick up times' at which they pick up children.

The concept of the walking bus was introduced in the United Kingdom in 1998 and was first used by students of Wheatfields Junior School in St Albans.

Walking Buses have remained popular in the UK, where the 'Walk to School' campaign promotes Walk to School Week every year and also the WoW (Walk on Wednesday or Walk Once a Week) scheme, a simple scheme that enables schools and local authorities to promote walking to school throughout the entire school year. This initiative is gaining popularity elsewhere in Europe and in the United States. In Europe, the same project is known in France as **Pédibus**, in Germany as **Schulbus zu Fuß** and in Italy as **Piedibus**, while at international level, there are organisations like the International Walk to School, which involves 50 countries in the world and gives children, parents and teachers an opportunity to be part of a global event as they celebrate the many benefits of walking.

Examples of walk to school activities are:

- 'Walking Wednesdays' to encourage walking one day a week and potentially extend the event to a month or a year long activity;
- the development of walking themes for each day of the week: a bright, highly visible colours day, a 'walking hat' day, bring a healthy lunch day, etc;

- competitions that reward classes with the most walkers.

Box 5: Cycling to work and school in the United Kingdom

With the goal of promoting healthier journeys to work and reducing environmental pollution, the 1999 Finance Act introduced an annual **tax exemption**, which allows employers to lend cycles and cycling safety equipment to employees as a tax-free benefit. Eligible equipment includes bicycles and cyclists' safety equipment

Employers of all sizes across the public, private and voluntary sectors can implement a tax exempt loan scheme for their employees. For an employee, the VAT-free price of the bike is repaid via salary deductions over an agreed period (usually between 12 and 18 months). The employee does not pay tax or national insurance on the income deducted, which provides a further saving. After the agreed period, the employee will usually have the option of purchasing the bike at a 'fair market price' (between 2.5% and 10% of its original cost). The employers who purchase cycles and cycling safety equipment for loan to their employees can treat the cost as capital expenditure and claim capital allowances in the normal manner.

Many cycle to work schemes have started in the UK since 1999. They provide a wide range of services, where employees may choose a bicycle to go to work, and employers may provide the employees with bicycles to use for commuting and other purposes as a tax exempt benefit in kind. Some UK organisations are **Cyclescheme**, **CycleToWorkNow**, **Get Cycling** and **London Cycling Campaign**. They promote cycling of all kinds and work for local authorities, health promotion services, regeneration agencies, businesses, schools, universities and the leisure industry.

Cycling England, established in 2005 by the DfT, promotes the growth of cycling in England by championing best practice and channelling funding to partners engaged in training, engineering and marketing projects.

It works with Sustrans, the UK's leading sustainable transport charity, on the project known as **Bike It**. It also works directly with schools who want to increase levels of cycling. It assists schools to make the case for cycling in their school travel plans and supports cycling champions in schools. By involving pupils, teachers and parents, BikeIt aims to increase the level of walking and cycling to school.

3.4 Mobility centres

3.4.1 Characteristics

A Mobility Centre may be considered as the focal point on the supply side, in the sense of cooperation of different transport providers, and for the demand side, in the sense of the integration of different mobility services.

A Mobility Centre concentrates all services and, thus, serves as a platform for data communication and exchange. User access may be via personal visit, phone, fax, e-mail, information terminals and/or on-line services.

Generally, a Mobility Centre covers a set of competencies, such as:

- identifying barriers to mass diffusion of sustainable mobility practices and possible actions for their elimination;
- creating a citizens' support instrument aiming at Mobility Management;
- developing complementary optimised solutions in accordance with passengers' needs and expectations;
- promoting the involvement of mobility agents in a cooperative platform for integrated mobility (public transport operators, authorities etc.);
- equitable provision of access and mobility.

Finally, the structure of a Mobility Centre will vary according to needs and resources: from simple arrangements by some transport associations for example, to more complex forms organised jointly by authorities, public transport companies and others.

3.4.2 Significant case studies

The case studies for the cities of Graz (Austria) and Münster (Germany) represent the first attempt at implementing the concept of mobility centres in Europe. Other Mobility Centres are also developing dynamically, not only in Austria and Germany, but also in other countries, like Italy, the Netherlands, Sweden and Switzerland. Some countries (including the United Kingdom and Belgium) regard mobility centres as a valuable tool for providing information on public transport services.

Both **MobilZentral** in Graz (operational since 1997) and **Mobilé** in Münster (operational since 1998) aim to make urban areas more accessible, with 'information to the users' and 'ticket sales' the core components of the system. Both systems also see a direct role for the local public transport company as a pre-requisite for their successful development. Table 6 provides an overview of the services that are commonly provided by Mobility Centres in Europe.

The German city of **Bremen** provides another interesting case study, which is particularly significant because shows how mobility services can be effectively integrated to achieve the goal of more sustainable mobility.

Bremen's success is due, firstly, to the coordination of the Mobility Management measures (mobility stations, integrated ticketing, car sharing service etc.), and secondly, to the support for these measures from a long-term vision for urban mobility. This has led to the design of a well-balanced package of measures, instead of individual ones. The measures are embedded in an overall institutional framework where mobility needs, priorities, and specific actions have been identified and are constantly updated. Public involvement has also played a key role since it has raised users' awareness and acceptance of alternative transport modes without affecting their sense of mobility freedom.

