



# *Sustainable Mobility for All!*

*How to reflect the needs of special groups in local policies to encourage sustainable mobility*

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# *Sustainable Mobility for All!*

## *Mobility – A basic human need*

We travel every day to play out our social roles and engage in activities, earn our livings, learn, shop, meet people, fulfil everyday needs or just relax. Mobility links friends, family and the wider community in an essential way and is vital for maintaining independence. Travel becomes a necessity if our needs cannot be satisfied on the spot, causing people to make decisions to use transport systems. These decisions are based on a system's accessibility (infrastructure and cost). Depending on the infrastructure, mobility can be attained in different ways. Indeed, it is possible to facilitate a certain degree of mobility that incurs little traffic, requires little money, consumes few resources and limits ecological damage, if for instance, public facilities are accessible through sustainable ways of travelling (Becker 2003).

## *A dramatic increase in the speed of travel*

All studies on travel patterns reveal that average transport time and the average number of trips per person are constant over time and in different social groups and societies. A steady increase in passenger-kilometres merely expresses a dramatic increase in the speed of travel and distances covered when passengers either shift from slower to faster transportation or travel at higher speeds.

Europeans travel altogether some 4.8 billion kilometres per year, a figure that is 120,000 times the earth's circumference. Roads are the main transport system for goods and passengers. Europeans use their own cars for 80 percent of journeys, using public transport for only 15 percent, a development which has correspondingly changed the transport infrastructure and the number of vehicles used.

While the EU motorway system has increased three times in size since 1970, the rail network has shrunk by 11 percent. In the same period, the number of vehicles has grown dramatically in all industrialised countries; more and more households own at least one car. As a result, car journeys and distances driven have considerably increased (see Figure 1), leading to harmful effects on the natural environment and the quality of life in cities. The use of motorised individual transport and the increased speed of

travel have given rise to dispersed urban structures, leading in turn to increased volumes of motorised traffic.

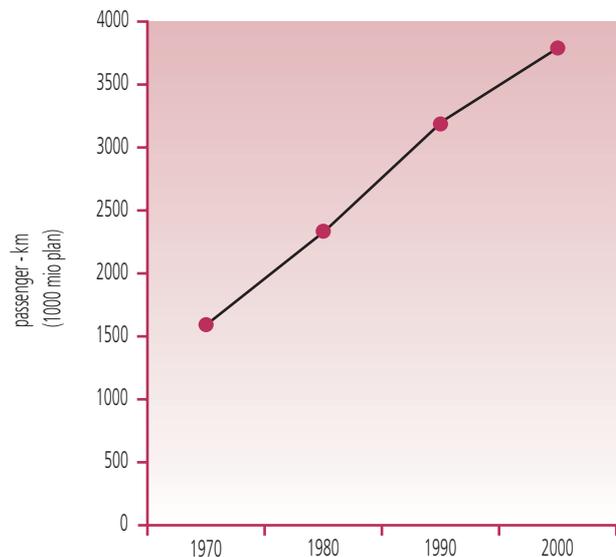


Figure 1: Passenger-kilometres in the 15 EU countries

## *Break the vicious cycle!*

To counteract this vicious cycle of ever-increasing distances and motorised travel, strategies to promote sustainable mobility aim to reconcile people's need for mobility with their quality of life and the environment. Sustainable mobility is about creating incentives for people to choose more sustainable ways to move such as walking, cycling and using public transport systems. Planning the "City of Tomorrow", however, also means creating a sustainable city in which all people have a high quality of life, with transportation accessible to children, people with disabilities, low-income groups and others who are restricted in their mobility. Therefore, projects and measures must be designed according to the needs of such groups, above all by getting them directly involved during the planning of transportation systems and necessary infrastructures. Such communicative processes substantially contribute towards improving the quality of planning.

## *The SMILE Project*

“Sustainable Mobility Initiatives for Local Environment” (SMILE) was a three-year project funded within the European Commission’s LIFE programme.

A lot of expertise already exists in Europe for tackling the transport problems of today’s cities. SMILE wanted to validate successful experience by promoting and transferring it to other cities. Since problems are common, to a certain extent common solutions should be applicable.



Exchanging knowledge on good practice is essential in this respect. In order to gain an overview and collect the richness of experience available all over Europe, the SMILE consortium carried out a large-scale survey of European local authorities. Authorities in more than 25 countries returned over 140 completed questionnaires, providing extensive insight into the different kinds of measures being implemented to promote sustainable mobility. The most interesting, innovative and replicable experiences were selected for inclusion in the SMILE GOOD PRACTICE DATABASE. Fields of activity included plans for mobility, awareness-raising campaigns, urban planning, clean vehicles, public transport, cycling and walking, intermodal transport, measures to slow down traffic, parking management, and freight transports.

*For more information, go to  
[www.smile-europe.org](http://www.smile-europe.org)*

Another initiative taken to promote a sustainable mobility culture in European cities and towns was the establishment of specific RECOMMENDATIONS AND GUIDELINES. Task forces involving experts from public and private institutions were set up that focused on specific

aspects such as the integration of public transport systems into mobility policies, thoughtful approaches for different groups of people with special mobility needs, and the abatement of traffic noise. Moreover, a STUDY TOUR CATALOGUE was produced, featuring a number of "champion" cities in Europe that are showcases of good sustainable mobility policy. These cities open their doors to interested elected representatives, municipal officers and technicians from all over Europe and present altogether some 40 to 50 interesting sites or installations.

## *Sustainable Mobility for all!*

This brochure is meant to support local authorities all over Europe in coping with the challenge of adapting their transportation networks to the demands of ALL users and implementing land use policies to facilitate sustainable mobility. It is based on findings from the SMILE questionnaire, case studies, and an extensive review of recent research and experience.

The work programme concentrated on three main tasks:

- review of literature and Internet research;
- qualitative research (case studies and experience) and;
- quantitative research (analysis of questionnaire).

First, different groups and their specific needs regarding mobility were identified. In a second step, recommendations on how to improve and ensure sustainable mobility for these groups were derived from the literature review and case study analyses. This included examples of successful approaches by local authorities. Communication activities and especially the direct involvement of citizens are required to ensure that the needs of each group are identified and considered within the framework of a specific project. At the same time, such exercises contribute towards sensitising and motivating planners, politicians and technicians in the long run. These activities are illustrated by examples of “best practice”.

# Users of transportation networks have special needs

Research on transportation reveals that traffic is influenced by structural conditions (such as settlement patterns and transport infrastructure) as well as personal factors. These factors can be differentiated into socio-demographic and socio-economic elements such as age, sex, employment, income, or availability of a car, and into individual preferences and norms (such as the prestige of using a car, or the importance of notions like health and environment) (Hunecke 2000).

Some members of society simply do not have access to a car and are perceived as immobilised social groups. Particularly disadvantaged by unequal access to transportation and affected by the negative consequences of increased traffic, they are also regarded as "powerless victims of the car hegemony" (Thomsen 2002).

Ways of travelling and experience differ with age, gender and lifestyle, allowing us to group people accordingly:

- children;
- young people;
- women;
- elderly;
- people with disabilities and mobility-impaired people;
- people with low incomes.

To support sustainable mobility in cities, activities need to address supply, structures and infrastructures, and the demand for mobility. Therefore the focus is on "hard" and "soft" measures designed for the groups considered in this context. Clearly, the need for mobility cannot be avoided but it can be met in more sustainable ways. This brochure will show examples and illustrate experiences that have been successful in local environments.

## Children's special needs

### *Europe – three times as many cars as children!*

In 2002, there were 63.4 million children under 14 years of age in the European Union (16.8 percent of the total population). The number of children in the EU has steadily decreased for decades, while the number of cars has continuously increased – to 177.4 million vehicles. As a result, there are nearly three times as many cars as children in the EU (Eurostat 2003).

Not only do children need transportation now – their future needs for transportation will create traffic problems they will have to deal with at a later time as well. They are a particularly important group regarding the time scale required for sustainable development. For adults to live a physically active life and frequently use non-motorised modes of travel, these habits must be established and encouraged in childhood. The focus in the past has clearly been on safety issues to the neglect of making ways of travelling part of the living environment for children as well. Childhood and youth are sensitive phases in which an understanding of mobility should be developed. Such an understanding can influence how young people regard the status of cars in their future everyday lives (Flade et al. 2002).

## *Children are the most vulnerable users of roads*

Children are still developing physically and mentally and therefore experience road traffic differently than adults do. Even cars parked at the edge of the street already create a barrier that hinders a child's view of the road; they also hide children from the sight of drivers who don't see them until they walk into the street.

### *Children's perceptions of "Safety" and "Danger"*

Perception and awareness of "safety" and "danger" develop in three steps.

1. Up to ages five or six, children learn to recognise dangerous situations in road traffic only when they are already in acute danger. Danger is usually seen too late and accidents are barely avoided.
2. In the second stage, children learn to foresee dangerous situations and recognise what kind of behaviour is dangerous. This stage is reached at about eight years of age.
3. Children aged nine to ten learn to consciously behave in a preventive way to reduce risks. For example, a child making a detour to safely cross the street has already developed an awareness of preventive measures. Even though a child at the second stage is already clearly more aware of safety, more or less "safe" participation in road traffic can only be expected if children have reached the third stage.

Children are also particularly endangered by road traffic because of their undeveloped abilities and behaviour. Younger children (under age six) can't assess the speed of cars and therefore can't judge whether a vehicle is far away or already very near. They also don't understand that cars need some braking distance. The large discrepancy between a child's subjective feeling of safety and its objective safety is an important aspect. As described in the box, children do not perceive dangerous situations at once but have to learn this ability step by step.

Moreover, children are less interested in traffic, spontaneously turning their attention to other children, animals, and circumstances not related to traffic. Younger children cannot concentrate on two things at once; they are also diverted by their thoughts and feelings. At about five years of age, children start learning to focus their attention. But even older children (ages eight to 12), as a result of not getting enough exercise, watching too much television, and facing too many other attractions, can be easily distracted and thus their safety in road traffic is reduced. As a rule, the ability to focus on road traffic for a longer time is not fully developed until about age 14 (Limbourg 1997).

### Children are spontaneous

Apart from their inability to assess traffic situations and pay attention to road traffic, children often run and jump on the pavement and move more spontaneously than adults. Their behaviour is more incalculable for car drivers. Up to the age of about eight, the behaviour of children as pedestrians is risky and not very safe. Due to their behaviour and increased traffic, children are particularly endangered by road traffic.

As illustrated in Table 1, pedestrians and cyclists of all ages have a high risk of being involved in an accident. In neighbourhoods dominated by high volumes of motorised traffic, children stand out as a particularly vulnerable group. Road traffic injuries are the leading cause of death among children across Europe and one of the main barriers to walking and cycling (WHO 2002).

### Children and road accidents

Even though road fatalities have been in constant decline in EU countries, 114 persons per million inhabitants (in total 42,608 persons) were killed in road accidents in 1998. Particularly children under 14 years (16.8 percent of the population) are often killed in accidents. For this age group, the rate of road deaths amounted to about 29 child deaths per million inhabitants (1999). The rate is particularly high in Portugal at 52 child deaths per million population, (Department of Transport, Local Government and Regions 2000).

transport mode	fatalities2000	billion pkm 2000	fatalities per billion pkm
pedestrians	6,472	144	45
cyclists	2,262	71	32
powered two-wheelers	6,943	150	46
car passengers	22,517	3,796	6

Table 1: Traffic Safety in the EU 13 (Source: International Road Traffic and Accident Database, DG Energy and Transport).

### Restrictions to children's mobility

As movement is of fundamental importance for children's development and health, walking and cycling are the most suitable ways for children to travel. Children need safe places for playing, moving and meeting other children – if possible near their homes. They also need the opportunity to explore their environment on their own, visit friends, and make trips to school alone. In many ways, the number of children who walk and cycle is a good indicator of the perceived and actual safety of non-motorised ways of travelling. As most children and young people go to school, the school journey is an important opportunity for establishing the routines and habits of walking and cycling (Limbourg 1997, WHO 2002).

However, the urban environment often barely meets children's mobility needs and in many urban areas, walking or cycling to school is not safe. As a result, many parents, worried by the risk of road accidents, take their



children to school by car, initiating a vicious circle. The more parents drive to school, the more traffic is created and the more dangerous the school's surrounding area becomes. In many European countries, a decline of physical activity among children with the corresponding negative impacts on their health is noticed which is partly explained by increased car use for the journey to school (WHO 2002).

### Correlation between ways to travel and health

Due to changes in society resulting in a sedentary lifestyle and the consumption of energy-dense food, the prevalence of obesity is estimated to have increased by about 10 to 40 percent from the late 1980s to the late 1990s in most European countries. Motorised transport encourages a sedentary lifestyle by reducing opportunities for physical activity such as walking and cycling ([www.obesite.chaire.ulaval.ca/iotf.htm](http://www.obesite.chaire.ulaval.ca/iotf.htm)).

Research has demonstrated that two-thirds of children today are not active enough to ensure their future health and well-being. In the 1980s, five to six percent of children (from five to 12 years of age) were obese. This number increased to 15 percent in 2000 (SMILE: Montreuil; School Travel Programme).

Getting to school by car, children remain dependent on their parents and cannot satisfy their natural impulse for movement in everyday life. Moreover, they have no chance to learn and practice "safe" behaviour in road traffic, discover the world on their own or get used to new situations. Children often are forced to play in restricted areas like playgrounds or on very narrow pavement, often blocked by parking cars. As a result of the lack of movement and less contact to children of the same age, physical, mental or social deficiencies may occur. Many of these abilities are important and their deficit raises the risk of accidents and reduces positive

social behaviour in road traffic (Limbourg 1997, WHO 2002). The way people travel and conditions alter with age, of course. The change in using different modes of transport is illustrated in Figure 2.

### Changes in modal split with increasing age

Small children (under three years) need to be accompanied and usually go for free in public transport systems while children aged four to five years already have had the experience of trips with their families and to kindergarten and (at least in some countries) may already have travelled with children's fare.

Children between the ages of six to nine still do not have many reasons for travelling and their journeys are mostly related to school. They mainly walk (43 percent) but also often use the car as passengers (30 percent). Cycling and public transport are not very suitable modes of transport for young children due to their undeveloped abilities.

At about the age of ten, children start travelling more and more without adult accompaniment and are brought to school or leisure time activities less frequently by car (21 percent). In this age group (10 -14), cycling and public transport gain in importance. Walking also remains important (25 percent), even though its share clearly decreases with age.

Young teenagers (15-17) still cycle frequently (27 percent) but start to use public transportation more and more, making it the mode most often used by young people aged 15-17 (33 percent). This age group usually travels longer distances to school and new social activities. Thus, public transport is important; it also gives them independence from their parents. Some already ride a moped (two percent). Compared with other age groups, the share of journeys where adults take them by car is the lowest (18 percent).

In the 18-20 age group, many young people already have a driver license. Together with changes in types of activities, this means more car travel and less use of other means of transportation. There are differences in their situations depending on whether they have a driver licence, own a car, live independently or with parents, are students or have their own incomes. As a rule, young people use more and more motorised modes (either car or public transport) when they get older, while the share of non-motorised modes (walking and cycling) only amounts to 29 percent within the 18-20 age group. At the same time, young people typically travel longer distances.

Modal split of children and young people

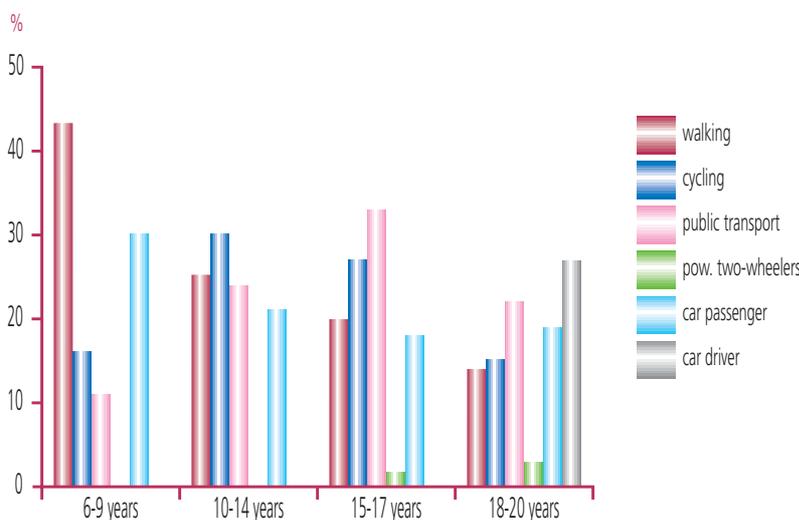


Figure 2: Modal split of children and young people.

## *Safety first!*

In most European cities, children's mobility is restricted by parked or speeding cars. The focus in promoting the sustainable mobility of children is clearly on safety aspects. In the past, accident prevention mainly involved teaching children how to behave in traffic. However, more effort is required to reduce the number of accidents involving children without limiting their free space. Instead of banishing children from road space, the focus must be on protecting them and adapting road traffic to children's abilities so they can move around safely on foot, on bicycles or with public transportation. It is important to know how children behave in traffic, which traffic situations are too much for them and how they actually use the facilities designed to help them (Limbourg 1997).



## *Neighbourhood planning with children in mind*

Ideally, neighbourhoods that are planned with children in mind are areas without cars, where children can move safely and have enough space for playing. Reducing traffic volume in the long term requires a package of policies which must support each other. For the short term, the risk of children being involved in road accidents when walking to school or moving around the neighbourhood must be minimised by slowing down traffic, banning the parking of cars on sidewalks and creating safe walking and cycling paths. In this sense, the focus must be on increasing road safety, particularly in residential and school areas.

Apart from organisational and infrastructural measures, soft policies are required to improve the view and behaviour of all who use the road. While road safety training aims to teach children to behave correctly regarding road traffic, awareness-raising aims to make car drivers behave more thoughtfully towards children.

## *Young people's and students' special needs*

### *Today's young people will have to cope with tomorrow's transportation problems*

In 2002, 46.8 million young people (aged 15-24) were registered in the European Union, making up 12.4 percent of the total population (Eurostat 2003). Like children, this group will face transport-related problems in coming decades and will have to cope with them. Young people are a very important group. While growing up, they develop patterns of travelling which have a long-term influence on their behaviour as adults regarding transportation.