Table 6: Mobility services

Mobility services	Characteristics	Examples
Information	Includes information on local, regional and national public transport as well as all other sustainable modes	Door-to-door timetables, fare and route information either personally, by phone, fax or Internet; information on walking routes, conditions and fares for car sharing; accessibility guides
Consulting	Comprises tailored in-depth advice for customers, who can be individuals, households, companies, schools, administrations, etc. Also includes surveying the initial situation, assessing alternatives and preparing recommendations	Comparing travel time, costs and the ecological impact of various modes for certain household trip purposes; how to introduce job-tickets or car pooling for companies; preparing a comprehensive mobility plan for a company, administration, shopping centre, etc.
Awareness and education	Includes all activities that draw attention to the existence of sustainable modes and their potential to meet individual mobility needs	Mobility education in kindergartens and schools; publicity campaigns for various modes; activity days (e.g. a car-free day)
Organisation and coordination	Organising new forms of sustainable transport or coordinating and improving existing services	Coordinating scheduling and fares; car pooling matching; special transport for mobility impaired persons; work buses
Sales and reservation	Can be done in person at workplaces or sales desks or through remote access by phone, fax or Internet	Public transport tickets and reservations; booking of car sharing; selling mobility-related products; hotel and tourist information
Products and services	Organising innovative products and services that make using sustainable modes easier and/or more comfortable. It is not the organisation of transport itself, but of the accompanying services	Combined tickets (entrance fee plus public transport to an event); guaranteed ride home for car pooling participants; city-wide delivery service; financial bonuses for users of sustainable transport

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Main lessons learnt

Based on the analysis in this note, the following final conclusions may be drawn. These are complemented by observations that relate to the role that the EU may play in Mobility Management in the future.

- **Accessibility.** Sustainable mobility is a prerequisite for achieving a better quality of life and greater social cohesion. People should have easy access to basic facilities in order to benefit from their work and leisure activities, in a comfortable, safe and healthy environment, minimising their contribution to pollution and congestion.
- **Innovation.** Mobility Management has great potential for fostering innovation. Innovation may concern both services offered to the end users and the technology they are built upon.
- **Integration.** Mobility Management should be based on an integrated approach whereby a package of well-balanced (soft and hard) measures is implemented, rather than single initiatives with a low likelihood of being effective. Sustainable Urban Transport Plans may provide a sound and appropriate framework for such integration.
- **Soft vs hard measures.** In a favourable wider policy context, soft measures may reduce traffic sufficiently effectively to merit serious consideration for an important role in transport strategy for the foreseeable future. Moreover they also have the potential to strengthen the effectiveness of hard measures, to which they are an important complement.
- **Acceptance.** Citizens should be part of the process leading to a Mobility Management strategy. This is fundamental for securing public acceptability of the proposed mobility measures. Planning, infrastructure, innovation and people must co-operate so as not simply to find solutions to urban mobility concerns, but also to define a long-term vision for more sustainable mobility in the future.
- **Main barriers to overcome.** Financial barriers (characterised by limited resources for transport development) and planning/functional/operational barriers have to be considered when designing and implementing a Mobility Management scheme. Planning/functional/operational barriers include: (i) inadequate integration between the various transport modes; (ii) low application of ITS in traffic organisation and management; and (iii) lack of tools and practices to evaluate the progress of current transport management projects.

4.2 What role for the European Union?

Being mindful of the subsidiarity principle,⁷ the EU is in a position to provide a valuable contribution to Mobility Management across European cities. As also mentioned in the note related to SUTPs, the EU should maintain its guidance role in setting up common

⁷ The principle of subsidiarity is intended to ensure that decisions are taken as closely as possible to the citizen and that constant checks are made as to whether action at Community level is justified in the light of the possibilities available at national, regional or local level. Specifically, it is the principle whereby the Union does not take action (except in the areas which fall within its exclusive competence) unless it is more effective than action taken at national, regional or local level. It is closely related to the principles of proportionality and necessity, which require that any action by the Union should not go beyond what is necessary to achieve the objectives of the Treaty (source: http://europa.eu/scadplus/glossary/subsidiarity_en.htm).

frameworks and approaches, where each city may have has the opportunity to select the tools and methodologies that best suit its specific context. In particular, the EU may have a role in mainstreaming Mobility Management policy at local levels.

Developing policy instruments is a core area where more EU intervention will be needed, namely by integrating Mobility Management into the broader planning process. This requires a parallel development in terms of evaluation method, especially from an economic perspective. A common evaluation framework may be proposed.

A major domain where the contribution of the EU may be valuable is the internalisation of external costs. This would promote a level playing field for all transport modes, particularly in order to make those transport modes that may represent a valid alternative to car use more competitive. Apart from congestion charging systems, it would be relevant to explore the use of market-based instruments and economic incentives.