The young people's group can be defined by age and the activity of seeking education and training, which implies journeys to places to prepare for future employment. Young people establish new relationships, particularly with people of the same age, and form youth cultures according to the spirit of the times. Generally, young persons can choose from different transportation options and have not yet finally fixed their behaviour regarding mobility.

Moreover, they are rarely limited by physical handicaps or time constraints in their choice of how to travel. However, as young people are still being educated or trained, or engage in studies and usually have limited income, they are particularly affected by the high cost of some means of transport. Lifestyle importantly influences young people's travel patterns and their choice of transportation (Tully 2002).

## *How young people travel*

This age group is characterised by high dynamics and new situations such as changes in school, the start of training or study or founding an own household. These changes often require new decisions regarding mobility. The modes of transportation at young people's disposal change as well. Until they are allowed to drive individual motorised vehicles (moped, car) on their own, they usually are familiar with environmentally-friendly ways of travelling (walking, cycling, public transport).

As they get older, young people and students start to travel more and more independently without their parents. Usually they have to travel longer distances to get to secondary school or college. Hence, walking to school or college gradually decreases with the age of the student while school buses are particularly important for regular journeys to school, a youth project or work. When young people start vocational training or study, this often means longer absences from home, considerable limitations in the free distribution of their time and new mobility needs. Consequently, patterns of travel change; distances and time gain in importance for young people (DETR 1999, Tully/Wahler 1999b).

An important change occurs when young people are allowed to drive a car. In most European countries, young people can get a driver licence at age 18. Acquiring a driver licence strongly influences mobility, facilitating a shift from using environmentally-friendly transportation to travelling by car. With this change, young people are no longer dependent on public transport and non-motorised modes. However, there are considerable differences between cities and rural areas. While in urban agglomerations many journeys can be taken with public transport, individual transportation, particularly the car, gains in importance in rural areas with lower population densities. Moreover, the distance to an educational institution is often shorter for young people living in a city than for those in rural areas. Surveys also show that the choice of transportation changes during vocational training and that particularly young people in rural areas tend to travel increasingly by car. The flexibility in departure time and often shorter travel time explain the shift to using a car (Tully/Wahler 1999).

### *Young people face high risk of accidents*

In most EU member states, traffic accidents are by far the most common cause of death among young people. Belgium, Greece, Austria and Portugal have the worst record of traffic accident fatalities, while Sweden, the United Kingdom and Norway have the lowest rates of death due to transportation accidents. On average, 29,000 young people aged 15-24 lose their lives each year in the European Union; about 40 percent are killed in traffic accidents (11,000 young people per year). Young males aged 15-24 are particularly endangered; around 80 percent of young people killed in road accidents are male. Young males are twice as likely to die on the road as those aged 35-44 (Hamzaoui/Whitten 2001).

Deaths in this age group tend to be the result of a young lifestyle. As young people get older, their leisure and social activities change and create new mobility needs. Most young people's leisure activities (from ages 18 to 24) take place away from home. Young people start to go out in the evening and travel longer distances. As young people travelling in the evening or at night tend to rely on individual means of transportation such as private cars or powered two-wheelers, the risk of being involved in an accident is particularly high in this age group.

### *More use of cars and motorcycles by young people for leisure activities in rural areas*

According to a nationwide survey in Germany, private cars or motorcycles are used by those aged 18 to 24 for nearly two-thirds of trips undertaken during their leisure time. However, there are considerable differences between urban and rural areas; the share of accidents related to going to discotheques is twice as high in rural regions than in urban agglomerations. In 2000, every fifth person killed in road traffic in Germany was in the 18-24 age group although this group makes up only 7.8 percent of the total population (Haustein et al. 2002).

There are several reasons for the high number of accidents among young people. Young people are endangered by an above-average tendency to cause car accidents because they lack driving experience. The factors listed below determine the high risk of this age group (Haustein et al. 2002, Schulze 1999):

- lack of maturity and overestimation of own driving skills;
- high acceptance of risks;
- high exposure to danger due to leisure activity at night;
- group dynamics and their impact on driving behaviour.

### *Attitudes and image are reflected in different ways of travelling*

There is usually a strong emotional relationship with mobility that must be considered when dealing with the behaviour of young people. The way people travel alters with age, and the perception of different means of transportation and their symbolic value change as young people get older. Depending on a person's age, ways of travelling represent different degrees of autonomy, privacy and social status. This may be one reason why many public transport operators do not view young people as a target group and believe that as soon as young persons have access to a car, they will stop using public transportation (Klößner 2002, McWhannell/Braunholtz 2002).

### *Young people and public transport*

According to a study in Scotland, younger teenagers (ages 12 to 14) tend to view public transport as "exciting" and "fun". However, the perception of different means of transport changes as young people get older. While young teenagers view the journey itself as part of the excitement of the whole trip and enjoy the independence that public transport offers them, young people aged 15 to 17 are more likely to see public transport as a practical necessity and take independent travel for granted. Once young people have driver licences, they use public transport less and less (McWhannell/Braunholtz 2002).

Attention must be drawn to the fact that mobility and traffic are social phenomena. In our modern and highly mobile society, vehicles are omnipresent as symbols and the availability of a car strongly influences social status. The everyday life of young people is essentially characterised by movement. This is also reflected in youth jargon, in which many terms stand for movement and speed; anything fast, flexible and energetic describes positive qualities (Tully 2002).

As young people get older, mobility plays an important role in gaining more and more autonomy, implying "freedom", "loosening up" or "searching for one's self". Journeys to school or training facilities take them along streets and past places that also offer self-fulfilling opportunities. For adolescents, (public) spaces are both a route and a destination at the same time. A car is not only a way to get from one place to another; its great attractiveness is also based on the fun young people have while driving. Young people are motivated not only to reach a destination but also to move around in a car. Moreover, virtual reality and cyberspace have been opened by new communication technologies (mobile phones, SMS culture, the Internet) and gain in importance for young people (Schulze 1999, Tully 2002).

### *Youth travel a lot as they search for social contact*

In general, young people travel a lot to find social contact and friends who no longer belong to a restricted space. Mobility plays a very important role in the everyday life of young people who aim to decide on their movement according to their own standards. While children are still restricted in their mobility, mobility increases in the transition from childhood to youth; the development of children into adults may also be described as a gradual detachment from spatial restrictions (Tully/Schulz 1999, Tully 2002).

Individualisation and an increasing pluralism in lifestyles are the main characteristics of the "young people and students" group, making them a very difficult target group for sustainable transport policies. Comprehensive knowledge of their special needs and expectations is an important condition for creating successful offers and services in transportation. These young people are sensitive to prices due to their relatively low income, and they have a relatively high amount of leisure time and above-average needs for mobility, all of which must be taken into account. In addition, modes of transport are used not only to travel distances and arrive at a destination; they also have a certain meaning. However, policy planners most often neglect considering that the way young people travel also reflects a certain individuality and way of life. Therefore, better understanding of the relationship between lifestyles and ways to travel is an important condition for developing differentiated, customised measures (Bäumer et al. 2000).

### *A range of options creates new opportunities!*

Even though the present orientation of society towards cars mainly influences young people's attitudes and ways of travelling, their behaviour patterns are still not fixed and may be influenced by appropriate measures. A range of options should create new opportunities. Young people are often quite concerned about environmental issues but usually don't see using public transportation as a personal contribution towards protecting the environment. It is important to provide better information and customise public transport services to the lifestyles of young people to attract them and keep them as passengers. Planners should also pay special attention to communicative activities and know more about young people's interests.

### *Special needs of the elderly*

#### *Population is getting older*

As life expectancy continuously rises and women have fewer children, European populations are getting progressively older. The number of people aged 60 and over in the 15 European Union states is estimated to double from 48 million (15.4 percent of the total population) in 1960 to 104 million (26.8 percent) by 2020. Nowadays, the proportion of older people and particularly of older women in the population is already much greater than ever before. With the share of people over 65 expected to increase by 40 percent over the next 30 years in most European countries, the special needs of older people will become more and more important.

Ageing affects many aspects of the way people travel and their safety. However, the elderly population of the future will have rather different travel needs and constraints compared to the present elderly population. Older people currently constitute a group which usually uses public transportation quite intensively. However, at present and especially in future, generations will enter retirement who have had driver licences and cars since early adulthood. Compared to the past, older people will be relatively healthy and therefore more independent and mobile. Present trends indicate that older people increasingly use cars and have driver licences, especially older women. Thus, older people are becoming less dependent on public transport than they used to be; public transportation systems must be designed to remain attractive for "choice riders" who have an alternative (Mitchell 2000, Scheiner 2003).

People of different ages are involved in different activities and have different ways of travelling. It must be noted that age is a poor indicator of ability or activity. For some people, ageing occurs early and the effects are relatively severe, while for others, the effects of ageing are minimal. Consequently, the supply of care and the retention of privileges (such as a driver licence) must be based on each individual's ability, not on calendar age (Mitchell 2000).

## Restrictions for senior citizens' mobility

Several factors restrict the mobility of senior citizens. Of prime importance are issues such as health and physical handicaps, risk of injury and death from road traffic accidents as well as fear of crime. The following age-related physiological changes in particular can make travelling more difficult and more dangerous (Mitchell 2000, Reinberg-Schüller 2002):

- reduced vision, particularly at night;
- reduced hearing;
- reduced physical strength, flexibility and dexterity;
- greater fragility or vulnerability to injury;
- increased reaction time; and
- reduced ability to divide attention between multiple tasks.

The resulting handicaps considerably restrict the mobility of senior citizens. While some of these changes make it more difficult to walk, cycle or use public transport, others (such as increased reaction time or reduced vision) make driving more dangerous so that older drivers tend to avoid driving at night, on motorways, in congested areas, at peak times and in areas they do not know (Mitchell 2000, Reinberg-Schüller 2002).

## The risk of serious injury increases with age

Moreover, due to their greater fragility, the elderly face a relatively high risk of serious injury and death when using the road system. An older person dealing with impact is more likely to suffer injury which is slower to heal and more likely to cause complications or even death. While people aged 60 and over are under-represented in road accident casualties of all degrees of severity, they are over-represented in road accident fatalities for each of the main means of transport, whether as pedestrians, bus passengers, car drivers or car passengers. The higher risk of serious injury and death from road traffic accidents for older people must have implications for road safety, and particularly for the safety of pedestrians (Mitchell 2000).

Issues of road safety involve accidents as well as crime. Older people, particularly senior citizens living on their own in bigger cities, worry more about their safety and fear crime because they are more likely to be severely injured. Moreover, the fear of crime is stronger among older women than among older men. In many cases, this anxiety is a reason for not using public transportation, particularly in the evening (Deubel et al. 1999).

## Mobility has an important social function

Because they are retired, senior citizens no longer undertake job-related journeys; transportation is an important link to friends, family and the wider community. As a lack of mobility can prevent older people

from participating in social activities, efforts must focus on enabling the elderly to be mobile as long as possible. This helps preclude loneliness and depression in old age. The ability to travel usually serves a number of functions for older people, including (DfT 2001):

- entertainment – they enjoy getting out of the house and often travel "just to see people around" and not because they have a destination in mind;
- participation – they are involved in a number of organisations, like church and community groups;
- independence – they do not want to have to rely on relatives or friends to accompany them to shops, the bank, and the like;
- social interaction – travelling provides an opportunity to meet friends and neighbours en route.

## Patterns of travel and access to different modes of transport

A journey's purpose is the main factor influencing how and when older people start their journeys. As senior citizens travel mainly during off-peak times (see Figure 3), their demands on public transport (schedules) differ considerably from those of other age groups.

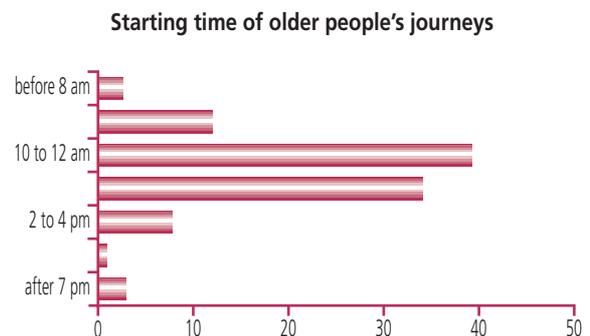


Figure 3: Starting time of older people's journeys (Source: Mollenkopf/Flaschenträger 2001).

There are clear differences between younger and older people regarding access to transportation, apart from purposes and times of travelling. For older people, physical difficulties associated with walking and accessing public transport are usually among the largest barriers to mobility. Moreover, costs often determine older people's ability to travel, as does the availability of a car. A higher share of older people has no car and is dependent on public transport and walking (DfT 2001, Flade 2002).

As a rule, older people do many journeys on foot, although as pedestrians they are much more exposed to specific risks than any other age category, not only with regard to accidents involving other users of the road, but also regarding slips and falls. In particular, high speeds and the volume of motorised traffic constitute risks for older people and restrict their mobility.

## ***Are the elderly "captive" users of public transportation?***

Elderly people commonly use public transportation, which is the safest kind of travel. In many cases senior citizens have no alternative to public transport and belong to the group of "captive" users. According to a study by the European Transport Safety Council (ETSC 1999) on car driving, there are 0.8 deaths to 100 million people for every kilometre. The risk of being killed while using public transport is much lower (0.08 for buses and 0.04 for railways). Nevertheless, insufficient accessibility to public transport may cause older people not to use it. Particularly physical barriers (such as high steps), long waits, overcrowded vehicles and a lack of information on service and schedules constitute major obstacles to senior citizens. Waiting for public transport, for instance, can be a very frustrating and anxious part of the journey and uncertainty about when the next service is due, how much it costs and where the next bus or train leaves from, can act as a deterrent that creates a feeling of vulnerability. If attractive public transport is missing, some older people, particularly women, do not engage in activities outside their homes (Camba 1999, Deubel et al. 1999).

## ***Accessible public transport is needed more than ever before!***

The proportion of older people in the population is much larger than ever before, leading to an increased need for accessible public transport. All in all, the group of older people is not a homogenous one; it includes younger senior citizens who have different demands than persons well advanced in years. The overriding aim is to enable senior citizens to be mobile for as long as possible. As physical exercise helps elderly people stay in good shape and be healthy, this group should be able to walk frequently or even cycle, if possible. Transport planning and technical measures to slow down and simplify traffic, and traffic monitoring, are needed to protect senior citizens who walk and cycle. Measures such as slowing down traffic contribute towards increasing the safety of older people (and children) in road traffic.

Moreover, older people often use public transportation. To ensure that public transport remains a real option for older people, it must be accessible and available. The elderly have special needs regarding the design of vehicles, stations and bus stops; special tariffs should be offered so that they can afford to use public transport.

## ***Special needs of people with disabilities***

Only since the 1990s has more attention been drawn towards integrating people with disabilities into all areas of social life. An important condition for unlimited participation in social life is that public space and the

transport system are designed without any barriers for people with disabilities and that the accessibility of all public facilities is ensured. Investigations of the mobility needs of different groups and of technical developments has facilitated improving the mobility of people with disabilities. However, despite considerable improvement in many cases, existing knowledge has often not been used to a sufficient degree in renovation and new construction. There are two main reasons for this. First, despite the publication of a variety of manuals, recommendations and guidelines, planners and architects sometimes don't know enough about the needs of people with disabilities. Second, there is not enough knowledge available about existing barriers in public space, buildings and the transport system (Pfeil et al. 2001).

## ***Specific disabilities and restrictions in mobility***

To ensure that infrastructure and facilities do justice to the needs of people with disabilities, it is important to understand the structure and characteristics of this group. Two main groups can be distinguished: mobility-handicapped persons in a narrower sense and mobility-handicapped persons in a looser sense. The first group includes persons who are mobility-handicapped because of permanent restrictions to their health. These may be people with a limited ability to move or perceive their environment, with difficulties in speaking or hearing, as well as people with mental handicaps or mental illness. These limitations can also appear in different combinations. The mobility restrictions experienced by people with specific disabilities are listed in Table 2.

The second group includes people who are restricted in their mobility temporarily or due to age (such as senior citizens, women with a pram or heavy luggage or persons temporarily having difficulties in standing, walking, grasping, hearing or seeing). Depending on the illness and complaint, people with temporarily reduced mobility may be compared with the groups listed below and are therefore not handled separately (Pfeil et al. 2001).

As illustrated above, the group of people with disabilities includes persons with physical, sensory and mental impairment disabilities and is not homogenous.

The World Health Organisation makes the following distinction between impairment, disability and handicap:

impairment	disability	handicaps
is the lack or abnormality of anatomic, psychological and physiological functions and structures of a person	constitutes functional difficulties or deficiencies following impairment which hinders or makes impossible typical all day activities	are disadvantages for a person which are the result of an impairment or a disability

With regard to sustainable mobility, the goal is to minimise mobility handicaps for people with disabilities.



## Requirements of people with disabilities

The large degree of differences between people with disabilities calls for varying solutions. Tall persons have a different notion of the height of vending machines or handles, for example, than people of short stature. Blind or deaf people need a different kind of assistance than people experiencing difficulty in walking. Wheelchair users need sufficient space and even paths. Compromises are needed to ensure as high a level of mobility as possible for all people. Improvements favouring single groups while discriminating others should be avoided. One such compromise is to lower the kerb to about three centimetres so that blind people can still distinguish it (five centimetres would be optimal) and wheelchair users, preferring no kerb at all, can still pass over it (Pfeil et al. 2001).

The nature and severity of a disability as well as functional losses and impairments differ by very broad degrees and therefore place an equally wide variety of demands on the facilities needed for disabled persons in the transport system. Special priority should be given to the severely handicapped, for whom a comparatively high level of technical investment is required.

Even though specific conditions can be defined for each of these groups, the following generally accepted requirements can be summarised. Thus, people with disabilities should be able:

- to independently reach buildings and public facilities;
- to independently manage journeys;
- to independently find and understand information;
- to independently use transport modes;
- to safely and fearlessly move in road space; and
- to locate and use cultural, sport and leisure time facilities.