ITS and technical standards are two other areas where EC action may provide added value. In particular, defining and recommending common standards may help foster the compatibility of transport system solutions across Member States. This could also foster further integration of ITS into the planning process.

Finally, it is important that the EU ensures the dissemination of good practice in addition to supporting the exchange of knowledge through existing platforms and initiatives (e.g. EPOMM, ELTIS, European Mobility Week).

Table 7: Levels and actions for EU intervention

Level of intervention	Actions
Policy level	<ul style="list-style-type: none"> - Guidance in the setting of common frameworks and approaches - Policy mainstreaming of Mobility Management at local levels
Technical level	<ul style="list-style-type: none"> - Defining and recommending common technical ICT - Fostering further integration of ITS into the planning process
Financial level	<ul style="list-style-type: none"> - Applying the principle of the internalisation of external costs - Analysis of new market-based instruments and economic incentives besides congestion charging systems for mobility demand management

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ANNEX

A.1 Examples of car sharing schemes in Europe

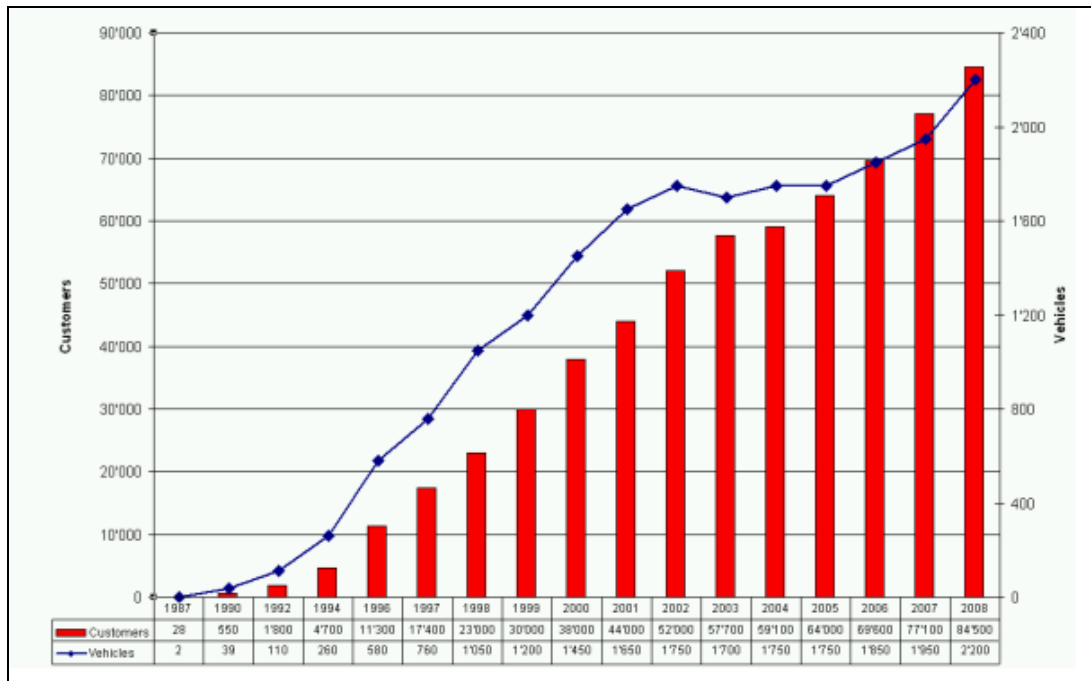
Switzerland is a pioneer in car sharing solutions. Car sharing began there in 1987 with the founding of two operators, the car Sharing cooperative ATG and Share Com in Zürich. The two organisations operated separately for ten years, before merging in 1997 to create Mobility CarSharing with the support of the Swiss government. Mobility CarSharing is generally acknowledged as the world leader and the largest provider of car sharing services in the world.

In 2008, Mobility's membership passed the 84 500 mark. It currently provides more than 2 200 vehicles at 1 150 stations throughout the country. Its service is characterised by strong customer growth, country-wide coverage, a standardised and customer-oriented product range, and extremely easy access to the vehicle fleet by means of the most modern communications technology, including via the Internet.

Reservation details are submitted to the car's on board computer via GSM. A smart card opens the vehicle and unlocks the ignition. After the car is returned to the designated parking space the transaction is concluded via the computer.

Mobility cooperates with different partners, including the Swiss train operators (SBB), the Zurich public transport network (ZVV), the Transports publics de la région Lausannoise (TL), Hertz car rentals, as integration with other modes of transport is seen as a strength of the system. Moreover the partnership between Mobility CarSharing Switzerland and the Deutsche Bahn (DB) enables customers to use the respective provider's CarSharing fleet in the neighbouring country.

Figure 4: Development of Mobility CarSharing from 1997 to 2008



Source: www.mobility.ch

In **Belgium**, after many years of research and planning by a potential operator and various authorities, it was decided to set up a nationwide car sharing scheme. Cambio was founded 2002, starting in all major cities, as part of a sustainable mobility policy.

The purpose was to create a network where a customer in one city can use a shared car in another city. A key strategic decision was to first establish a robust, self-supporting mobility service in its basic form. The use of clean cars, and car sharing for low income groups or in rural areas, are being considered as additional sustainable mobility options, but were deemed too risky in the early stages.