Kind of disability	Mobility restrictions
People with difficulties in walking	<ul style="list-style-type: none"> <li>• problems with long and uneven paths</li> <li>• difficulties in overcoming differences in height (such as stairs or ramps with a high gradient)</li> <li>• difficulties in getting on board vehicles with high steps</li> <li>• reduced road safety in case of danger because of reduced walking speed</li> <li>• high prejudice to detours</li> </ul>
Wheelchair users	<ul style="list-style-type: none"> <li>• overcoming differences in height as well as thresholds and steps partly requires the help of others</li> <li>• difficulties reaching buttons and other devices</li> <li>• requiring more space</li> </ul>
People with difficulties in standing	<ul style="list-style-type: none"> <li>• long waiting at stations or standing in vehicles</li> </ul>
People with difficulties in grasping	<ul style="list-style-type: none"> <li>• difficulties in holding banisters or grabbing handles/straps</li> <li>• risk of falling as vehicles slow down or accelerate because of difficulty in grasping handles/straps</li> <li>• difficulties in using vending machines and buttons</li> </ul>
Blind people	<ul style="list-style-type: none"> <li>• dependence on tactile and acoustic sensory impressions</li> <li>• usage of sticks to perceive obstacles and danger</li> </ul>
People with visual defects	<ul style="list-style-type: none"> <li>• difficulties in orientation</li> <li>• difficulties in recognising low obstacles and dangerous points lacking in contrast</li> </ul>
People with difficulties in hearing	<ul style="list-style-type: none"> <li>• perceiving acoustic noise only hardly or not at all</li> <li>• noises drawing attention to danger (such as hooter and bell signals, sound of an engine) are not heard</li> </ul>
People with mental handicaps	<ul style="list-style-type: none"> <li>• limited perception ability</li> <li>• difficulties in orientation and discernment of danger</li> <li>• often dependent on help</li> </ul>
People with mental illness	<ul style="list-style-type: none"> <li>• often unsure behaviour</li> <li>• road space is fearful and not easily comprehensible</li> </ul>

Table 2: Mobility restrictions for people with different kinds of disabilities.

## *Women's special needs*

The level of interest in the specific issue of women and transport has increased worldwide. However, despite the progress which has been made, women's transport and mobility needs are not always met. Although men face travel-related restrictions as well, there are many gender-related issues which currently limit women's transport choices and opportunities.

As illustrated below, men and women still have different access to private transport modes, different patterns of commuting and employment as well as different child-care and other family responsibilities. Thus, there are major differences in the ways in which women and men travel, in the types of transport which they use and in the nature of their journeys as well as in the problems they face and the effects of these upon their lives (DfT 2000a, The Scottish Executive Central Research Unit 2000).

## *Women's employment and care responsibilities*

Even though the reasons for differences in the mode of travel and mobility patterns between men and women are complex, they relate partly to different working arrangements. In the last decades, the average employment rate of women has considerably increased in many European countries – to 54.9 percent. There are rather big differences between individual countries. Particularly high employment rates are found in northern countries such as Sweden (72.5 percent), Denmark (72.6 percent) and Finland (67.3 percent) while in southern countries such as Italy (41.9 percent), Greece (42.7 percent) and Spain (44.0 percent) the share of women who are in paid employment is clearly lower (Eurostat 2003a, The Scottish Executive Central Research Unit 2000).

Despite the increasing rate in women's employment, women continue to be primarily responsible for domestic work, including shopping and child rearing. As a result of changes in the age structure of the population there are more and more elderly people with restricted mobility who require home-based care. The care of sick and elderly adults is done almost exclusively by women. So far, women still have the largest proportion of care responsibilities of all types and primary responsibility for domestic work. On average in all European countries, women spend more time with activities in the household than with occupation and education. Two exceptions are Denmark and Norway where the time spent on both kinds of activity is approximately the same (Aliaga/Winqvist 2003).

As a consequence of care responsibilities, many women seek part-time work close to home. Therefore, it is not surprising that in the European Union considerably more women (33.7 percent) than men (6.3 percent) work part-time. Here as well, there are large differences between European countries. Part-time employment among

women is very common in the Netherlands (72.8 percent) and also in the United Kingdom (44 percent) while it is of less importance in southern countries (Eurostat 2003a).

### *Labour market and women's travel*

The UK still has a particularly gendered labour market. As a consequence of care responsibilities, more women work in part-time employment and have two or even more jobs. Of the 6.8 million people who work part-time, approximately 80 percent are women. Moreover, there are also more women working flexible hours (11.7 million) than men (8.7 million). As a rule, many women now have to undertake more work-related journeys, often at non-peak hours, and to balance journeys relating to work and child care (The Scottish Executive Central Research Unit 2000:93).

As there is a high proportion of part-time staff in lower-level jobs, women tend to be disproportionately represented in lower status and lower skilled occupations. Moreover, they also tend to work closer to home than men and with far more flexible hours. Altogether, this clearly affects the modes of transport used and the need for availability of services at off-peak hours.

## *Gender differences in the complexity of trips and access to transport*

A range of research has been undertaken in recent years on specific aspects of women's travel needs and behaviour and there is evidence from many parts of the world that women's and men's travel patterns differ considerably. As many women need to juggle a number of obligations during their day, they tend to make interconnected decisions to be able to combine work and other duties. The "out and back" or the "out, one stop and back" patterns which characterise much of the travel of men in employment are not common in the case of women, particularly those working part-time, with children and domestic responsibilities. Usually, shopping and school escort trips account for a higher proportion of women's journeys than of men's (The Scottish Executive Central Research Unit 2000).

### *Increasing car ownership by women*

Car ownership and driver licence ownership among women are growing. This fact is also reflected by the sudden inclusion of women in car advertising portraying women not as passengers but as confident drivers. The usefulness of the car in making the shorter, more complicated journeys that women undertake cannot be underestimated. When this is mixed with the feelings of liberty and safety that cars provide, it becomes clear that encouraging women away from cars will be extremely hard and that public transport and planning have a long way to go before they can offer an attractive alternative (Covill 2000:5).

A main difference between men and women is in terms of access to a car. As a rule, women have much less access to a car and own a driver licence less often than men. In many households, there is only one car available and usually the man has first call on its use. Thus, women undertake a higher proportion of their journeys on foot, as car passengers and using buses while men undertake more journeys as car drivers. However, women's patronage of public transport cannot be taken for granted as most of the recent increase in car use is attributable to women (see box).

In the past, women's special transport needs and aspirations have often not been sought or addressed and there are several barriers which restrict women's mobility. To ensure sustainable mobility, it is important to take the special needs of women into stronger consideration.

### *One barrier to women's mobility is the fear of violence*

Personal safety issues concern particularly women and restrict their travel much more than men. Because of their fear of violence and aggression, women are less willing to travel after dark. As they are subject to sexual discrimination and sex-specific violence, they avoid certain areas of town and certain transportation options at certain times of the day. Some modes such as double-deck buses, trains or walking are considered to be particularly problematic. Depending on the city, there may be problems with underpasses and areas which are little used after dark, with few pedestrians and poor lighting. Multi-storey car parks have brought particular problems for women car users. Moreover, many transport interchanges such as isolated bus stops and unstaffed railway stations are seen to be unsafe and therefore are often avoided after dark. Thus, fear of violence may constitute an important restriction of women's mobility (The Scottish Executive Central Research Unit 2000).

Moreover, women are more likely to be in part-time employment and therefore travel off-peak more often than men. Particularly travel to part-time work may have to be early in the morning or late in the evening (for jobs such as catering or cleaning) when services are reduced and those travelling are more likely to feel isolated and vulnerable. Due to their travel purposes, women often are "encumbered" with children or shopping. Research into women's experience in travelling on public transport reveals the difficulties of travelling for women with children and heavy luggage, especially boarding and alighting as well as getting to a seat on a moving vehicle. Lack of luggage space on buses is a problem often expressed by women.

### *Urban structure is another barrier to women's mobility*

Urban structure is often another obstacle, confronting women with increasing distances and restricted access to sustainable ways of travelling. During recent decades, urban development in most European countries was characterised by the increasing suburbanisation of housing, workplaces and shopping centres. Urban functions were separated more and more and distances increased. Some destinations are now reachable only by car and conditions for pedestrians, cyclists and users of public transport have deteriorated. Due to their limited access to cars, women are particularly concerned about this development. Shopping, care and work activities have become more difficult to combine because these different functions are widely separated within many municipalities.



## ***Planning and policy decisions are needed!***

Women have many different tasks to complete every day and for this reason, they often combine individual destinations into one string of events. This should be improved through planning and policy decisions. Even though women's needs are partly subsumed under those of other groups, women still need a separate voice as they earn less than men, undertake the unpaid caring and domestic roles in most households, work part-time more than men and have to rely on environmentally friendly modes more often than men do (Covill 2000).

Therefore, efforts must focus on supporting and promoting women's use of environmentally sound modes of transport. If women's transport needs are neglected now, the transport network of the future will provide for even fewer women than it currently does. Efforts must focus on urban design and structure to increase the personal security of women travelling on their own and enable them to reach their destinations using sustainable ways of travelling. As women are more likely to have lower incomes than men, attention must be given to ensuring that they can afford to travel. Recognising that some women prefer to travel with a companion because of their concerns for personal security, patronage could be increased by issuing "two for the price of one" tickets, particularly in off-peak hours. Discount schemes make it easier to travel with children or older relatives. Even the issue of boarding a vehicle is important to women with children or heavy shopping.

Communicative activities should ensure that the transport system meets the needs of women. Close cooperation between the public transport operator, local authorities and other transport providers is important for providing women with "seamless journeys" (by enabling through-ticketing and good connections, for example) (DfT 2000a).

## ***Special needs of people with low income***

### ***Socio-demographic background of the low-income population group***

In 1996, the income of 61.1 million persons in the European Union was below the poverty line of their countries. The European mean poverty gap was 30 percent, meaning that persons living in a low-income household in the European Union had an equivalised household income that was, on average, 30 percent below the poverty line of their country (Mejer 2000).

Regarding age, there are relatively more children, young people and elderly in the low-income group in the EU, and fewer people of productive age. There are more than

three times as many single parents in low-income groups compared to the rest of the population. Due to the higher proportion of women among the elderly and among single parents, the relative proportion of women is higher in the low-income group compared to the rest of the population. Within all age groups, women are always at greater risk of facing poverty than men within the European Union. The difference in poverty rates are considerable depending on age; gender differences in poverty are largest within the 18-24 age group and at 65 years or older. Moreover, single women face a higher poverty risk than single men (Mejer 2000; Mejer/Siermann 2000).

A person's level of activity is also a significant factor in determining income level. Being unemployed or inactive considerably increases the risk of being in the low-income population. For the EU as a whole, there are nearly three times as many unemployed in the low-income population compared in relative terms to the rest of the population. The group of inactive persons is mixed. In some countries, a large part of this group is made up of people doing domestic work, and thus not receiving any significant income. Educational background has considerable influence on the income level, of course. There are more persons with low skills in the low-income group, and within that group, relatively more are unemployed or inactive than are employed (Mejer 2000).

## ***Relationship between mobility and low income***

There appears to be a clear relationship between mobility and social exclusion which is particularly marked among unemployed people, families with young children, young people, older people and all those on low (benefit level) incomes. Even though mobility does not often appear to be one of the primary preoccupations of many low-income groups and they often don't recognise the role of transport in enhancing or eroding their quality of life, poor transport provision is supposed to have an implicit or knock-on effect in terms of the disadvantages and exclusion this group experiences. In particular, it can act as a barrier to accessing high quality education or adequate health care facilities and even may prevent the take-up of employment. Thus, poor transport provision can act as a barrier to economic and social inclusion (DETR 2001, DfT 2000b).

One reason why transport is often not a preoccupation of low-income groups is that many persons in socially excluded groups or areas have a relatively narrow range and do not expect to have to travel for jobs or services. The problem is perceived as the lack of a local job opportunity or service, not as the absence of transport (DfT 2000b).

### Car use by income in Great Britain

In the UK, 64 percent of households in the lowest income quintile do not have a car, and only five percent have two or more. Conversely, only six percent of households in the highest income quintile do not have a car while 50 percent of them have two or more. People in low-income groups make the fewest car trips. On average, people in households in the lowest income quintile make 324 car trips a year (38 percent of all trips), compared with a general population average of 645 trips (62 percent). Conversely, with 860 trips a year (73 percent of all trips) people in households in the highest income quintile record the highest use of cars.

There is also a difference in the average length of car trips by income, varying from 7.0 miles for trips made by people in the lowest income group up to 10.8 miles for those in the highest income group (Department of the Environment, Transport and the Regions 2001).

Concerning car ownership, income plays an important role. Thus, a large majority of all groups above the low-income threshold possess a car. The employed in the low-income group on average also exhibit the same pattern, whereas car ownership is much less widespread among the unemployed and inactive in the low-income population (Mejer 2000).

### Providing local service is essential!

People with low income often have a relatively small range and rely on their local area. They do without a car more often than other groups and therefore are rather dependent on sustainable ways of travelling. If activities are not locally based, the additional cost of travelling to places outside the area may put such activities out of the price range of low-income groups. Additionally, providing a minimum level of service locally increases its accessibility to people with low income. An urban structure that strengthens the role of neighbourhoods and favours non-motorised movement would enhance the mobility of people with low income.

The cost of public transport can create problems for people with low incomes. Affordability, availability and accessibility are key issues for all groups, but in particular for people with low income. Public transport planning should consider extending, changing or standardising the eligibility of concessional fares and look at fare differentials to ensure an acceptable basic minimum mobility that also provides access to different facilities.

Percentage of population that does not possess a car		EU-13	BE	DK	DE	EL	ES	FR	IE	IT	LU	NL	AT	PT	UK
Total population		10	11	18	5	27	18	8	19	5	5	9	8	32	12
Employed	low-income group	12	(4)	(24)	(6)	36	18	13	(18)	(5)	-	(13)	(6)	49	(11)
	rest of population	4	3	11	3	18	6	3	9	2	2	3	4	21	4
Unemployed	low-income group	32	38	(41)	29	45	31	34	55	11	-	(28)	(55)	58	43
	rest of population	12	12	29	7	27	14	7	32	3	-	9	19	33	23
Inactive	low-income group	21	18	24	10	45	34	18	35	9	(17)	25	(13)	62	30
	rest of population	8	7	13	3	23	17	5	15	3	2	5	5	23	11

Table 3: Percentage of population that does not possess a car (in low-income and remaining population groups), 1994 (Mejer 2000).

Members of households without a car travel shorter distances than those in households with cars. Because of changes partly induced by increased car ownership, it is now necessary to travel ever-increasing distances to access almost everything (shopping, work, education, leisure, health care). Travel to an activity is now often an integral part of that activity. In a society in which car ownership is the norm, households without a car are "socially excluded" since their members can't behave as the vast majority of society behaves. Even not owning a driver licence can be a disadvantage as it may reduce job opportunities (DfT 2000b).

# *Sustainable mobility for all!*

## *Recommendations and best practice*

If needs cannot be satisfied on the spot, the demand for mobility arises. How these needs are met depends on the availability of transport systems and may result in more or less (motorised) traffic. Sustainable mobility means that everyone's need to move is taken into account and facilitated, but at lower cost, risk and consumption of resources. In short, the concept of sustainable mobility is to meet the needs of all people while reducing traffic.

### *Tomorrow's mobility patterns are the challenge of today's transport policies*

As transport systems and their infrastructure have a long life, mistakes and improvements accompany citizens for many years. Therefore it is essential to start now with implementing a sustainable transport strategy and adapting individual measures and projects to the special needs of different groups. To ensure sustainable mobility for all, the appropriate conditions (transport infrastructure and services, urban structure, information) must be established, offering target groups customised alternatives to motorised individual traffic. Such a strategy includes encouraging people to walk, cycle and use public transport, and developing new flexible transport services like car sharing, urban freight and small goods delivery. Since transport modes must be seen in their interrelation with each other, a multi-modal and integrated approach is required. This means that access to sustainable ways of travelling should be improved and enhanced by establishing and facilitating links with other transport modes (intermodality).

### *Making walking and cycling safe and attractive for all*

Cycling and walking are considered the most energy-efficient, environmentally friendly and sustainable means of getting from one place to another. Considering that most urban trips are short (typically about 50 percent are less than 3 km), cycling and walking constitute real alternatives to motorised travel for many journeys and are associated with many benefits. Promoting them offers the potential of reducing the negative impact of motorised traffic while increasing people's well-being and health. Walking and cycling are very suitable ways to get around for all groups, particularly for children as it enables them

to move independently. As walking and cycling are very cheap ways of being mobile, they pose no problem to people with low income. Older people often walk and should be encouraged to be mobile as long as possible.

But despite the many advantages of using non-motorised modes, many barriers prevent people from walking and cycling. In many European cities, longer distances between urban facilities, unattractive routes, and the negative impact of motorised traffic has worsened conditions for pedestrians and cyclists. Pedestrians and cyclists are closely aware of their environment and are sensitive to detours, weather and the ups and downs of terrain. Moreover, pedestrians and cyclists are very vulnerable and endangered by road traffic so that high safety standards must be guaranteed.

Improving conditions for walking and cycling includes such things as improving the infrastructure that connects different public facilities. Moreover, it is important to redesign road space, taking into account the needs of people with disabilities. As pedestrians and cyclists are endangered by motorised traffic, measures to ease traffic must be implemented to increase safety, particularly for children and older people.

### *Good walking and cycling infrastructure*

The quality of the infrastructure strongly influences people's decisions to use non-motorised ways to cover ground; demand tends to increase where good walking and cycling facilities are provided. Therefore, a closed city-wide walking and cycling network should be created connecting different locations (housing, workplace, shopping, leisure facilities). Neighbourhood cycle tracks and footpaths must be linked to larger networks. To reduce interference between cyclists, pedestrians and motorised traffic, bicycle tracks and footpaths should be clearly divided from each other as well as from the carriageway. This can increase the safety of cyclists and pedestrians (TRANSPLUS Consortium 2002b).

With regard to cycling, safe possibilities for locking bicycles and minimising the risk of theft are important as well. In many cities, bike stands have been installed at various well-frequented places, near public facilities, shopping areas or in pedestrian streets. The overriding aim is to create a close-meshed network with good and safe access (TRANSPLUS Consortium 2002b).



findings led the city council to take important decisions that contributed to a new policy for redesigning the centre of Larissa. Tackling the mobility issue was one of the basic elements of this policy; its primary goal was to encourage walking. The final result was a functional and organic plan that gave form to the entire pedestrian precinct network, with a projected total length of 15 kilometres.

#### Parma (IT): Promoting Bicycle Mobility

The expansion of the bicycle path network in the last three years has seen the construction of 52 kilometres of paths; another 38 kilometres are to be completed in 2003, connecting with car parks at

transit points. These activities were financed by the municipal budget, the Emilia Romagna Region and the Ministry of the Environment and Protection of the Territory within the scope of the Ecological Sundays programme. A Bike Office was established regarding the implementation of services, initiatives and incentives.

#### Kecskemét (HU): Promoting Cycling and a Healthy Lifestyle

Sustainable modes of transport have been strongly promoted over the past years in Kecskemét. A bicycle programme was introduced in 2000/2001 when the municipality developed a cycling network. In addition, secure and guarded bicycle parks have been installed near railway stations, especially in areas with high traffic congestion and in the city centre. The Kecskemét House of Nature offers bicycle tours and programmes. A "bike to school" action was organised as part of the 2003 European Mobility Week campaign.

##### • Measures for people with low income

Walking and cycling are suitable ways to get around for people with low income who often do not own a car and are dependent on cheap modes of transport. A strategy to increase accessibility may focus on extending cycling networks so that certain areas are easier to reach by bicycle.

#### Merseyside (UK): Cycle Network

In Merseyside, the economy has undergone a period of structural decline in high employment industries which has resulted in a high rate of unemployment. As many people do not own a car and are dependent on low-cost modes of transport, the cycling network has been extended to link main residential areas and main employment sites. The overriding aim of the cycling strategy in Merseyside is to improve accessibility to industrial and residential areas by non-motorised modes and increase the share of cycling on trips to work.

Depending on the city, ways to improve the cycling and walking infrastructure can differ considerably. In some cities, improvements are very basic while in others, good conditions for walking and cycling already exist. Improving these conditions may include creating safe crossings for cyclists and pedestrians, converting areas into pedestrian precincts or designating bicycle streets. Apart from general improvements in the walking and cycling infrastructure, some cities have implemented special measures to meet the needs of target groups such as children or people with low income. As walking is the best way for children to move around, a closed walking and cycling network should connect their most important destinations such as schools, leisure time facilities, and shops. In some cities, walking and cycling routes have been created in residential and school areas to ensure safe home-to-school trips.

Efforts on improving walking and cycling infrastructures can be seen in cities all over Europe.

#### Leipzig (DE): Bicycle Network

With its compact urban structure, few hills, numerous green areas and watercourses, Leipzig is an ideal city for cycling. To make cycling even more attractive and safer, the local authority continuously improves its cycling network along streets as well as in green areas. The total stretch of bicycle lanes and paths has doubled since 1989. According to the local authority's 2002 report on cycling, the total length of the bicycle network is now 195 kilometres. In addition, 1.7 kilometres of bicycle lanes have been renewed. In 2002 alone, eight new traffic lights were installed, 38 kerbs lowered and 89 new bicycle racks installed to make cycling safer and more efficient.

#### Larissa (GR): Pedestrian Network

Since the 1960s, Larissa has been subject to the "evils of growth" and the dominance of cars, just like almost every Greek city. The first serious attempts for new urban planning started in the 1970s and continued throughout the 1980s, when major studies were carried out. Their

This measure aims to link the SIAs (special investment areas), which are new focal points for employment initiatives, to the areas of social need (pathway areas) in support of Merseyside's Objective 1 Programme. The programme contains a wide range of initiatives and in particular will focus on creating 56,500 additional jobs over the period 2000-2006. A main aim of the Merseyside Local Transport Plan (LTP) therefore is to ensure that transport provision is of the highest quality to serve these areas. The cycle strategy will consequently focus on linking the pathway and the investment areas.

Mobility services do not only support sustainable transport, but can also contribute to job creation. Bike stations offering an allround service for cyclists including bike hiring, bike parking and bike repair are one example for offering training and job opportunities for unemployed people.

#### Lüneburg (DE): Bicycle Station

An ever increasing number of commuters, insufficient bicycle parking facilities near the railway station (with the result that the station became the place with the highest bicycle theft rate in the city) and the declared intention to promote sustainable modes of transport in the city's transport development plan of 1990 induced the local authority to build a bicycle station right next to the train station premises. Due to the 650 bicycles parked at this location as ascertained in the framework of a census, the new bicycle station was built with a capacity for 965 bicycles on two levels which can be accessed via ramps. There is a bicycle shop with workshop from where the bicycle station is kept under surveillance. The bicycle station also offers bicycle hiring and hands out information like city maps.



## Enhancing the road safety of pedestrians and cyclists

Promoting sustainable ways of travelling is directly linked with safety and security. As pedestrians and cyclists are very vulnerable and are particularly endangered by high volumes of motorised traffic, neglecting safety issues often results in low levels of cycling and walking. The real and perceived physical danger posed by motorised traffic is one of the main reasons why many people who would like to walk or cycle feel intimidated; parents increasingly restrict the independent mobility of children and older adults tend to restrict their own travel. Therefore, high standards of personal safety are fundamental for encouraging people to walk or cycle.

In the past, however, the safety needs of pedestrians and cyclists were often neglected. Even though the risk of road accidents concerns all road users, children and older people are particularly endangered and restricted in their mobility if safety issues are neglected. Therefore, slowing down and simplifying traffic by introducing appropriate technical measures and/or deliberate traffic monitoring should ensure that children and senior citizens would be safer than they are now.

#### • Measures for children

There is general recognition of the need for children to play outdoors with their friends and be able to move around safely in their neighbourhoods. Transport planning that has children in mind includes reducing traffic speed and improving the overall view of traffic. Two major requirements are to lower the speed limit to 30 km/h and reduce the volume of traffic in residential areas. Many cities have already introduced measures to slow down traffic with the intention of reducing speed from 50 km/h to about 30 km/h. Before and after studies have shown that the number of accidents with children has been reduced by up to 70 percent after such speed limits were enforced (Limbourg 1997, Preston 1995).

Cars parked at the edge of a street restrict the view and are a significant factor in causing traffic accidents involving children. In some countries, parking is not allowed near crossings, zebra crossings and stations to improve the visibility of car drivers and children. Public transport stops should be designed in a way that enables children to safely get in and out of buses. This measure should include cars having to stop behind school buses during that time or passing only very slowly to ensure the safety of children who

may cross the road. Monitoring is also needed to ensure the success of such measures; this should focus particularly on the observance of "no parking" rules, and stopping at crossings, bus and tram stops which are potentially dangerous and therefore significant regarding children's safety (Limbourg 1997).

As physical movement and mobility are the basis for successful ageing as well, relevant infrastructural and organisational measures also benefit older people. Devices to slow down traffic, the installation of traffic lights with a longer green phase for pedestrians and cyclists, pedestrian crossings, and centre islands that allow two-stage crossings are examples of what is needed to allow younger and older people to reach the other side safely. In residential areas, wide pavements need to be installed because many children use them as a playground for hopscotch, painting, roller skating or riding a scooter. Pavements should have a minimum width of 2.5 metres; a general ban on parking should make sure that children have access to this needed playground. Banning traffic from streets and even major roads at certain times, on certain days or even during certain periods of the year (summer holidays) can offer extra freedom for playing.

In many cities, slowing down traffic and enforcing parking restrictions in the vicinity of schools help increase the safety of home-to-school trips. Improving road safety is also of benefit to parents, mostly women, because they don't need to ferry children to and from school for safety reasons.

Additionally, so-called "walking/cycling buses" to school (also called "bicycle pooling") have been organised in many European cities to make the journey to school safer. Usually, parents agree to walk groups of pupils to school along set routes with a timetable and bus stops where children can catch the "walking" bus. By increasing the safety of journeys to school, more children walk or cycle to school. For instance, at the first school to start a walking bus, Wheatfield Junior School in Hertfordshire, car use declined by 30 percent and is reported to have fallen further since. In the meantime, walking buses now operate across the whole of Europe (WHO 2002).

#### Nottingham (UK): Safe Travel to School

The programme of School Travel Plans and Safer Routes to School schemes are part of the Local Transport Plan and offer safer and healthier travel options for children and young people travelling to school in Nottingham. The programme is open to all schools in Nottingham City and has capital funding for three strands: the development of School Travel Plans (STPs), supported by a grant scheme (ASSIST) designed to help schools implement on-site measures for promoting more sustainable travel; a programme of Safer Routes to School (SRTS) involving improvements to the highway infrastructure to promote walking, cycling and travel by public transport; improvements to School Crossing Patrol sites. Starting in 2001, several schools have implemented SRTS improvements; further schemes are in progress or planned for the future.

#### Bristol (UK): Implementation of Home Zones

Home Zones are based on concepts such as the "woonerven" and traffic-calming; they aim at supporting existing neighbourhoods and making streets safe for social activities by slowing down traffic and other measures. Corresponding approaches to create amenable neighbourhoods and promote the use of sustainable modes for short journeys have been implemented for decades in Europe. In 1999, the Bristol city council began investigating the possibility of a home zone in Henbury, linking it with their Safer Routes to Schools programme. Three roads in Henbury were chosen and residents were involved in the project, identifying issues such as the lack of space for younger children to play in, the desire to see environmental improvements, and dangerous entrances to schools. Construction began in February 2001; the second phase, introducing 20mph zones and landscaping, was completed in 2002.

#### Lausanne (CH): Pédibus

The pédibus is a walking bus and is a system for accompanying children on their walk to school. A pedestrian bus is mapped out on a public transport model: children wait for the pédibus at "stops" in front of specified signs (giving pédibus schedules, volunteer parent details) and then join the bus to complete their journey to school. Volunteer parents with identification badges accompany the children. The pédibus operates thanks to voluntary parental cooperation, with organisational and logistics support from local authorities. There are currently 15 routes with an average of 435 m (160 m for the shortest and 880 m for the longest).

#### Other Examples

Kromeriz, Czech Republic: Cycle paths are routed to reach bigger playgrounds and schools; speed bumps are being installed near schools.

Bologna, Italy: A project for a children's city, "tragetti sicuri casa-scuola", has been initiated.

Bad Hofgastein, Austria: Bicycle paths and walkways to school have been made safer.

Ruma, Yugoslavia: Motorised traffic near schools has been slowed down by policemen enforcing speed limits; pedestrian walkways and bicycle paths have been constructed.

### *Redesign of road space*

As the speed of pedestrians allows them to perceive their environment very well, the shaping of the environment is another main element in promoting non-motorised travel. The design of an area affects the way people move around. Thus, new sign and information systems can help to link together diverse parts of a city and encourage people to walk, cycle or take the bus. Paths through an attractive environment encourage people to walk or cycle, even for trips of longer distances. Acoustic impact also influences the choice of non-motorised movement.

Therefore, planning for pedestrians calls for an awareness of buildings, the space between buildings, colours, vegetation and the like, with priority given to pedestrians and to children for play. Architectural elements such as arcades are both aesthetic and functional as they protect walkers from weather. Encouraging people to walk is often combined with measures restricting car traffic to reduce negative impact on pedestrians and cyclists. Integrating cycle tracks and footpaths into "green corridors" helps improve the surroundings for pedestrians and cyclists. The creation of living districts with interesting design and attractive public spaces gains in importance (TRANSPLUS Consortium 2002b).

#### Paris (FR): Green Neighbourhoods

The quiet neighbourhood and 30 km/h zone concepts implemented in Paris were adapted from the PDUIF (Plan de Déplacements Urbains de la Région Ile-de-France / Urban Travel Plan for the Ile-de-France Region). The municipality was driven by the desire to make life in neighbourhoods easier. As recommended under French law, this implied a redesign of public space at a local level. When devising its "green neighbourhood" concept in 2001, the municipality of Paris went even further. The definition and practical implementation of "green neighbourhoods" rely on the analysis, improvement and monitoring of aspects such as replanting, designing small squares, creating courts in front of facilities and monuments, and creating living spaces (to develop local life and improve shopping facilities).

#### Borlänge (SE): Street and square that give priority to pedestrians

Within a designated area, the municipality has built a street which gives priority to pedestrians, cyclists and buses over cars. The street and its surrounding square are the nucleus of the area and a meeting place for the people who work there. Within the area there is also a large water park where rainwater is purified in special ponds. The environmental programme, the "pedestrian street" and the water park are all measures that are expected to lead to lower emissions of atmospheric pollutants and more accessibility and safety for the people who work and move around the area.

Particular attention must be paid to the needs of people with disabilities who often require a specialised street design to be able to travel independently.

- Measures targeting people with disabilities

When designing the local environment, all age and health-related limitations must be taken into consideration, and barriers restricting mobility must be avoided or removed. Ensuring access to buildings and transportation enables everyone to take part in normal life. Street design which takes into account the needs of persons with reduced mobility (such as people with disabilities, the elderly, or parents with children) promotes accessibility.

Depending on the disability, different requirements are made of road design, and compromises are often necessary to ensure that everyone can be as mobile as possible. Improvements favouring single groups while discriminating against others should be avoided. Existing architectural and technical barriers that can interfere with the everyday life of the handicapped have already been removed in many cities. Such measures have include creating walking areas free of fixed and movable obstacles. Pavement, for example, can be sufficiently wide, have a low crossfall and gradient, an anti-slip surface, lowered kerbs at pedestrian crossings, light-coloured kerb markings, and provide tactile orientation for blind people. Traffic lights with acoustic signalling and adequately long green periods are also important to ensure safe crossings. Furthermore, differences in height present a barrier, particularly for persons having difficulties in walking, wheelchair users or women with prams. Ramps or lifts are often provided to help overcome differences in height (Pfeil et al. 2001).

Streets in many cities have been redesigned, taking into account the special needs of disabled people. Measures include pavement adaptation, traffic lights with acoustic signals, Braille signs along selected routes, and aids for deaf people.



### Koprivnica (CR): Increasing Accessibility

One of the principal objectives of Koprivnica's transport policy is to provide all citizens with greater accessibility and equal opportunities for mobility. All road and street reconstruction projects must provide for a reduction of architectural barriers. Measures to reduce architectural barriers are now included in all street and road reconstruction schemes, and in the construction of new streets and roads. Networks of barrier-free streets and roads will be extended, starting in the inner city and going towards outlying districts. All new public institutions will be provided with entrances and elevators for the disabled, while existing public institutions will be urged to ensure the construction of barrier-free facilities within three years.

### Other Examples

Geel, Belgium – redesign of streets, taking into account the special needs of disabled people.

Pécs, Hungary – traffic lights with a voice for the blind and visually impaired.

Olomouc, Czech Republic – wheelchair access routes (pavement adaptation), Braille signs along selected routes and points, optical and acoustic signalling, aids for the deaf.

Skopje, Macedonia – many buildings and facilities are being constructed or modified to offer more mobility to disabled people.

- **Measures targeting women**

Urban design also has an important effect on the mobility of women. Measures to increase safety against crime mainly address women who travel alone in the evening. Therefore, attention must be drawn to such issues as whether major walking and cycling routes go through areas that are well-visited during the day and evening. There are some ways in which good design in the constructed environment can increase safety, thereby reducing crime and fear. Clear views and lighting at night are very important elements. Areas with a mixture of residential buildings, offices, shopping, and leisure and cultural facilities are often peopled the whole day, thus reducing danger as well as an unsafe feeling for women using non-motorised ways of travelling.

### *Shortening the distance between activities*

A recent finding is that shortening the distance between facilities and activities encourages people to choose non-motorised ways to get to them. In some large European cities, bicycles are the fastest way to travel distances of up to three kilometres (door-to-door travel). For even shorter distances of up to one kilometre, walking is an alternative to travelling by car. Thus, urban planning that shortens the distance between areas of human activity and favours sustainable ways of travelling can help reduce private car use (TRANSPLUS Consortium 2002a, 2002b).

To ensure sustainable mobility and avoid motorised traffic, it is necessary to reduce the distances between certain activities and increase possibilities for combining activities in trip chains. Planning principles such as density, mixed use and polycentric concentration gain in importance. People can avoid long car trips if they are offered facilities to cover everyday needs within short distances. Concentrating urban functions along public transport corridors and sub-centres also supports the use of sustainable ways of travelling.

Short distances are of benefit to all target groups. In particular, people who do without a car benefit from an urban structure favouring alternative ways of travelling. Shortening distances is a help especially to women, children, older people and people with low incomes. Mixed use and short distances are conditions that encourage more walking or cycling. In consequence, fewer people travel by car, making roads safer for children and other road users. The lack of local facilities and activities for young people may be seen as a significant factor in the rise in youth disaffection. The range of entertainment and leisure venues should be improved, enabling shorter trips, particularly in rural areas. The long-term aim must focus on reducing travel distances and the need to travel.

### Tübingen (DE): A New District Experiences Variety

One of the largest French military bases in southern Germany was located in Tübingen; it covered more than 60 hectares. The departure of the French garrison in 1991 offered the city a chance to develop the district in an innovative way. A main feature of the new district is variety – variety of uses, variety of ways to live, variety of types of buildings and variety of social groups. One of the main objectives is to develop a “city of short distances” by implementing mixed use and providing a high density of social and leisure time facilities. Moreover, the goal is to enable as many daily trips as possible with non-motorised ways of travelling. Pedestrians are given priority, while motorised individual traffic is restricted.

### *Attractive and accessible public transport for all*

As public transport is fundamental to sustainable mobility in cities, a comprehensive and well-planned public transport system is required which reaches and adequately serves all members of the community, including persons in outlying areas and areas of social deprivation.

In the past, schoolchildren and older people often had no alternative to public transport and were so-called “captive public transport users”. However, as a result of a drop in the birth-rate in many European countries, the number of children going to school has decreased. There is also an assumption that in future more and more older people will keep their driver licences and depend less on public transport. As a result, the number of “captives” will

continuously decrease and public transport systems will need to find new customers. Making public transportation attractive will strongly depend on how well it meets the needs of those who can choose how to travel. Because the population is ageing, public transport services definitely have to be adapted to the needs of the elderly, who represent a continuously increasing share of customers.

### ***Increasing access to public transport by offering special tariffs and tickets***

Affordability is a key issue and pricing is a very common measure to ensure accessible public transport. Special tariffs for different groups are offered in most cities for children, young people and students, as well as older people and people with disabilities. For certain times (such as weekends), there are special tariffs for families or groups of people. Furthermore, integrated tariffs and tickets are often used to make travelling easier between different municipalities.

Innovative ticketing has the potential to offer a large spectrum of special tariffs adapted to the needs of individual user groups. The disadvantage is that a high number of different tickets also makes the use of public transportation more confusing. One solution, avoiding barriers for users due to a complex and hence confusing tariff structure, is "smart cards". Nevertheless it is important that customers still understand the pricing system that stands behind it.