Nowadays, Cambio operates in 14 cities with 108 stations and 284 cars. The partners are Taxistop (which offers mainly car pooling services) and Hertz.

The first car sharing scheme in **Germany** started in Berlin in 1988. Since then various larger car sharing organisations have been formed, operating in more than one city. New forms of cooperation, with local businesses or public transport for example, have also been established. In 2007 there were over 100 000 car sharing members using 2 900 cars in 260 municipalities.

A large number of commercial schemes exist in Germany with many independent companies in almost every city. The best-known organisation is Stattauto Berlin, which was formed in 1998 and was the first scheme to be set up in Germany. It is also considered to be the most profitable existing car sharing organisation. In 2002 it had nearly 270 vehicles and 87 stations in Berlin, Potsdam, Hamburg, Rostock and Schwerin.

There is also DB Carsharing, the car sharing provider of Deutsche Bahn, the German national railway company, which operates in Berlin. There are other major car sharing service providers but none larger than Stattauto. For example, Cambio, which operates in seven cities, including Aachen, Bremen and Köln, claims to have 325 vehicles and 10 000 members, and Stadtmobil, which has services in Dortmund, Duisburg, throughout the Ruhr region and elsewhere in Germany, has more vehicles and a comparable membership. As mentioned above, Cambio has also had an important role in the development of car sharing in Belgium. In addition there are numerous small organisations, often operating in a single locality with a small fleet and less than one hundred members.

Italy defined a national policy some years ago. Car sharing vehicles have special rights and most car sharing organisations in Italy are part of ICS (Iniziativa Car Sharing). ICS offers municipalities and their car sharing operators assistance in: the technical, legal and administrative aspects of designing and setting up a system; providing the technology for operating the service, including on-board computers, call centre equipment, communication links and assistance; managing customer services through a call centre or contact centre; and marketing activities such as communications and promotion.

ICS has worked with many major Italian cities: Bologna, Brescia, Florence, Genoa, Modena, Palermo, Parma, Reggio Emilia, Turin, Venice, Novara, Milan, Rome, Taranto and Padova, as well as the provinces of Milan and Rimini.

In the **United Kingdom**, CarPlus is the national co-ordinating body for car sharing clubs and is run by a non-profit organisation. It is currently supported by the Department for Transport and Transport for London. The objective of CarPlus is to create a national network of car sharing, integrated with other modes of transport and accessible to all people. CarPlus seeks to promote a rethink of car use, in particular the use of car sharing alongside the most sustainable transport modes; to support the development of car sharing

schemes; and to ensure responsible car use that is accessible to all and easy to understand.

In 2007, the service was offered by 42 operators in 37 different cities, with 29 000 members and 1 200 vehicles. There are five car sharing operators in London, each offering different rates and services. The main car sharing operators are WhizzGo, Streetcar and CityCarClub. They were joined in London by the United States operator Zipcar. Fifteen small services also operate in more populated areas and small urban communities. Car clubs range from city-wide schemes run in conjunction with local authorities (e.g. Bristol) to independent clubs with only a few cars based in villages and market towns (e.g. Moorcar in Ashburton, Devon). Some clubs have particular features, for example, Hour Car at Hebden Bridge in West Yorkshire uses vehicles that run on biodiesel; Rusty CarPool in Leicester involves renovation of older vehicles and a scheme set up in a low income area of Manchester forms part of a Local Exchange Trading Scheme, so that vehicles are available to people with little cash.

In the **Netherlands**, the Ministry of Transport began negotiating with mobility providers to work out a suitable framework. The original idea was to develop a 'call a car' concept, where a user could telephone for a car and have one 30-60 minutes later, in order to address the problems of congestion, emissions, noise and lack of land for parking.

In 1995 the Dutch Ministry of Transport funded the creation of the Stichting voor Gedeeld Auto Gebruik (Foundation for Shared Car Use). The Foundation's aim is to communicate car sharing to the public and media, to give advice to entrepreneurs starting car sharing organisations, and to support the authorities in formulating policies on car sharing.

The Foundation is effectively the umbrella organisation for all car sharing organisations in the Netherlands. There are around 20 companies offering car sharing services in various parts of the country, although the type of scheme offered varies. The most significant is Greenwheels, which is based in Rotterdam but has outlets throughout the country.

The Foundation helps lobby and convince local authorities that providing city car clubs with spaces is worthwhile. This can be difficult, as parking spaces are a good source of revenue for local councils, whereas city car clubs are not yet cash generating. In addition, the car club company Greenwheels has worked closely with municipalities and national government for over four years, and now has over 200 kerb parking spots in 14 cities that are provided by municipalities.

As for integrating the car club mode with other forms of alternative transport, Dutch National Railways has a reciprocal arrangement with mobility provider Greenwheels whereby Greenwheels members get discount rail trips and frequent rail users get a discount on Greenwheels membership. To support this, Greenwheels is aiming to establish car share networks at each of the 39 main intercity stations in the country.