#### **Málaga (ES): Smart Card System**

The Málaga Transport Company is the first public transport operator in Spain to have implemented a non-contact ticketing system for its bus network. The Smart Card includes different options to users enabling them to choose from single/multiple trips, or a month/year pass; it also can provide for the needs of special user groups, such as the elderly or students. Although initially installed only for the bus system, this service has been designed with the potential to enable the integration of intermodal tariffs, therefore encouraging intermodality.

- **Measures targeting children and young people**

The aim of allowing children up to a certain age to use public transport for free is to make children familiar with public transport as soon as possible. By providing cheap public transport, children should be encouraged to use public transport not only for their journeys to school but also for recreational purposes.

#### **Gent (BE): Free Public Transport for Children**

The city of Gent aims to double public transport use within 10 years by providing more, better and cheaper public transport. As a result, the offer of free public transport already existing for the 6-11 age group has been extended to the 12-14 age group, which is already able to travel independently, making it an important target group. Public transport should be used not only for

journeys to school but also for recreational purposes. Financial contributions from the city for season tickets mean that all children aged 12-14 can use public transport without facing any financial barriers.

Attractive offers have been developed to meet the needs and expectations of young people, mainly regarding schedules and tariffs. Most cities offer special tickets such as student cards or allow high school students to travel for free as soon as they are registered at the local university (using the "semester ticket" available in many German cities, for instance).

All-in-one tickets for events, or special night tariffs, are an attempt to make the use of public transport attractive to young people going out in the evening or attending events.

Apart from these special tariffs, the way in which these services are communicated to young people is crucial. Young people must be addressed in their own language, often quite different from traditional communication on transport issues, and offered corresponding service.

#### **Île de France (FR): Imagine 'R' Card**

An attempt is being made in the Île de France region to replace the use of private cars with more environmentally friendly ways of travelling. In particular, the image of public transport is being improved by attractive offers. The Imagine 'R' card offers a special tariff to young people. The card also has valuable secondary aspects such as a magazine, a website and an SMS community. The Imagine 'R' card is a community card and a kind of "urban pass" meant to enhance leisure time and give young people new privileges.

- **Measures targeting older people and people with disabilities**

Older people can use public transportation at reduced fares in many cities. In Kosice (Slovakia) and in Szeged (Hungary), pensioners under 70 years of age receive reductions, and retirees more than 70 years of age even travel for free with public transport. In Daugavpils (Latvia), retired people use trams free of charge as well. In Castellbisbal (Spain), retirees get a special public transport card and can use public transport for free.

### ***Increasing access to public transport by improving services***

The attractiveness of public transport also depends on the extent to which service meets the mobility needs of the population. In this context, timetables and the frequency of public transport service as well as whether facilities can be reached in seamless journeys have an important influence on the use of public transport. "Door-to-door" options would be optimal for senior citizens. Distances to and from stations should be as short as possible and destinations should be reachable without the need to change lines. Improving public transportation should also reduce a dependency on cars for travelling longer distances. This can be done by:

- giving clear priority to public transport vehicles in traffic flow, reducing decelerations due to car traffic/congestion (prioritise buses or trams at traffic lights by installing new, fast routes that to a large extent are separated from other traffic);
- extending and/or revitalising the public transport network which most often is connected with high investments in the infrastructure (building new light rail systems including public transport coverage within the whole region, enabling seamless journeys by establishing direct connections between important destinations);
- establishing new stops and stations which are well connected with other transport modes to improve the accessibility of city centres and smaller sub-centres. It is also important to improve the functionality of stations as transport nodes by coordinating transport interchange schedules.

#### Grenoble (FR): Déplacement Horizon 2010

In 1999, the urban community's travel policy was outlined with the objective of reconciling quality of life, environmental protection, economics and practicality. Until 2010, it is planned to extend the tramway network and to create a multimodal centre combining train, tram, bus, and park and ride facilities. In the period from 2000 to 2005, the bus network should become more efficient and include measures such as the introduction of new lines, the development of night service and the extension of the trolley bus network. Moreover, the local rapid transit network is to be improved by introducing new stops and integrating future developments such as the train-tram (tramway designed to use the national railway network).

#### Madrid (ES): Passenger Interchange Station Network

Well-developed passenger interchange stations in Madrid connect the metropolitan bus and train lines running from the outskirts with the city's public transport network, especially the underground network. The location of the passenger interchange stations is chosen according to accessibility, space, and integration with the surrounding urban environment, with special design and management for every one of them. The newest station highlights the quality of this network and Madrid's bet on public transport – the Nuevos Ministerios passenger interchange station, situated in the city centre, including a direct Metro line to the airport terminal and a flight information and baggage check-in system. Opened in 2002, it is used by an average of 75,000 travellers per day. The accessibility of the city centre was altogether improved and public transport demand increased.

- Demand-responsive transport services for special target groups

It is extremely expensive to provide regular public transport services under certain conditions (to people with certain disabilities, at night, in dispersed regions).

Therefore, in addition to general improvements in public transport supply, demand-responsive transport services have been developed all over Europe (Belgium, Finland, Germany, Italy, Sweden, UK) to integrate, extend and improve overall public transport services. Mobility needs are taken into account during hours of low demand, in areas of low population or where target users are dispersed among the general population. An important objective of demand-responsive service is to reduce the operating costs of public transport and raise the level of service and accessibility.

Demand-responsive transport services are provided in a variety of ways, using buses, taxis, invataxis that are specially equipped for mobility-impaired persons, minibuses and feeder services for express coach, tram and rail services. Services can be integrated between different modes of transportation.

#### Pötttsching (AT): "Gmoa Bus"

A small citybus has been permanently installed since 2000 in Pötttsching. This so-called "Gmoa bus" is an example of how small municipalities can offer attractive and customer-oriented public transport services. It is a flexible bus-taxi which increases the mobility of inhabitants and at the same time helps reduce car traffic. The service is particularly adapted to the needs of women without a car and persons with mobility restrictions; it links remote parts of the municipality with the centre. The bus, a 9-seater mini-van, which is adequate also for people with disabilities, runs on demand with a fixed timetable and offers door-to-door service within the municipality. The bus operates between 7 a.m. and 6 p.m. and can be ordered by phone or simply used according to the timetable.

In many cases, the supply of public transportation for children and young people is confined to the provision of school buses. However, more far-reaching measures are required to win children and young people as public transport users. Since young people tend to go out in the evening, so-called night buses provide a special service aimed particularly at this group.

#### Potsdam (DE): "Nightrider"

The public transport system in Potsdam has developed some special options for young people. These offers are called "have fun travelling" and range from poetry readings in a tram with coloured spectacles to student parties in the historic Gotha tram. The Nightrider is a special line that runs between all popular pubs in the Beelitz-Potsdam-Teltow region at weekend nights from 11 p.m. to 6 a.m. It is mainly for young visitors from Potsdam's southeastern surroundings. The Nightrider not only stops at fixed stops but also on demand – at a charge of 1 euro – and thus offers almost "door-to-door" journeys. The ticket also entitles users to numerous reductions at many venues. In addition, passengers who get off at Beelitz can order a "fifty-fifty taxi" from the bus to take them the rest of the way home.



Despite various measures and continuous improvements in the accessibility of public transport vehicles, there are many handicapped persons who cannot travel on their own. Therefore, alternative services have been developed to offer the individual assistance needed. In many French cities (Nantes, Le Mans, Dijon) demand-responsive services for the disabled have been installed. Another such example is:

#### Coimbra (PT): Door to Door Service for People with Disabilities

A special door-to-door service for disabled people has been set up in Coimbra, in which special vehicles can be ordered by telephone or booked beforehand. Coimbra also offers a range of other services to mobility-impaired people (reduced fares for elderly people over 65 and the disabled, real-time information announcements in public transport vehicles, the "touchless" validation of tickets for blind people entering public transport vehicles, and low-floor buses)

### *Increasing access to public transport by providing a safe environment*

Access to public transportation also has to do with the design of vehicles and stations; this affects both safety and accessibility. Research reveals that women's and older people's fears for personal security are a barrier to using public transport after dark. There are ways in which good design in the man-made environment can increase safety and reduce the fear of crime. For instance, car parks at stations and taxi ranks, and access routes to them, must be well lit.



To make improvements in the wider environment, it is also important to work with other relevant agencies in the area. Safety may be increased when public transport operators adopt a personal security policy for passengers that also pays attention to fears and perceptions as well as reported crime rates.

- Measures targeting people with reduced mobility

Apart from safety issues, the design of vehicles and stations may also create physical barriers and must be adapted to the needs of people with disabilities to ensure that public transport is accessible to all. Senior citizens, people with disabilities, women with prams, and otherwise encumbered people in many ways have similar requirements of accessible public transport and most often are restricted in their mobility by physical barriers in vehicles and stations. Therefore, the special technical adaptation both of vehicles and stations/stops is necessary to ensure that people with reduced mobility can use public transportation.

In many cities, structural hindrances (in vehicles, at stops) which make access to public transport more difficult have been removed. In recent years, many cities have gradually introduced more accessible vehicles such as low-floor buses or buses with adjustable floor levels which are beneficial to wheelchair users and persons who have difficulties with steps. Further measures focus on ensuring that a sufficient number of seats is available in vehicles for people with difficulties in standing (reserved seats for older people and pregnant women).

Station design must also be adapted to the needs of public transport users with reduced mobility. Stops and stations are the entry and exit points in the public transport system and must be reachable by all passengers. The construction of these points must therefore meet many requirements. Thus, steps and thresholds at entrances must be removed and narrow passages eliminated. Where possible, automatic door openers should be installed. Handrails at stairs usually are provided to assist passengers. Ramps, lifts or available staff help ensure that it is easy to get onto platforms or bays in a wheelchair. Shelter and adequate seating at the stop/station/terminal increase the comfort of waiting

passengers. Public toilets accessible to disabled people should be installed at central stops. Modifications also apply to ticket offices, handling facilities, and sanitary facilities.

Quick and easy orientation is also important so that senior citizens feel “safe” on their way to the station and at stations and are not afraid of trouble or encroachments. To deter misuse, waiting areas and vehicles must be checked regularly.

#### Zaragoza (ES): Public Transport Accessibility Plan

Access to public transport for people with severe mobility handicaps is being promoted in Zaragoza. Various measures have been implemented concerning vehicle fleets, transport infrastructure and transport management. All new buses in the Zaragoza Urban Transport Company (TUZSA) fleet since 1995 have low floors and are fitted with easy-access ramp systems (90 new units between 1999 and 2002). Between 1992 and 1999, six vehicles were incorporated that were specifically designed and built to transport people with severe mobility handicaps, and in 2000 a new bus model was developed to provide door-to-door transport for these people. A high-demand route was adapted to allow total accessibility by eliminating the difference in level between the pavement and the deck of the bus and 73 new bus stops were created on other bus lines. Further activities are the development of a new programme for this special transport management, as well as the training of disabled persons to enable them to manage the service and join TUZSA’s organisation.

The action programme for the coming years includes:

- signalling – fitting of high-intensity reflectors to all traffic signs in the city over five years, installation of audible signals that can be activated by a remote control at all pedestrian crossings, programmes and traffic light controls setting the pedestrian crossing speed at 0.7 m/sec;
- installation of public toilets that are totally accessible for disabled people;
- specially adapted vehicles (taxis and buses);
- illuminated panels giving information about bus line directions and stops. The expansion of the current system with loudspeakers is being studied;
- bus stops – installation of 400 bus shelters with tactile paving, height indicators and information in Braille.

### ***Increasing access to public transport by improving information and orientation systems***

Information and assistance in orientation is crucial for accessibility and security in public transport. The uncertainty caused by a lack of information and not knowing the time of the next service can add to the fear of crime while travelling. As some persons, particularly

older people, have difficulties with the new technologies used more and more in ticketing and making announcements, public transport staff should be present and prepared to help customers. This includes offering advice on the public transport system, providing information on tariffs and timetables, and assisting in buying tickets or getting on/off the vehicle or train. Considerate behaviour also applies to announcements in vehicles (DfT 2001).

Every measure aimed at providing all-round information for a certain journey contributes to the accessibility of a certain area or facility. Even though it is assumed that those who are dependent on a service tend to know their way around it in some detail, this applies only to journeys regularly undertaken, while there seems to be more of a problem with information for unfamiliar journeys. Here, even regular public transport users often do not have sufficient information and are not aware of other possibilities open to them.

User-friendliness can be further improved by providing information on routes, timetables and fares as well as on station staffing and amenities (shopping centres, hospitals, post offices, libraries and other places frequently visited). Besides such conventional means as timetables, this also includes innovations such as Internet or SMS information. The provision of real-time information at stops is mostly found in underground rail systems but also at bus and tram stops as it is increasingly being used.



#### • Measures targeting people with disabilities

Access to information is essential to allow people to get around easily using public transport, or find their way around a local area. Information on public transportation (tariffs, timetable, ticketing system) must be accurate, clear, relevant and accessible. Information must be provided in different ways to ensure that people with difficulties in hearing and with visual impairments are informed. This also applies to information on delays or alternative routes, often provided by an audio or visual public address system.



## *New flexible transport services*

As it is not possible to completely replace car use, additional services such as car sharing or the delivery of goods with clean vehicles have been introduced in several European countries. Flexible and attractive services are offered which complement walking, cycling, and public transport; these services can be adapted to special needs. They help reduce the negative impacts of private car use even though they offer the mobility of a car.

### *Car sharing and car pooling*

Car sharing and car pooling are important elements of an environmentally-friendly transport system. Car sharing goes on in most European countries (Sweden, Denmark, Germany) and aims to provide safe, modern and environmentally-friendly transportation to people who do not need a car on a daily basis. Car pooling is particularly favoured in Sweden, and aims to avoid car trips by matching up travellers who share the driving with each other. Both measures help increase the efficiency of car use and reduce the negative impact of travelling by private car.

There are several models of this kind of car use, which have been adapted to the demands of special target groups.

Nanterre (FR): Voiture & co. – Car Sharing Scheme for Young People

Voiture & co is a non-profit association that promotes car sharing among students in partnership with the municipality of Nanterre. Its aim is to reduce the number of vehicles on campus and provide a convivial, environmentally-friendly, safe and cheap system to a population with limited financial resources. Voiture & co runs a solidarity-based car-sharing scheme intended for

students and the academic and administrative staff of the University of Paris X Nanterre. The scheme is also open to employees working within the area. Other services include car-sharing services at night for student parties and receptions in the Île de-France region and for some other cities (Nice, Marseilles, Lille, Poitiers, Bordeaux). As car sharing was not widespread in France, progress was relatively slow in the beginning. Around 300 people registered to join the scheme the first year. There were 650 members the second year, including 150 regulars (more than twice a week). According to a field survey in late 2001 by RATP (the public transport operator), 14 percent of students at the Paris X campus were using the car-sharing service on a regular basis.

Langenegg (AT): Car Sharing as a Local Authority Service

The municipality of Langenegg has a very large proportion of commuters, considering the number of its inhabitants. With almost non-existent local public transport services, most people use their cars for the journey to work. As a consequence, many households already own a second car to ensure the mobility of the rest of the family during the day.

To slow down this trend, the energy team at the local authority proposed to buy and rent out a car. The argument for purchasing a municipally-owned car was supported greatly by the fact that the municipality didn't yet own a car, and was paying up to 2,200 euros a year in travel costs to its staff in the municipal administration and nursing home for business travel, training and other activities. Although there were already several convenient systems on the market for car sharing, the local authority finally decided to set up its own scheme for cost reasons. The municipality bought a car, which of course runs on biodiesel. The energy team called the car "Fifty". Why this name? "Fifty" (50 percent) means that costs, emissions, parking space, energy and resource consumption are halved. The Fifty is used by Langenegg residents and the municipal staff. Municipal staff are allowed to use their private cars for official trips only when the Fifty is not available. That's how the local authority saves on paying mileage and increases capacity utilisation at the same time.

Safety is crucial for car poolers. According to Swedish surveys, car poolers want to know who they are travelling with. Therefore, the Swedish Car Pooling Service, for instance, can be used only by staff at the company who are members of the service.

Södertälje (SE): Car Pooling Scheme

The municipality of Södertälje, together with the Astra Zeneca and Scania companies, has agreed to cooperate in providing car pooling for employees; they pay a consultant to manage an Internet car pooling scheme. To ensure safety, the car pooling scheme accepts only employees of the participating companies. The Swedish Car Pooling Service is an Internet service that connects car poolers with each other. The first time an employee visits the home page, he/she has to register with full details.

## City bikes and hiring bicycles

There is also an increasing number of organisations hiring out bicycles. In many European cities (such as Vienna, Munich, Koprivnica), citybikes have been introduced as an element of strategies to promote sustainable mobility and support cycling. Bicycles are unmistakably designed, making them visible as a means of transport for everyday use. Several services have been developed to encourage particular groups to cycle.

### Rennes (FR): Free Rent-a-bike Service

Rennes recently set up a free rent-a-bike service as part of its "cycle plan". It aims at promoting cycling as an efficient alternative to private car use and a complement to public transport systems. Further objectives are to improve access to the city centre where several bike hire points are located. Hire points are installed close to bus stops, stations, park-and-ride facilities, and near or within the university campus for students. Twenty-five hire points distributed all over the municipality provide a continuous supply of rental bikes and free parking places. Two hundred bikes are available to the public and meet special requirements in terms of reliability (resistance to shocks and vandalism, tamperproof components), identification (integration of a microchip in the frame, original and functional design), and ease of use (light weight, five gears, carrier, easy-to-adjust saddle and handlebar, anti-theft device with key for stops between two hire points).

Altogether, 2.000 access cards were distributed. All the municipalities in the urban area of Rennes received a number of cards in proportion to their population on the basis of one card per household; 30 of these 2,000 cards can be obtained in the city centre by occasional users.

### Castellbisbal (ES): Bicycle and Tricycle Loan System

The city council is developing a campaign to promote sustainable modes of transport, and especially the regular and everyday use of bicycles. It will include a new system of free bicycle and tricycle loans for all citizens. They only have to fill in a form and leave a deposit, given back to them when they return the bicycle or tricycle after a few hours. The bicycles and tricycles will be available at the Punt Verd municipal environmental centre and at the Illa Esportiva municipal sports area, where a bicycle park has recently been opened. Tricycles are included in this project to enable those people who do not know how to use a bicycle, who have mobility difficulties, or who simply want to carry a small load difficult to carry on a bicycle, to benefit from the initiative. In the framework of this campaign, the City Council will also offer its staff a few bicycles for work trips.