In **Spain**, the Generalitat de Catalunya (Provincial Government of Catalonia), the Barcelona City Council and the Associació per a la Promoció del Transport Públic (Association for the Promotion of Public Transport) of Barcelona constitute the Fundació Mobilitat Sostenible i Segura (Safe and Sustainable Mobility Foundation).

In 2005 this non-profit organisation and several enterprises of the mobility and transport sector (such as Transports Metropolitans de Barcelona, Ferrocarrils de la Generalitat de Catalunya and Barcelona Serveis Municipals) created Avancar, the first car sharing provider in Spain, backed by the technology and know-how of Mobility Switzerland. In Barcelona, Avancar has started a car sharing scheme offering 95 cars in 28 locations. After two years of operation, figures reveal great success: 850 registered clients, 54 vehicles, 20 parking

areas, 16 000 reservations, 250 000 hours of use, 2 000 000 km travelled by the cars in the scheme. Some hybrid cars were introduced in January 2008.

A.2 Examples of car pooling schemes in Europe

An example of a car pooling service for individuals in **Germany** is the national *Mitfahrzentrale* service, with 17 000 members logged in on the website in 2007. It brings together drivers and passengers with the same destination on medium and long distance journeys. Customers can book trips via the Internet or telephone and passengers pay a small arrangement charge to the organisation and a fixed share of the fuel costs to the driver.

Mitfahrzentrale also provides a 'safety check'. Passengers can send an email or call the driver in order to arrange the pick-up and drop-off details. They are encouraged to share the driver's phone number and personal details with others. Moreover, passengers and drivers may write reviews and testimonials about each other, so that users know something about the drivers and passengers. Finally, users may validate their identity card by fax in a photo-ID Card which gives them 'safe user' status.

In **Belgium**, nationwide car pooling has been organised by the non-profit organisation *Taxistop* since 1978. The service began in Flanders but has since spread to the other two regions, Wallonia and Brussels. *Taxistop* is a partner of *Cambio*, the Belgian car sharing provider. In 2007 it had 41 000 members, of whom 11 000 are regular users logged in on the website. In addition to bed and breakfast, home exchange and home sitting services, *Taxistop* offers a variety of car pooling services:

- car pooling for individuals who want to share any type of travel (work or non-work) using software called *Carpoolplaza*;
- car pooling for a company that may provide its employees with the software for a car pooling service. The software used is *Smartpool*, a car pool application based entirely on geographical data. When searching for car pool partners, the employee does not look up the postal codes of two places but instead looks at the different routes that can be used to travel from one place to another, taking into account the travel time required;
- car pooling aimed at school pupils and their parents. *Schoolpool* is a variant of car pooling that aims to encourage pupils and parents to travel to school together rather than singly in cars. *Taxistop* developed a special version of its carpool software, named *Schoolpool-database*, for this purpose;
- car pooling for travel to a music festival or major event, called *Eventpool*. When people want to go to an event and there is no public transport option, they may search for partners to travel together in one car;
- car pooling in case of travel to and from an airport, named *Airportstop*. This service offers the possibility of finding a partner for car journeys to and from an airport;
- finally, there is also software that promotes a hitchhiking service. Called *Eurostop*, it operates throughout Europe.

As far as the insurance coverage is concerned, the *Taxistop* policy relies on two mandatory insurances, i.e. civil liability and industrial insurance (the latter applies only in the case of

work-related travel). It also advises users (both drivers and passengers) to agree on a compensation for the service. This compensation covers both the fuel and any potential damage not covered by the driver's insurance in the event of an accident.

Liftshare is the largest car share network in the **United Kingdom**. A national provider of car sharing services, it offers services for individuals and for 300 companies. In 2007 its website had 200 000 members. The system matches individuals with others wanting to travel in the same direction so they can share the journey and the costs. Members simply register their journey and the system automatically lists all potential matches in both table and map format. The user then sends an automated email to any likely matches and arranges the shared travel.

The system also calculates the financial and CO₂ saving each user is making compared to if they had made the car journey alone.

Users can choose from several levels of system, from an easy-to-use private scheme to a fully-branded corporate solution.

The security of the system is guaranteed through secure data collection and a secure database that collects the information but does not show it to other people. Moreover, access to the monitoring facility is password protected.

The clients of *Liftshare* are local authorities, hospitals and health trusts, universities and colleges, companies and multi-nationals, business parks, festivals and sports events.

The services offered are:

- *CarBUDI*: drivers can offer lifts and those without cars can look for lifts for regular commutes or one-off journeys;
- *BikeBUDI*: this matches people with others cycling the same way, so they can ride together. Moreover, experienced cyclists can advise on routes, safety, bicycle security, suitable gear and taking a bicycle on public transport;
- *WalkBUDI*: this matches individuals with others walking the same way so they can walk together. It can be used for regular trips such as walking to the office or going to the station as well as occasional trips such as going out at night or even to find others going for a weekend ramble. It helps make walking fun, safe and sociable;
- *TaxiBUDI*: this helps people find others travelling the same way who can then share a taxi. The idea is to help people to make the most of the convenience of taking a taxi whilst significantly reducing their personal costs.

Liftshare is recognised as the world leader in providing successful car sharing systems to organisations and communities.

In London, the local government body Transport for London has set up a system provided by *Liftshare* to meet the needs of organisations. The *Londonliftshare* service provides a range of services for individuals or companies to encourage commuters to use car pooling services.

In **France**, a number of associations have been established to promote car pooling services among companies, providing expertise to companies wishing to introduce a car pooling service or encourage their employees to car pool. Car pooling services are available through www.covoiturage.com and www.covoiturage.fr for the country as a whole.

In **Italy**, there are many initiatives for car pooling systems. The main providers are: Caringbee, which is aimed at employees and can be integrated with the intranet of a company; Roadsharing, which is free and addressed to everyone, whether employed or not, and for event, and Pendolaria and Tandemobility

There are also local initiatives, such as a car pooling scheme in Rome and initiatives in the province of Bolzano, which has set up a car pooling scheme for local residents and one for students (YoungNet).

A new car pooling service is now available on the A8-A9 motorway, the first such initiative in Italy.

The A8-A9 motorway connects Varese, Como and Milan and has high daily traffic volumes. Two types of intervention have been arranged:

- extension to three lanes between Lainate and Como (23 kilometres);
- extension to five lanes between Milan and Lainate (84 kilometres).

At the same time as these interventions were planned, Autostrade per l'Italia, the main motorway operator in Italy, promoted a car pooling scheme on the A8-A9 motorway to improve traffic flow and reduce pollution levels.

The measures adopted to implement this initiative are:

- lanes dedicated to cars with at least four passengers;
- a 62% discount on tolls for cars with at least four passengers from Monday to Friday during peak hours;
- an Internet platform to organise and share travel so that it also can be available to companies.

A.3 Recent EU research projects and travel plan schemes

Two research projects on Mobility Management and travel plans, MOVE and MAX, were carried out between 2008 and 2009.

MOVE⁸ (International Cluster for Mobility Management Development and Research Dissemination) is a common platform for Mobility Management issues, aiming to exchange know-how and information between market actors in the participating regions. The objective is to generate best practices and general methods that will serve as guidelines for market actors on regional and local level, ensuring high levels of quality and efficiency of mobility work and facilitating the start-up of new projects. The following states are involved in 10 projects: Bulgaria, Germany, Ireland, Italy, Slovakia, Spain and Sweden.

⁸ For more information: <http://www.move-project.org/>

MOVE promotes many Mobility management actions, of which the main innovative ones are:

- the introduction of company transport for employees in Zilina, Slovakia;
- a Green Schools Travel Program in Dublin, Ireland, by promoting sustainable transport modes (walking, cycling, car pooling or public transport) to go to school;
- a Traffic Snake game in Varna, Bulgaria, an awareness-raising campaign developed for primary schools in order to encourage students to walk and bike.

MAX⁹ (Successful Travel Awareness Campaigns and Mobility Management Strategies). aims to link Mobility Management and travel awareness in one comprehensive research project to exploit synergy effects in order to:

- improve the quality and impact of Mobility Management;
- help prove the validity and success of Mobility Management;
- achieve the necessary standardisation (especially for evaluation);
- open new fields, especially in connection with planning.

MAX partners are universities, research companies and local authorities of many Member States

(Austria, Belgium, Estonia, France, Germany, Greece, Italy, Latvia, Poland, Portugal, Slovenia, Spain, Sweden, and United Kingdom).

Using information campaigns or free 'test days' of the services, it promotes a range of measures, such as car sharing, car pooling for employees or for private use (shopping or housing areas).

The CIVITAS project promotes also new and innovative measures for travel plans in some cities. The table below shows some travel plan measures during CIVITAS II (2005-2009) and CIVITAS plus (2009-2012).

⁹ For more information: <http://www.max-success.eu/index.phtml>

Table 8: Travel plan measures during CIVITAS II (2005-2009)

City	Measures	Objectives	Results
La Rochelle	The Business Travel Plan includes home-to-work trip, with the promotion of park and ride, annual public transport season tickets, bicycle sharing and carpooling.	<ul style="list-style-type: none"> – provide employees located on a site/area with an integrated global solution to mobility issues 	86% of working commuters surveyed stated that they were satisfied with their principal mode of public transport.
Malmö	The measure involves training municipal employees in eco driving, changing driver behaviour and thus the environmental performance of the municipal car fleet	<ul style="list-style-type: none"> – train 1 500 employees in the municipality in eco-driving – reduce fuel consumption and emissions 	This measure has not been as successful as hoped because of difficulties in getting municipal employees to participate in the training. For this measure to be successful in the long term, the municipality needs to find ways to give repeat training and the resources and opportunities for staff to take such training
Toulouse	<ul style="list-style-type: none"> – Commuter plans – Administration Mobility Plan for the city of Blagnac 	The development of commuter plans and administrative mobility plans puts the focus on dedicated public transport services and infrastructure, accessibility and services	Thanks to the active participation of the public transport authority in the commuter plan development policy, more than 80 commuter plans were active at the end of 2008
Odense	Odense Harbour is a former industrial area which is being converted into more recreational use. To serve this vision, Odense needs an integrated Mobility Management scheme that includes all modes of transport and a planning strategy where architecture and traffic planning is fully integrated	<ul style="list-style-type: none"> – demonstrate the benefits of integrated Mobility Management services to link Odense Harbour and the Odense City centre more effectively – involve private firms and the public in the preparation of mobility management services – integrate all sustainable transport modes into existing traditional traffic and transport forecasting models 	<ul style="list-style-type: none"> – production of a toolbox for traffic planning – production of a cycle traffic model – production of a plan for traffic and mobility – setting up of six cycle pumps along the ring road