### Nantes (FR): Low-cost Hiring of Bicycles by Students

"Velocampus" loans bicycles to students on an annual basis (upon presentation of a student card) in return for an annual Velocampus association membership fee of €30. Repairs are free for members, except for damage resulting from accidents or incorrect use, and there is a

€150 deposit to cover theft. The bicycles are regularly serviced (brakes, lights), and free check-ups ensure that the bicycles are always safe to ride. The association also attends numerous events and offers free safety check-ups.

### Geneva (CH): Genèv'Roule

"Genèv'Roule" was initially a scheme set up by the Geneva Red Cross for the sponsored loan and hire of bicycles. Between the months of May and October, a certain number of bicycles are available every day without charge for the use of residents and tourists in Geneva. During the summer of 2002, four lending sites were opened. There are different types of bicycle available: standard bicycles, electric bicycles, bicycles with a child seat or cart, tandems and scooters. The fleet is renewed each year. The project aims at encouraging urban use of bicycles and employing and training asylum seekers.

Genèv'Roule is a job-training programme for asylum seekers without work. The programme has three elements: social integration, eco-friendly travel and promotion of a healthy lifestyle. About 60 asylum seekers have benefited from Genèv'Roule, which has enabled them to take part in a public service programme, and to receive training in dealing with the public, gain some technical experience, get an introduction to running a small hiring business, receive health and fitness training, get road safety training, gain experience in sorting and recycling waste, and learn specialised vocabulary in French, English, and as far as possible, their mother tongue.

Some cities have introduced the use of electric two-wheelers. Electric bikes and electric scooters are considered to be practical in urban areas for service and commuting trips between five and 12 kilometres.

### Rotterdam (NL): Electric Two-wheelers

In Rotterdam, the E-Tour project introduced electric scooters as an alternative to fuel scooters and mopeds. Electric bikes have been introduced for service and commuting trips (about five to 12 kilometres), not only to improve the environment but also to introduce the normal cyclist's pleasure in commuting without being delayed by traffic congestion. The overall objective was to demonstrate, evaluate and promote the advantages of electric two-wheelers as a substantial contribution to sustainable mobility in urban areas. The project aimed to convince employees of municipal departments and private companies in Rotterdam and the region of this alternative's benefits.

## Integrated approaches

Transport modes must be seen in their interrelationship with each other, which requires a multi-modal approach. Such a comprehensive approach usually combines "push and pull" measures – measures which stimulate the use of sustainable modes are combined with those restricting car

use. People should be prevented from travelling with their private cars and attracted to alternatives. As a rule, the promotion of non-motorised modes should be supplemented with corresponding measures reducing the negative impact of motorised travel. Moreover, attractive, environmentally-friendly alternatives to motorised individual transport should be created by linking public transport and non-motorised ways of travelling (TRANSPLUS Consortium 2002a).



Measures to reduce urban space or access for cars have been implemented widely, including accessibility regulations, parking management or reallocation of road space. Accessibility regulations comprise selective restrictions on vehicle access, such as time of day/week, vehicle type, user type (resident, visitor) or road user charging.

Lund (SE): LundaMaTs – an integrated effort to create a sustainable transportation system

Lund's sustainable transport strategy, LundaMaTs, was introduced in 1997. The strategy comprises:

- better public transport with improved intermodality for city buses and regional transport services;
- bicycle city;
- more sustainable commuter transport;
- environmentally-friendly car traffic;
- sustainable urban planning.

In the framework of LundaMaTs, a large number of activities – both infrastructure and soft measures – have been carried out and several projects were initiated. Measures for discouraging the use of the private car are various speed-reducing measures, reallocation of road space, limiting parking space as well as supporting car pooling and car sharing. Nevertheless, the emphasis in LundaMaTs is on measures designed to encourage voluntary changes aimed at creating an environmentally sound transportation system.

## *Improving transport intermodality*

Non-motorised modes such as cycling enable individual movement which is independent of timetables or car ownership but is best used only for short distances. On the other hand, public transport modes are suitable for travelling longer distances, but cannot provide door-to-door service. Therefore, it is important to link non-motorised and public transport modes to benefit from the respective advantages of both. Improving the link between public transport (train, bus, tram, underground) and cycling considerably increases the accessibility and effectiveness of both ways of travelling and thus their competitiveness with cars. Linking cycling to public transportation is of importance especially in areas of low density where a comprehensive public transport infrastructure cannot be implemented for economic reasons (TRANSPLUS Consortium 2002a).

Cycling from home to the public transport stop becomes even more attractive if it is possible to park one's bike safely and under a weatherproof shelter right next to the public transport stop. Bike-and-ride facilities have been installed in many cities to improve accessibility to public transport. Since some people reach a station by bicycle and continue their journey on a bike after using public transportation, some public transport operators enable cyclists to transport their bicycles on trains. Some services such as bike safeguarding and repairing are offered directly at railway stations and other well-used destinations.

### *Leipzig (DE): Bike & Ride*

To make cycling from home to the public transport stop more attractive, Leipzig has established the biggest bike-and-ride system in eastern Germany; many parking areas for bicycles have been built at important public transport interchanges. The bike-and-ride stations are at all terminal stops of the tram, at important urban railway stations and other important bus and tram stops. Bike parking facilities are individually adapted according to local conditions and requirements. The so-called Leipziger Anlehnbügel (a reversed U-shaped bar) is used as a rack to store the bicycles. Roofing is prescribed. Some 28 bike-and-ride stations have already been erected with a capacity of up to 1,000 bikes. About 20 of them are situated at the periphery, the others adjoin the city centre. The combined use of bikes and public transport has increased considerably and the number of bicycle trips has doubled since 1989, amounting now to 200,000 journeys per day. Bicycle traffic accounted for 13.2 percent of urban traffic in 2000.

## *Accessibility regulations and parking policies*

Car access to the city centre is limited in many cities and parking space must be managed to reduce traffic in the city centre. Parking control measures are a common method for reducing the number of cars on the streets.

Reducing the number of parking spaces, regulating their use through permits or restricting the duration of parking or opening hours are measures meant to encourage car riders to use other means of transport. In turn, these measures presuppose the existence of attractive alternatives to using a car.

To encourage people to use sustainable modes, most cities have installed paid parking in the centre and immediate surroundings. The pricing policy may be differentiated according to place and time. Another approach is to reduce parking space according to the accessibility of public transport. An innovative example for parking regulation is the definition of a maximum number of parking places that is dependent on the quality of public transport.

#### Cologne (DE): Reduction of Parking Lots with the Help of Public Transport Quality Plans

The city of Cologne has established a system to determine a maximum number of parking places, which depends on the quality of public transport and the modal split. The urban planning department has worked out public transport quality plans. German municipality regulations for influencing private parking are complicated. But in the state of North Rhine/Westphalia, the scope of action by municipalities was made easier when the law changed in 1995. Since then, cities in North Rhine/Westphalia have been allowed to reduce the number of required parking spaces on private property in areas with a well-developed public transport system. The conditions for reducing parking space are that the area is no more than 300 metres from a public transport station served by several lines and that this service has a frequency of at least 20 minutes.

Many cities provide special parking lots for handicapped people, elderly or women to avoid their being restricted because of reduced mobility or fear of crime.

#### Kecskemét (HU): Reduced Parking Fees for Handicapped Persons

The local authority has reduced parking fees for the handicapped. It has also delineated parking areas for the handicapped to ensure accessibility, especially at already existing institutions. This is also a condition for new building permits.

### *Car-free / restricted neighbourhoods*

Improvements in environmentally-friendly transportation need to be enhanced by deterrents for car use. Establishing car-free neighbourhoods is the most intense form of restricting space for cars, aiming to uncouple residential development and parking provision. Car-free / restricted neighbourhoods must meet certain criteria so they do not restrict the mobility of residents. It is crucial that attractive alternatives to the private car are provided. Car restriction must include ideas promoting environmentally-friendly travel and thus must be part of an integrated transport plan. Moreover, providing mixed

use is also important to reduce the need to travel and to promote non-motorised travel. Although it will hardly be possible to provide a sufficient number of working places in the immediate vicinity, a good supply of daily goods as well as public and private services is required. Retail shops, schools, and green spaces should be available within walking or cycling distance (TRANSPLUS Consortium 2002a).

Car-free neighbourhoods are especially valuable for persons who do not own a car or who depend on their local area for activities. Children in particular profit from car restriction as they are not endangered by motorised traffic. Many projects are also meant to provide additional benefits to the residents, such as extra public space, ecological building standards, mobility services, and a high level of participatory planning. An overriding aim is to create neighbourhoods that facilitate contacts and are attractive to different generations and social groups. Public spaces are not used for traffic and parking but serve as places to be used by residents, employees and visitors; they must be of high quality to attract people.

Such quarters may also be not completely car-free but only restrict car access. For instance, it might be possible to load and unload cars in front of all buildings or allow parking facilities for selected uses such as activities that are dependent on a vehicle, for people parking short term (at a fee), for disabled persons and for car-sharing projects.

#### Vienna (AT): Car-free Housing

The first car-free development in Vienna should demonstrate the feasibility of a car-free housing project with some 250 flats and units. Good public transport services close to the Floridsdorf regional public transport hub and car-sharing facilities in the settlement guarantee mobility to the tenants who commit themselves to not owning a car. The money saved by not building a parking garage was used to create common facilities to increase the residents' quality of life (green space). There are only 25 parking spaces; they are used for car-sharing vehicles and bicycles. The use of these cars amounts to a marginal five percent of all trips made by residents of the project.

#### Tübingen (DE): Redevelopment of a District with Restricted Car Access

A former military area has been redeveloped in an innovative way in the southern part of Tübingen. The transportation concept aims at equality for different means of transport. However, it was never the intention to create a car-free neighbourhood, but rather, quarters in which public space is not dominated by cars. With some exceptions (for people with disabilities), vehicles are parked in public car parks with 100 to 350 parking spaces. The central areas of each quarter are designed to slow traffic down to walking speed. Only a few streets are designated as 30 km/h zones. A dense bus network, good connections to the urban cycle network and a comprehensive car-sharing-project are provided in the district.

# *How to make local transport suitable for citizens – participatory approaches*

A "City of Tomorrow for Everybody" calls for developing concepts and policies which take all road users into account. The acceptance of measures promoting sustainable mobility is one condition for their success. Thus, it is not enough to improve environmentally-friendly ways of travelling and develop new transport services; citizens must also be encouraged to reconsider their mobility behaviour. Campaigns and other communicative measures can help influence the formation of opinion and remove or weaken subjective reasons against sustainable means of transport. Moreover, as a lack of information constitutes an important barrier to the use of sustainable transportation, special groups must be given information on alternatives to the private car in a comprehensive way. Mobility management as a concept has arisen all over Europe in the past ten years.

In addition, participatory approaches may pursue the objective of ensuring that the needs of special target groups are met as far as possible. There are many ways to assess the transport market. Most often, surveys and other tools are used to get to know people's travel patterns, their choice of transport and their attitudes towards different ways of travelling. The aim of surveying people or selected target groups is also to identify barriers and dangerous situations. It is users themselves who tell authorities about their needs and requirements.

It is also possible to directly involve people in the decision-making process. In this context, a good decision not only incorporates good planning and engineering practices resulting in an efficient allocation of resources, but also reflects the interest and goals of different groups. Thus, it is important that particularly "weaker" road users have the chance to contribute to plans by identifying barriers to mobility and possible alternatives or by influencing planning in a way to create structures which allow them, for instance, to reduce the distances they travel for everyday activities.

Summarising, it is clear that communication activities include getting information on certain issues, investigating the needs and requirements of different groups, and exchanging experiences and opinions. We will distinguish between three main activities: informing and qualifying people and special target groups, collecting information, and initiating a dialogue with target groups. The main characteristics of these activities differ in the kind of information flow between different actors and the purpose and impact on plans and actors.

In addition, cooperation is important to successfully implement strategies and measures.

## *Providing information to target groups*

As the success of measures increasing sustainable mobility for everyone mainly depends on their acceptance within target groups, providing information and raising awareness are essential elements when promoting sustainable mobility. Providing information to the population is mainly a one-way process which generally aims to present certain issues and evoke a certain reaction; this might be to encourage people to change their behaviour in favour of sustainable mobility, use new transport services, accept plans or be thoughtful towards weaker road users. Many channels and methods are available, including making announcements, printing leaflets, exploiting local press, radio and television, taking excursions or staging public events. New media such as the Internet have recently been gaining in importance too.

### *Vic (ES): Sustainable Mobility Map*

In Vic, a sustainable mobility map has been published to provide people with information on existing alternatives to using their cars. The map has two parts.

One part shows a map of the city with public transport routes (urban buses), environmental routes, current and planned cycle lanes, bicycle parking facilities, public and private car parks, bus stops, railway lines, rivers, green spaces and built areas as well as schools and colleges. In the legend, distances and times to walk between different points of the city are indicated.

The other part of the map contains information about the conditions and benefits of sustainable mobility, such as the European Charter of Pedestrians Rights, European pro-bicycle cities, the benefits of walking and cycling, objectives of the mobility pact, safety advice, journeys in town, the cost of owning a car, traffic data and a list of web pages on sustainable mobility issues.

The sustainable mobility map will be updated whenever changes take place. The aim is to complement information by means of additional material and work, and to disseminate it through schools, neighbourhood

associations and other groups in the city. Other actions to promote sustainable development are also envisaged – seminars, school activities, awareness-raising campaigns, and lectures. Cycling, walking and public transport should be regular ways of making journeys, rather than exceptions.

#### Karlstad (SE): Pre-trip Information Package for Students

A pre-trip information package is provided to the students of Karlstad University. The university is expanding and facing severe traffic problems. Therefore, a main objective is to enable students, teachers and other staff to commute to the university without depending on cars. A first measure that was introduced was a pre-trip information package with good transport information and a free ticket offer for all new students. The cost of this measure, which was introduced within the MOST project and has since become permanent, is shared by the university, public transport companies and the municipality. In addition, personal travel advice is given twice a year to students and staff at a temporary mobility office by local and regional bus companies, the railway company and the municipal transport advisory service. A detailed website also provides all information.

The result of these activities was evaluated in a student survey. Three-quarters of students were aware of the information offered by the university's mobility office, 50 percent used the free public transport ticket offered, 49 percent said their travel behaviour was influenced by the services offered and 17 percent increased their use of public transport because of acquiring the information (MOST 200:6).

Poitiers (FR): Information Leaflets list journey times needed to travel on foot, by bus and on a bike

Poitiers has published information leaflets on walking, cycling, and public transportation which aim to increase awareness of these modes of transport. The leaflets list the personal and environmental benefits of walking, cycling and using public transport. They also state average travel times for these ways of getting around to various parts of Poitiers, starting from the town centre.

Mobility centres have been established in some cities to provide information on ways of travelling and to influence people's choices. Awareness-raising campaigns are often used to motivate both environmentally-friendly and considerate behaviour towards other road users (children, older people, persons with disabilities). The objective is to enlighten the general public about the lives and needs of special groups. Education is another form of information provision which mainly aims to encourage people to be mobile in a safer and more sustainable way.

### *Mobility management services*

Mobility management is a demand-oriented and low-cost approach that aims to encourage a voluntary change in mobility behaviour in favour of sustainable modes of transport. It involves new partnerships and a set of tools

to support and encourage a change in attitudes and behaviour towards sustainable modes of transport. Corresponding approaches are usually based on information, communication, organisation and coordination and include strategies such as providing better information on alternatives to private cars, arranging of new collective transport for commuters and students, coordinating car pooling or organising public awareness campaigns (Schreffler/Serwill 2000).

In several European cities, mobility management centres have been established at a regional, local or site level. Some mobility centres have been analysed within European projects such as MOMENTUM, MOSAIC and MOST to identify and demonstrate good practice and provide guidance to other cities.

Altogether, mobility management is a long-term approach which is being incorporated in local and regional transport strategies more and more in the European Union. Important elements of mobility management schemes are the creation of partnerships between stakeholders (transport operators, community groups, local councils, local businesses) and the use of awareness-raising campaigns. Moreover, instead of spreading information across a wide range of user groups, efforts target selected users (such as companies and young people).

#### Graz (AT): Mobil Zentral

Mobil Zentral started in 1997 as the first Austrian Mobility Centre and was partly financed by the MOMENTUM and CENTAUR EU projects in the starting phase. Located at a public transport node in the city centre of Graz, it is the mobility information office for the Styria region and beyond. Due to its ambition to become a focal point for all mobility-related issues, it has developed a wide range of services such as:

- information on public transport, including personalised timetables, Styrian public transport fares, Austrian and European rail services;
- sale of all tickets and reservations;
- information on cycling, walking, car sharing;
- rental service for bikes and bike trailers;
- mobility services in general and tourism for mobility-impaired people;
- various mobility consulting services for people who have just moved, for companies, and for schools;
- campaigns, awareness-raising and complaint management.

The Mobility Centre is operated by Austrian Mobility Research and services are provided 64 hours a week. The staff has received special training and provides information via phone, fax, letters, e-mail, Internet, and in person. The number of contacts has increased from about 2000 at first to 4000 inquiries (personal and phone contacts) per month in 2001. Up to 50 customers visit the office each day and the number of services is steadily growing.

Quite a number of mobility management services have been developed which target companies and their employees. Services like promoting the use of public transport by co-financing tickets, promoting cycling to work, financing bicycles and related equipment or promoting car sharing and car pooling are well known, although not widely implemented, throughout Europe.

Lund (SE): Bus Rider project

The Bus Rider project's aim was to convince half of a group of regular commuters to use public transport after a one or two month trial. Seventy former car commuters signed an agreement to go to work by public transport for a period of two months. The Bus Rider project was carried out by Lund's mobility office, which aims to trigger and assist in the development of more sustainable transport in Lund through mobility consulting, information services and awareness-raising about the environmental and health implications of traffic. Bus Rider was tested in Soedra Sandby, a village near Lund, to see to what extent it is possible to change travel behaviour by combining different mobility management activities. One year after the initiative, nearly 30 percent still travels by public transport at least three days a week. In the area where bus riders in one group live, around 65 percent of inhabitants know about the project. Almost 30 percent of all Lund citizens know about the project.