Source: CIVITAS

Table 9: Scheduled travel plan measures during CIVITAS Plus (2009-2012)

City	Measures	Objectives	Expected results
Brighton & Hove	The Workplace Travel Plan project aims to develop a Travel Plan Partnership with 28 businesses where good practice can be shared	To reduce the number of people commuting in single occupancy vehicles by maximising the take-up of more sustainable options	By the end of the project, 28 employers in Brighton & Hove should have an effective travel plan in place that helps reduce the number of single car journeys to and from the workplace
Craiova	The measure involves developing software for planning routes for employees and introducing a digital map as part of optimisation and efficiency of routes	<ul style="list-style-type: none"> – optimise city traffic – eliminate delays in public transport – reduce traffic jams by introducing new Mobility Management techniques addressed to employees 	The introduction of digital route maps, software programs and a consequent improved co-ordination of routes, especially in peak hours, which will increase traffic flows in the city and result in more employees using public transport instead of their own cars
Donostia-San Sebastián	The University of the Basque Country will develop and implement a Mobility Management plan for the Ibaeta Campus. This will include yearly awareness campaigns for students and personnel and the setting up of a Mobility Management Observatory	<ul style="list-style-type: none"> – stimulate the use of public transport, walking and cycling, car sharing and car pooling – promote eco-driving 	The communication actions at the campus will reach at least 15 000 students and staff. At least 10% will change their travel behaviour to more sustainable modes during the CIVITAS Plus project
Iasi	Iasi will work with five universities and 11 schools, organising events to educate and encourage young people to use public transport or soft modes to get to school	<ul style="list-style-type: none"> – educate children on the benefits of sustainable transport – encourage them to think about their transport habits and influence their parents 	The Technical University of Iasi (TUI) will conduct interviews to assess the impacts of the measure as part of the site evaluation
Zagreb	Implementation includes: travel plans for eight larger organisations or institutions, car pooling schemes, bicycle testing schemes, marketing campaigns, promotion material and events	<ul style="list-style-type: none"> – promote more sustainable commuting transport modes, including car pooling, public transport, cycling and walking 	<ul style="list-style-type: none"> – 20% increase in the average number of passengers in cars – 10% increase of the number of people commuting by alternative modes

Source: CIVITAS

A.4 An integrated urban mobility approach: the case of Bremen

Bremen has made considerable efforts to improve its citizens' quality of life by implementing an integrated approach to sustainable mobility. The main initiatives are:

- 'Mobilpunkt' stations,
- Integrated Fare Payment and e-payment ('Bremer Karte Plus');
- Car sharing services;
- Real-time traffic information and mobility services;
- The 'Verkehrsmanagementzentrale' (VMZ) –Traffic Management Centre;
- Bicycle integration.

'Mobilpunkt' (Mobility points)

Integrating the different transport solutions (public transport, cycling, car sharing) is essential to obtain positive results in terms of improved mobility. Therefore the 'Mobilpunkt' (mobility point) has been established to ensure a link between all transport modes.

Two special integrated intermodal car sharing stations have been created and located in inner city areas where parking problems are more intense. The two 'Mobilpunkt' stations were inaugurated in April 2003 and a third is due this year.

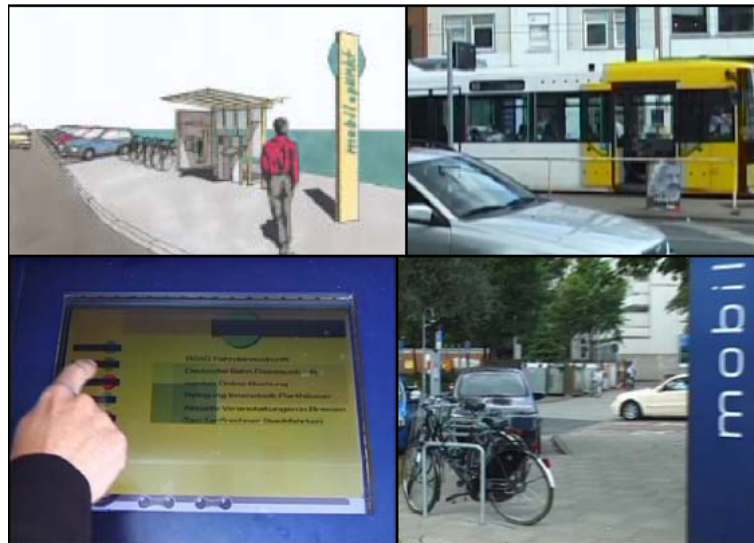
Mobility stations have been introduced to ensure a link between all transport modes. The basic principle is that the locations are close to a public transport stop and also provide integration with bicycle racks and some further mobility related information. Electronic kiosks at the stations provide various kinds of transport information, such as fare calculations by mode, and also allow for car share reservations.

The results can be summarised as follows:

- 83% of users are private, even though a significant 17% is represented by corporate customers;
- 30% of private customers have given up their use of a private car, while 55% have not purchased a car due to the availability of the car sharing service;
- 21% of corporate customers have given up their use of a company car, while 67% have not purchased a car due to the availability of the car sharing service;
- the key to the attractiveness of this service is the proximity of a car sharing station.

In total, 95 cars have been replaced in the area surrounding the 'Mobilpunkt' stations, with a positive effect in terms of relieving the parking situation and reallocating the newly available road space.

Figure 5: Mobility stations in Bremen



Source: UITP, 2002

Integrated Fare Payment and e-payment ('Bremer Karte Plus')

The regional transit organisation allows users to have one ticket for all transport operators. Since 1998 a pass has allowed users to combine car sharing access and an annual transit pass. A smart card was introduced in 2002 and combines transit fare payment, banking and access to car share vehicles. The card is called 'Bremer Karte Plus' but is known as the 'Chippen card' or the 'Eierlegendewollmilchsau' (egg-laying woolly milk-yielding sow), a German term that means bringing unexpected things together in a positive way.

The Bremer Karte Plus has the advantage of combining its function as a normal bank card with its specific function of buying public transport tickets (even on board) and reserving car sharing in all car sharing stations.

Figure 6: Bremen Karte Plus: one card for e-ticketing, car sharing and shopping



Source: UITP, 2002

Car sharing service

In Bremen, the car sharing service is provided by CAMBIO and has 40 stations with more than 100 cars available. There are 2 700 registered clients, both individuals and private companies.

A high level of decentralisation and a differentiated tariff structure are its main advantages and strong points. In particular, the tariff structure allows tailor-made prices according to the different drivers' needs. Four tariffs are available with different levels of price:

- 'StartTariff': very low entrance fee and fixed costs (to encourage entry to, and trial of the car sharing system, or for people who drive very little);
- 'AktivTariff': low fixed costs, favourable for people driving infrequently;
- 'ComfortTariff': slightly higher fixed costs and still more favourable driving prices especially for those who drive more frequently or longer distances;
- 'BusinessTariff' and 'ProfiTariff': exclusively for companies and institutions.

The wide range of cars and a user-friendly reservation/payment system have made this service very popular and appreciated by users, with a differentiated price structure which is very worthwhile for people who drive no more than 10-12 000 km per year.

Figure 7: Car sharing stations in Bremen



Source: UITP, 2002

Real-time traffic information and mobility services

Innovative traffic information and mobility services provide a regular flow of information, allowing users to efficiently manage their trip both before and during it. The most important services are:

- 'Verkehrsinfo-Nord' Project, which gathers all the information about road traffic flows in the five states in northern Germany, giving drivers an up-to-date overview of the traffic situation;

- Timetable by SMS, which provides real-time information on the arrival/departure of buses and trams at bus/tram stops by sending an SMS to the BSAG server. In the future, further developments are expected based on UTMS technology.

The 'Verkehrsmanagementzentrale' (VMZ) – Traffic Management Centre

In Bremen, overall traffic management is ensured by the VMZ (Verkehrsmanagementzentrale, or Traffic Management Centre), which coordinates all the different systems by monitoring traffic conditions to optimise urban traffic flows. The Centre coordinates the dynamic signalling control for buses and trams at hot spots to reduce delays to public transport as much as possible, as well as by recognising when a bus or tram arrives and then turning green automatically after the usual time for boarding has expired.

From a technical point of view, the Traffic Management Centre works as a unique platform with different subsystems: (i) electronic message signs on the A1 motorway, (ii) traffic control system and connected traffic lights, (iii) parking and information management system, (iv) roadworks management system, (v) variable message signs in the commercial zone.

Bicycle integration

The City of Bremen has a long tradition as a cycling city. Currently the cycle network is 750 km long and host to 350 000 cycle trips per day. This puts Bremen in first place among all large German cities (i.e. with a population greater than 500 000) in terms of its use of cycling facilities.

Since 1983 the city has implemented about 20 bicycle priority streets where vehicles must travel slowly. In some of these streets, a smooth red bicycle lane has been built in the middle of the street.

Concerning bicycle integration, the city administration has made progress in three major directions over the last 20 years:

- implementation of bicycle lanes, paths and bicycle priority streets;
- opening one way streets to movement in both directions for cyclists;
- safety.

The following actions are planned:

- the construction of a new 1 500-place cycling station at the main railway station with facilities and options for rental, supplies and repairs, secure storage, and even bicycle cleaning;
- further enhancement of the 'Bike+Ride' service at all Bremen railway stations and public transport stops;
- further improvement of road infrastructure (e.g. pavement, kerbs and signalling) in the city centre to making cycling easier and safer.

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