Time management – quite common in companies – finds more and more attention also in the field of mobility as new practices in the workplace, changes in consumer habits and domestic lifestyles have a major impact on our choice of mode of transport. Time agencies aim at making the journeys that are necessary at different times of the day easier (work, social or parental, for example) and to improve the quality of life and availability of public services.

Urban Community of Poitiers (FR): Time Policy Agency

Poitiers' "Agence des Temps", the first in France, is run by the Research and Development department. The Agency analyses and improves the organisation and scheduling of transport for the inhabitants, employees and students of Poitiers. The main objective is to improve coordination between modes of transport and various employment and social activities.

The agency records patterns of movement over the whole of the Poitiers urban area and provides a platform for discussion, negotiation and the construction of new partnerships. The agency looks for innovative ideas and solutions to increase awareness and improve synchronisation of journeys within an urban context. Projects of the agency include "Temps des Villes, Temps des Femmes - A time for Towns, a Time for Women" and "Time on Tuesdays" (public meetings every two months addressing themes like new trends in the workplace, time management for fathers, time management at night and childcare for 0 to 3 year olds). In addition, meetings with major "timetable creators" are held to make them aware of the impacts that their timetabling decisions have on the community as a whole.

- Mobility management services targeting the unemployed

Nottingham (UK): Travelwise Centre

In 1999, the UK's first mobility centre, the Nottingham Travelwise Centre, was set up dedicated to collating and distributing traffic and travel information for all modes of transport. The mobility office does not just provide transport and mobility information. The office in Nottingham has established itself as an essential service to the local community, in particular in the way employment information and advice is delivered to unemployed people. Thus, mobility management is used as a tool to remove transport barriers to employment and training within socially excluded areas. Improving access to transport services is one area where the city council hopes to combat social exclusion. These mobility management services to employment and training sites have overcome social exclusion barriers for groups of people from three areas.

The "get-a-job-get-a-ride" scheme has been a great success. To encourage the unemployed to look outside their immediate surroundings for employment opportunities, a couple of measures have been implemented. Nottingham City Council has focused its efforts on the introduction of a mobility office, and public transport services and information that provide unemployed individuals with door-to-door service and free public transport tickets to attend job interviews and job training and, if successful, travel to the new place of employment for one month. Local taxi companies are also involved in the scheme as they offer a guaranteed ride home if there is a problem with the door-to-door transport service. Participants in the service are provided with free public transport tickets, personalised timetables and travel schedules, maps and details of where to board and depart a bus. Those individuals who have gained permanent employment or training are able to choose between a free monthly bus pass or the use of a bicycle for three months.

### *Awareness-raising campaigns*

Information campaigns aim to change people's points of view and motivate environmentally-friendly behaviour. The public should become aware of the problems caused by car traffic and the benefits of sustainable ways of travelling. Another objective can be to draw attention to the special needs of weaker road users (children, older people, people with disabilities).

- The "In town without my car" event and European Mobility Week

The European Car-Free Day was established in 2000 as a European initiative to encourage the use of sustainable modes of transport and raise awareness of the environmental impact of people's ways of travelling. The success of this pan-European event can be seen in a continually growing number of participating cities and

towns, which has led to the organisation of European Mobility Week since 2002. This Europe-wide campaign gives municipalities the opportunity to initiate a wide range of activities, contributing to raising people's awareness of the damage to the environment and quality of life generated by the current trend towards increased individual motorised mobility. The European Mobility Week has a focal theme each year, which local authorities take up by organising special events during the week.

The focal theme in 2003 was "accessibility", also seen as a contribution to the European Year of People with Disabilities; in 2004, the focal theme will be "children and safe streets".

- Campaigns targeting children and young people

In many European countries, it has become more and more common for parents to drive their children to school. To counteract this vicious cycle, it is necessary to improve conditions for walking and cycling, and to influence parents to stop driving their children to school, getting children to walk or cycle instead.

To encourage young people to participate in the development of alternative services, schools in particular need to ensure that learning about mobility is fun and exciting and that classroom activities are applicable to real life.

#### Limbourg (BE) – Safe and Environmentally-friendly Ways to School

The Safe and Environmentally-Friendly Ways to School campaign is organised annually for 200 participating schools. During this week, environmentally-friendly and safe travel from home to school is stimulated by competitive games for pupils aged six to twelve (elementary schools). A "snake game" has been developed as a way of encouraging children and parents to change their travel behaviour.

The campaign aims to increase the share of safe and environmentally-friendly travel to school, stimulate discussion on traffic safety and alternative ways of travelling, and raise awareness among parents, pupils and teachers of their own travel behaviour. During the campaign week there is a shift to more environmentally-friendly travel, although in the longer term the shift is not particularly positive or negative.

#### Geel (BE): Give us Some Space Campaign

This campaign, targeting pupils aged six to twelve at primary schools, addressed the issue of young vulnerable road users, asking for some space to travel and learn by experiencing daily traffic. The campaign aimed to increase awareness in schools of their role in the promotion of sustainable transport for home to school travel and to increase the accessibility of schools by encouraging children to travel in sustainable ways. Moreover, awareness was created of road safety problems and the negative impact of cars on the environment.

The campaign had impact on how children perceive travel. Its effect was monitored in a survey; the proportion

of pupils significantly decreased who rated the car above cycling because of "speed", "cool character", "easy door-to-door travel" and "enjoyable way to travel". The most important results are the observed change in behaviour which shows a statistically significant increase in the proportion of children cycling to school (from 40.6 up to 50.5 percent) and a corresponding decrease in those travelling by car (from 47.8 down to 37.3 percent).

#### ZOOM Campaign

In the run-up to the ninth UN Climate Change Conference (December 2003), the European ZOOM campaign helped children and their parents discover how to travel in an environmentally-friendly way to school. For the Green Footprints campaign, children started a symbolic journey to the Climate Change Conference in Milan, Italy, and got to know the history of climate change and protection during an intermediate "stop" in Kyoto. Children aged four to ten were asked to collect Green Footprints from June until November 2003; each time children used an eco-friendly means of transport during the ZOOM week in their school, they received a Green Footprint sticker to keep in a small sticker album.

By collecting Green Footprints, the children got a real idea of their own contribution towards mitigating climate change. Children who were already behaving in an environmentally-friendly way were also rewarded, as were the children who changed their behaviour during the week. All Green Footprints collected by children throughout Europe were handed over to the participants of the Climate Summit in Milan by the Climate Alliance of European Cities (coordinator of the campaign) and around 200 children, illustrating that community effort is needed to protect the climate.

There are also schemes to promote mutual understanding between children and adults / car users.

#### Austria: "Big Danger for Small Road Users"

Compared with other European countries, there are quite a lot of accidents in Austria involving children. Therefore, the overriding aim is to reduce the number of road accidents in which children are injured or killed. The Big World of Small People campaign aims to demonstrate children's problems in road traffic and sensitise adults.

A gigantic car is used to illustrate the dimensions which confront children in road traffic every day. Adults see how "little folk" see things. Centred on the gigantic car, the campaign offers a programme with games, opportunities for discussion, information, videos about children's safety, a "better vision for more safety" eye test, and an interactive computer programme about braking distances.

### *Education activities*

Children's safety depends on the physical features of the route, particularly when children are cycling, but also on their physical abilities, know-how and experience. It also

greatly depends on the behaviour of motorists. Know-how consists both of a mastery of the bicycle and the knowledge of certain theoretical data, notably an awareness of the possible conflicts between bicycles and cars and of the nature of dangers which may arise on route. Before a child goes to school on foot or by bike, the difficulties of the journey must be assessed step by step. Studies have shown that this early training considerably improves children's safety awareness.

- **Traffic education for children**

Children cannot always fully coordinate their physical movements, especially when playing. Cycling is a much more complex activity than walking and requires good motor and travel-related abilities. Children less than eight years of age are allowed to cycle on the pavement in Germany because their cycling behaviour is erratic until that time. Cycling behaviour improves between the ages of eight and fourteen, but risk increases because children overestimate themselves. Cycling education increases the motor skills and safety of children in road traffic.

#### Avila (ES): Traffic Park and Environmental Classroom

A children's traffic park was opened in Avila in 2001. This playground is subject to specific regulations approved by the directorate-general for traffic, and complies with all the legislation in force regarding facilities of this kind.

The traffic park consists of a classroom and marked circuit area of 6,000 square metres. The learning programme offered takes two full days and is initiated by a request from a teaching centre. Teachers give pupils direct personal attention. Pupils first learn the theoretical content of the course and then carry out road safety, environment and sustainable mobility education activities using audio-visual media in the classroom. They then put theory into practice on the marked circuit using bicycles on the first day and go-carts on the second day.

#### Tours (FR): Biking Education

As part of the 2001 "In Town Without My Car!" day, 3000 "Two-Wheel Education" bulletins were distributed to secondary school pupils, as well as leaflets entitled "The Journey to School" and registration forms for various workshops (on road safety, and for teachers). The Two-Wheel Education Village (run by the police during the day as an experiment) has been given a permanent basis as the road safety education unit. Similar events were organised in September 2002.

The police organises regular events at schools throughout the year. Three workshops are offered:

- information, a video film, and a quiz game based on knowledge of the highway code;
- a manoeuvrability course with slaloms, slopes, obstacles, and seesaws;
- a simulated journey through the city centre.

Three policemen train children aged eight to twelve. Prizes such as helmets, repair kits, bicycle lights, and card games are distributed at the end of the workshops.

- **Mobility for the elderly**

To enable older persons to retain their mobility for as long as possible, they must be informed about modern options for travelling and be able to use new technology; they must also be able to safely use cars and bicycles.

#### Switzerland: "Be Mobile – Stay Mobile"

A Swiss mobility office is now offering courses to people over 50 all over the country. People find out how to use the modern information services offered by public transport operators and practice using ticket machines. They can take a practical "Safety in the Saddle" course and get a check-up on their driving. Even people with disabilities find out that thanks to a wide offer of diverse ways of travelling, they need not forego individual mobility.

[www.mobilsein-mobilbleiben.ch](http://www.mobilsein-mobilbleiben.ch)

## *Collecting information on target groups*

The design of the man-made environment, transport infrastructure, information systems and the provision of services should meet the needs of all persons in society to ensure sustainable mobility. Surveys and other tools to gather information aim to gather opinions and ideas and often are used to investigate existing problems and get to know the needs of different groups. Barriers can be identified which, for instance, may restrict the mobility of children. Such research enables stock-taking and is the basis for defining a problem and finding its solution when developing new urban transport plans or individual measures. Opinion polls on the attitudes and behaviour of people regarding sustainable mobility help to set up targeted communication strategies.

## *Surveys and questioning*

Surveys are based on questionnaires which are disseminated and filled in by a "representative mean" of the population or by special groups. Surveys allow taking a large group of people into account. However, problems may arise if people are not willing to fill in questionnaires, resulting in low returns and selective representation.

Surveys can be carried out in different ways (post, telephone, on-line). If certain groups are supposed to be questioned, it is important to disseminate the questionnaire among them. In many cities, children and their parents are questioned about their travel behaviour and unsafe traffic spots on the way to school. The results are used to improve the traffic situation by taking corresponding measures.

#### Lund (SE): Identification of Unsafe Traffic Spots and Travel Behaviour

In the framework of its Walk and Bike to School project, the city of Lund asked children and their parents to fill in

a questionnaire about unsafe traffic spots, how they travel to school and which way they go. The results of the questionnaire were the basis for a list of the most critical spots around Lund that needed to be improved; it is now used to fix these critical spots step by step. Speed limits have been reduced to 30 km/h In different residential areas and speed humps have been installed. A soft measure arising from the project is the walking school bus, where parents take turns walking their own and neighbourhood children to and from school.

#### Montreuil (FR): School Travel Programme

A study was carried out with the help of a questionnaire for parents. Although they revealed that the number of children driven to and from schools was already small compared to the national average, replies indicated an uneasiness about safety in the area around schools and at nearby crossroads. Some walking bus routes were set up based on where pupils lived and stops that had been suggested at a meeting of parents, the local authority, and directors and teachers at schools.

Auditing is another way to appraise the current situation and improve the quality of transport services for all passengers. It is important to involve different user groups such as women or disabled people who will provide valuable information on how the system operates for them in practice and what improvements they would like to see. Afterwards, the results of the audit need to be transformed into a strategy and action plan, which must be properly communicated. Monitoring is about tracking agreed measures and targets to make sure the organisation is doing what it has planned (DfT 2000a).

#### Tournai (BE): Municipal Mobility Plan

Tournai introduced a municipal mobility plan in March 2001, an initiative of the Walloon government. The objective of the plan is to provide a balanced solution in consultation with local stakeholders. Accessibility is a central issue, requiring local synergies in view of the various stakes involved. One of the objectives was to provide the inhabitants of Tournai with preferred access to the town centre.

Consequently, auditing was the first stage of the process, followed by the formulation of objectives. The auditing phase aimed at highlighting the sources of dysfunction as well as the municipality's strong points and potential regarding mobility and the transport of persons and goods.

### *Perception excursions and photo expeditions*

Excursions with different groups (children, women) are a useful tool for gathering information on the spot on problem areas within a district. In many cases, key actors organise a tour of a selected area, usually following a planned course. While following the given route, people make a systematic analysis which provides important

information on the starting situation, ways used by different user groups, statements on conflicts such as dangerous crossings, as well as the needs, wishes and suggestions of selected groups. This procedure also may be combined with public relations work and thus enable awareness-raising and mobilisation of the population regarding plans already in the project phase.

Excursions and interview expeditions are used in several cities, working with children (expedition to the playground), with women (security in public space) or people with disabilities (accessibility of public buildings and infra-structure).

#### • Expeditions for children

Getting children involved in planning projects is very appropriate since they are particularly affected by changes in their surroundings. Projects are usually limited to a certain time period and to the solution of a single problem. Involvement in projects also facilitates playful and child-oriented ways of action. Further advantages are that the characteristics of the group can be considered during preparation and thus, time and attention can be given to the individual situation of participants, adapting methodology to the target group. Interviews and perception excursions are frequently used within such projects.

A lot of information can be gathered from children during perception excursions, enabling planners to understand the way children perceive the project area. Excursions routes can be prepared in advance, but good results depend on letting children determine the direction of their everyday paths and individual experiences. Consequently, the results of such excursions are more open than survey findings. Results can be written down or, even better, illustrated in plans. An interesting alternative is to take photographs or record a video during the excursion. Excursions function both as a source of information and as a starting point for reflection processes (Homann 1998).

#### European ZOOM Campaign: "Hot spot" Expeditions

In the framework of the European ZOOM project (see above), "hot spot" expeditions were carried out to find out more about children's daily journeys. Children identified areas of concern (hot spots) in their surroundings, such as dangerous crossings, a lack of traffic lights, or pavements always blocked by parked cars. They developed solutions on their own to clearly show their vision of a child-friendly and safe transport system with positive environmental impact.

Primary school pupils worked with questionnaires, while pre-school children were asked to draw or create handicrafts that expressed their impressions and ideas. The results of the questionnaires together with the children's drawings, ideas, and wishes were collated into a children's mobility report, which was handed over to local decision-makers and town planners in the hope that specific improvements in local transport organisation, and planning and design, would be made taking their needs into consideration.

## *Initiating a dialogue with specific groups*

Good communication activities incorporate target groups in the policy-making process. Agenda 21, resulting from the 1992 Earth Summit on sustainable development, clearly stresses that involving the wider public in policy-making is a fundamental aspect of sustainable development.

A main objective of public involvement regarding sustainable mobility is to make local transport suitable for everyone. Apart from assuring better quality and a more effective implementation of plans, interactive forms of policy-making aim to bring different actors together to tackle certain problems and establish networks between them. Involved in a (single or continuous) communication process, participants intensively deal with the pros and cons of an issue and thus may enlarge their view. Moreover, experience shows that the link between inhabitants and authorities, and citizen identification with projects concerning their residential area, may be strengthened. In general, communication and participation processes are social acts involving a lot of persons and the outcome cannot be exactly foreseen (TRANSPLUS Consortium 2003).

There is a variety of participation typologies and tools, varying from public debates and consultations to more active forms of involvement such as workshops, forums or committees. The Internet is also used more and more to involve citizens. It is important to reduce the inhibition level and create as friendly a setting as possible for target groups. Therefore, the focus must be on accessibility (by selecting appropriate locations) and comprehensibility (by using different communication channels). Laypersons and particularly children usually have difficulties with technical terminology. Therefore, technical language should be avoided and communication should be improved by visualisation. Some target groups may have difficulty entering communication processes; therefore, not only communication opportunities, but also motivation and direct contact are required to reduce some people's inhibition levels. Every communication exercise and methodology used has to be adapted to the situation (size of municipality, already established communication structures, special local conditions, and purpose).

### Grenoble (FR) : Déplacement Horizon 2010

While a public debate was underway on whether or not to build a new motorway in the urban area, the community of Grenoble Alpes Métropole decided to enlarge the scope of its deliberations to integrate all modes of transportation. Two firms of consultants were given the task of coming up with proposals for a new plan to organise transport from 2010 on that would promote a mixture of various ways to travel.

The Déplacements Horizon 2010 project aimed to promote environmental protection and improve travel conditions within the Grenoble urban area while taking

inhabitants' expectations into account. The local population was actively involved in the project through surveys, think tanks, public meetings, opinion polls, and studies. In March 1999, elected representatives outlined the urban community's travel policy, the objective of which is to reconcile quality of life, environmental protection, economics and practicality. The project's main objectives have been integrated into the local transportation plan and into measures for its implementation.

## *Discussing mobility and transport issues*

Many communication exercises give people the chance to express their opinions on special issues or to review planning intentions or concepts drafted by the authorities. Such two-way communication processes provide background and insider information to both sides, thus contributing to an improvement in planning.

### • Public meetings

Citizens have been involved in drawing up mobility or local transport plans in many cities. As in Mouscron (Belgium), for example, public meetings are often held to present and discuss plans in public. The main objective is to improve the quality of plans by taking into account different views and ensuring that the final plan is broadly accepted and supported. A well-informed citizen is more likely to accept a change when he or she has seen the alternatives under discussion and the reasons for a certain solution.



Nevertheless, public meetings are usually characterised by a high number of participants where only the most eloquent citizens raise their voices while certain parts of the population (older people, women, foreigners) will not articulate their wishes and demands in such situations. Therefore, special efforts are needed to get some groups involved.

Mouscron (BE): Public Participation Strategy integrated into Local Mobility Plan

Mouscron, a Walloon local authority with a population of 53,000, made a decision to develop a true public participation strategy as an integral component of its local mobility plan. What triggered the process was the commitment of the town council to launch a widespread public information, participation and awareness campaign as part of its local mobility plan. In practical terms, this process had several stages:

- the first stage was carried out before the mobility plan survey was started and was organised as an information phase for the future plan;
- the second stage involved public consultation and covered the data collection period up to collation of the results of the survey,
- the third stage involved the presentation to the population, in a consultative manner, of the results of the survey and the mobility plan's objectives.

Once the survey had been completed, a presentation was made to the public in the form of an open consultation process in which 11 public meetings were held over a one-month period. The local population showed a real interest in mobility, road safety and quality of life issues, as testified by their participation in the various events that were organised and by their involvement in the subsequent debate. The next phase will involve establishing a dialogue with the local population which will ultimately lead to the practical implementation of the development projects identified in the local mobility plan.

- **Focus groups**

One possibility to ensure that everyone has a say, even persons who have difficulty articulating, is to organise focus groups which gather people of similar backgrounds or experience together and encourage more personal debate on an issue. A moderator or group facilitator is usually engaged to guide participants and help them participate in the discussion. Chances are higher that reactions will be elicited from participants in this situation, compared to public discussions, and that problems will be discussed that really concern the participants. Different forms of expression and anonymous contributions should be facilitated by offering people the opportunity to submit written comments in addition to speaking.

- **Mobility and transport forums**

The opportunity for people to raise issues or voice concerns about daily life in general or certain transport-related issues has been made a permanent feature in some cities. Some of these so-called forums deal only with issues

of transport and mobility and address only special groups instead of involving all the inhabitants of a district or city.

Merseyside (UK): Merseytravel's Community Forums

Community forums such as the women's forum, the transport access panel for disabled people and the Merseytravel advisory panels were initiated by the Merseytravel's Community Link and Access Team (CL&AT). In addition to its community forums, the CL&AT maintains a constant dialogue with forums created within other projects (transport, health and environment forum) and also works with education and youth service providers through the youth and education forum. This is not a real forum in the sense of a regular meeting group, but rather the constant work of CL&AT employees to reach out to youngsters.

In 1992, Merseytravel formed its women's forum which is open to all women's groups in Merseyside. The aim was to get a better view of the needs of women, who are the main users of public transport, and to have a forum to communicate with them. The forum is used as a means of consulting with women about proposed and existing public transport services and facilities across the region. Recognising that women are the main public transport users and that public transport is essential to many women's lives, it should be ensured that women have the opportunity to influence the shape of public transport in Merseyside. Meetings are held every 12 weeks in premises which are fully accessible (TRANSPLUS Consortium 2003).

### *Developing plans and solutions with specific groups*

People can become very involved in resolving issues of mobility. There are many settings which promote the exchange of views between persons who work jointly on these issues. Often, the transition from one setting to another is fluid and the distinction between them sometimes varies from country to country. What such settings usually have in common is that participants come together to deal intensely with selected themes and exchange their experiences. We will look at selected settings such as working groups, planning for real and the planning cell.

If solutions and plans are to be worked out together, the number of participants should be limited to ensure structured discussions and effective work. Participants must be willing to take a critical look at the issues at stake and commit their time and effort. Transportation and mobility issues usually concern the population; working on these issues commands in-depth involvement. Residents, as main users, are often involved in designing public space in neighbourhoods to make them accessible and enjoyable for all. Different techniques should be used to incorporate special groups, depending on who they are. Children, for example, cannot cope with discussions and must be given special attention so they can voice their needs. (TRANSPLUS Consortium 2003).

- **Planning for real – involving children as experts on their surroundings**

Children move around mainly within their local area, which they know very well. This knowledge should be used by directly involving them in the planning of urban facilities. Designing public space together with children is valuable for two reasons. First, changes can be achieved directly in children's surroundings so they see the results and the process becomes definite and comprehensible. Second, for many children, physically working on implementation is an attractive activity (Homann 1998).

Planning for real is a simple, user-friendly and practical technique which is used to identify necessary improvements in people's surroundings, giving inhabitants the chance to influence urban planning. It has been used to tackle all sorts of issues including traffic, community safety, and the living environment. To start, a large 3-D model of the planning area is created, which is used for people to put their ideas in and establish priorities for future development. Cut-outs or pictorial option cards are provided (shrubs, zebra crossings, phone boxes) so that people can select options and place them in the model. This technique overcomes the difficulty of verbal communication and everyone gets the chance to join. Furthermore, ideas are generated without participants descending into negative criticism. Especially for children, such models pose very appropriate forms of involvement and have been used in Rome, for instance, to design a school garden together with children (TRANSPLUS Consortium 2003).

#### Rome (IT): Planning for Real with Children

The nursery and primary school in Via Romolo Balzani is located in the Casilino 23 neighbourhood which is currently undergoing intense transformation. Teachers, children and their parents were involved in the process of designing the school garden in Via Balzani, together with university staff (DiPSA) and some municipal technicians. Planning for real was applied here completely for the first time in Rome.

Children had a very positive attitude towards the model and added their everyday knowledge of the place, which was useful and an important contribution to the design process. At the end of each interactive session, the children's ideas were carefully studied by the municipal laboratory staff and then captured on a drawing of large size. This drawing was presented to the parents during a meeting/party in which they were invited to express their opinions about the garden placement suggestions on the model, as their children had before, and use the provided materials (TRANSPLUS Consortium 2003).

- **Working groups**

Working groups consist of a limited number of people who jointly work on certain themes and questions, often supported by an external facilitator. The members of a working group deal intensely with selected issues and jointly work out common solutions and suggestions. Different views can be brought together since, usually, everyone can

enter in the process. Such settings are important for clarifying the complex correlation of urban development, fully discussing conflicts of interest and connecting potential development with members' experience.

#### Geneva Eaux-Vives (CH): Improving Travel Safety and the Quality of Public Space

A consultation process was initiated at the request of the inhabitants of Geneva's Eaux-Vives district, who submitted a petition titled, "For a More Convivial Eaux-Vives District", which asked for a reduction in through traffic, the freeing up of parking spaces occupied by people commuting to the area, more convivial public space, and improved safety for cyclists and pedestrians within the community.

Following these requests, a working group met regularly for two years (2000-2001) to develop comprehensive proposals that would deal with the issues raised in a consultation process involving the various stakeholders in the district. The working group was open to all and consisted of:

- inhabitants of the district;
- representatives of district associations, parents' associations, trade associations;
- representatives of relevant departments of the municipality of Geneva (street lighting, town planning, schools, police) and of the state of Geneva (transport and traffic office); and
- engineers and architects.

A public forum was organised in May 2001 to encourage users of the district to express their opinions; afterwards, the composition of the working group was enlarged to include new stakeholders.

#### Olomouc (CZ): Participation of People with Disabilities

The Accessible Olomouc project contributes to the creation of a long-term design for improving the quality of life for handicapped citizens. It involves people with different disabilities, especially wheelchair users and users of walking aids, people with difficulties in walking, the blind and vision-impaired, people with hearing difficulties, pregnant women and mothers with small children (with prams), senior citizens and people suffering temporary mobility difficulties after injury. The stated objective is to create equal opportunities of movement, transport and access to information for all of Olomouc's citizens.

During the project's preliminary phase (2000-2002), a fully cooperating working group was established with a common interest in creating equal mobility conditions for all handicapped citizens in the municipality, irrespective of the type of handicap. The project organises quarterly meetings to monitor accessibility to public roads and paths, public spaces and buildings. Since 2000, more locations have been made accessible and several dozen pedestrian crossings have been established. Moreover, individual transport was provided for disabled people through specially adapted vehicles.

- **Planning cell**

Many participation exercises fail to involve certain groups of the population. With the planning cell, efforts focus on reaching as wide a cross-section of the population as possible. To ensure that the combination of participants comes close to reflecting the heterogeneity of the whole population, participants are selected at random to include persons of different ages, women and men, and employed and unemployed persons. To enable the participation of "unavailable" groups, selected participants are excused from work for a certain length of time, and either take an educational holiday or receive a small allowance for their participation. Moreover, persons who have to look after relatives (such as elderly parents or small children) are provided with replacement care services (Stiftung MITARBEIT 1996).

#### Hanover (DE): Planning Cell and Inhabitants' Report on Public Transportation

People were brought together who would not have met otherwise, due to random selection. They were very motivated and quickly able to get used to the work and complicated questions, and to make statements in a qualified way. The diverse teamwork was assessed positively and expectations were widely met. In the end, a citizens' report (200 pages) was produced with practical recommendations. The planning cell has proven to be a relevant resource (Reinert 2001; Selle 2000; Stiftung MITARBEIT 1996).

### *Indirect involvement of special groups*

In some cases, groups are not directly involved for different reasons but a representative takes on attending to their interests. In several cities and communities, representatives of the municipal administration, the local economy, and associations come together in a certain setting (regular meeting in a group) to discuss and draw up action programmes for certain fields (energy, transport).

- **Planning ombudsmen**

Instead of directly involving certain groups, a planning ombudsman may be engaged whose task is to represent the interests of a group in municipal committees, taking on tasks such as advice, liaison and representation. Advocacy planning is mainly related to a specific planning project and aims to include disadvantaged parts of the population who have difficulty in articulating or expressing themselves within usual participation offers. The planning ombudsman, being understood as an expert who stands in for socially disadvantaged groups, is supposed to represent their interests in the decision-making process and develop planning alternatives corresponding to their needs. A planning ombudsman is mostly commissioned by the authority (because of required financial means) but can also be engaged by affected inhabitants. As the planning ombudsman's work is mostly financed by public funds, some kind of dependency can be assumed, even though he or she

should not directly belong to the planning authority (Hermann 2002).

Planning ombudsmen may also support children's concerns. Children's ombudsmen mostly work on the spot and are in contact with parents' initiatives, children and youth associations, teachers, and the youth welfare department. In particular, children's ombudsmen are not neutral but side with children and act as mediator or liaison officer between children and adults. Thus, they must be able to work independently of an administration's internal and political constraints. With regard to participation, children's ombudsmen may be suitable contacts since they get a lot of information directly from children and young persons and are also in touch with all ongoing initiatives (Homann 1998).

#### Nuremberg (DE): People with Disabilities and Public Transport

Instead of focussing on spectacular individual projects, the public transport operator in Nuremberg has systematically improved its supply to ensure that people with disabilities can move around in the whole system without any barriers. In this view, mobility for people with disabilities is seen as a long-term project. Apart from technical innovations, the local transport operator, VAG, is also developing the existing public transport system in close cooperation with municipal authorities and organisations representing handicapped persons. Cooperation with associations representing the needs of blind people in particular is very intensive and successful.

The representative of persons with disabilities has a variety of tasks. He or she is the person to contact disabled customers as well as their associations. The representative also manages cooperation with the administration and checks whether agreed standards are observed. Furthermore, he or she gives lectures, visits schools and accompanies groups of disabled people. The representative also includes employees of the local transport operator, VAG, in planning, and provides training (<http://www.wir-bewegen-menschen.info>).

- **Children's offices as a liaison agency**

Offices for children's issues have been established in some cities for coordination tasks within the municipal administration. Personnel and finances may vary considerably. Children's offices are based on a cross-sectoral idea behind local policies for children. Such offices are supposed to develop criteria for taking children's interests into better consideration in all municipal plans. For this job, they can have a look at administration documents across all sectors and evaluate whether plans have children in mind. Like commissioners for children's issues, these offices have only an advisory function within the administration and even this is limited. However, offices for children's issues may also carry on public relations work and sometimes see themselves as a contact agency for local initiatives, parents and children. Due to their cross-sectoral orientation, children's offices can be a good starting point for participation projects (Homann 1998).

### Leipzig (DE): Children plan their City

The children's office in Leipzig looks after activating and getting the participation of children and adolescents in all issues of urban development and design in some districts. Its tasks are to establish contact with children's facilities and schools, provide information to parents, do public relations work, organise children's meetings, and mediate between different authorities, municipal facilities and initiatives that work for children's interests. Children and employees of the children's office investigate relevant themes which result in the project work. Such projects include designing schoolyards, planning playgrounds, identifying problems related to road traffic, getting involved in finding solutions, and developing cycling and skateboard networks in residential areas. Moreover, dangerous spots in residential areas are investigated by "urban detectives", videos about the daily life of children are recorded and surveys are carried out.

The children's office has already contributed to the design of several places and streets in different districts. Creative and experimental approaches lend good opportunities for cooperation. The early involvement of children in local decision-making processes and the continuous balance of interests enables them to actively express their opinion on current problems in their living environment and contribute to solutions.

(<http://www.leipziger-kinderbuero.de/start.htm>).

## *Partnership building and cooperation*

As sustainable mobility depends on the behaviour of all community groups, partnership building between transport decision-makers and other actors is an important part of promoting sustainable mobility. The need for good cooperation can be seen in projects that aim to make children's journeys to school safer. Parents, teachers, decision-makers and local authorities have to work together here to succeed. Particularly educational institutions play a central role in promoting active, safe and sustainable lifestyles for young people. Consequently, schools and teachers are often partners within sustainable mobility projects.

### Barcelona (ES): The Way to School

This initiative is a proposal by Education for Mobility that seeks to enhance safe access to and from school. A school starts by integrating its education programme into the project and gaining the participation of teachers, parents and children. Initiated by the Barcelona city council, the project received the support of the set of bodies that form the Sagrada Familia civic forum which has taken it up as one of its priority actions. Other partners in the project are the council's office for mobility and safety, the public way sector, and the institute of education.

Public transport operators responsible for providing accessible and attractive public transportation play a crucial part in ensuring sustainable mobility in local environments. Local retail and shop owners also play an

important role as they are often keen not to have any reduction in traffic to protect their businesses.

As land development and transportation systems in agglomerations are strongly dependent on the development of the whole region, the coordination of projects at the local and regional level and the cooperation of neighbouring municipalities is crucial for counteracting trends in suburbanisation and ensuring the success of local activities. Regional cooperation is important for promoting development that uses available space well, encouraging building density, mixed use and polycentric concentration, to enable sustainable development.

### Montreuil (FR): Green Network

The priorities of the municipality of Montreuil's transport policy are to improve intermodality and increase the use of ways of travelling that cause less pollution than private cars. The municipality has introduced measures to promote cycling as a fast, safe and pleasant way of getting around that can be used in conjunction with public transport. These measures cover a large area and a large number of people because of an agreement with neighbouring local authorities (which also involves the RATP, the city of Paris, and closely neighbouring municipalities).

Together with eight neighbouring local authorities, Montreuil is conducting a study on the development of about 100 kilometres of intercommunal cycle routes which would be integrated with county and regional routes. The municipality has proven its desire to continue this development and give it an institutional basis by signing two charters of cooperation, one with the *Vivre à Vélo en Ville* association, which promotes the use of bicycles in cities and towns, and the other with the regional council. Participation during 2002 in the *Club des Villes Cyclables* has enabled the development of bicycle-related partnerships at many levels. The adoption of the "green network" contract and the finalisation of the intercommunal scheme for cycling and walking, managed by Montreuil, are both factors that have contributed to making cycling a major feature of municipal transport policy.

## *Developing participation strategies*

Once the plans for an overall strategy is in place and the strategy formulation process is being designed, the administration in charge of the plan or project has to determine how to contact the stakeholders and citizens, give them adequate information, hear their views, respond to their comments and incorporate them into plans and decisions. The more specific a public involvement plan, the greater its chances of producing input to the municipality's decision-making. For the more inclusive levels of participation, the stakeholders need to agree on the ways in which they are to be involved.

The stakeholders should be involved in all of the key stages in the development and implementation of a transport strategy, but the role and intensity of individual stakeholders' participation may vary throughout these stages (GUIDEMAPS, 2002), as shown in table 4.

greater difficulty getting to jobs, schools or recreation, but often they are also unaware of transportation proposals that could dramatically change their lives. Many lack experience with public involvement and do not recognise the opportunities to help improve transportation services.

Planning stage	Stakeholders			
	citizens	politicians	administration	planners
Analysis of the current situation				
Formulation of objectives	participating			
Analysis of deficiencies	participating			
Development of measures	participating			
Determination of the impacts of measures				
Evaluation of the measures	participating			
Political decision	with citizens' participating			
Implementation				
Evaluation and controlling				

Table 4: Role and intensity of stakeholders' involvement throughout the planning stages  
 ■ main actor in the planning stage, — communication path, ↔ communication within a planning stage

Underserved people include all those with special cultural or ethnic characteristics. Cultural differences may hinder full participation in transportation planning and project development. People with disabilities find access to transportation more difficult and their ability to participate in public involvement efforts are more constrained. People with low incomes often lack both access and time to participate. Therefore, special emphasis must be

In the meantime, a wide range of techniques for enhancing information, communication and participation have been developed and found application in many cities and planning processes. Table 5 presents an overview of such participation tools (most of them presented in detail above), divided in different groups according to the degree of participation.

given to obtain views from underprivileged and socially excluded groups and minorities (ARTISTS, 2003).

As a conclusion, some key arguments for enhanced participation are (GUIDEMAPS, 2002):

- Ethics: Everyone has the right to command his/her own destiny.

	Informing	Consulting	Full participation
<b>Ways of reaching people</b>	<ul style="list-style-type: none"> <li>• Mailing lists</li> <li>• Exhibitions</li> <li>• Media strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Service satisfaction surveys</li> <li>• Opinion polls</li> <li>• Citizens' panels</li> <li>• Question and answer sessions</li> <li>• Public meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Service user forums</li> <li>• Issue forums</li> <li>• Shared interest forums</li> <li>• Area/neighbourhood forums</li> <li>• Community plans</li> <li>• Hotlines</li> <li>• Focus groups</li> <li>• Site visits</li> </ul>
<b>Specific techniques for informing or engaging people</b>	<ul style="list-style-type: none"> <li>• Public information materials</li> <li>• Newsletters</li> <li>• Video techniques</li> <li>• Telephone techniques</li> </ul>	<ul style="list-style-type: none"> <li>• Complaints/suggestion schemes</li> <li>• Interactive web-site</li> <li>• Referendums</li> <li>• Consultation documents</li> </ul>	<ul style="list-style-type: none"> <li>• Visioning in small groups</li> <li>• Brainstorming</li> </ul>

Table 5: Participation tools according to the degree of participation (source: ARTISTS, 2003).

- Expediency: People who are not involved in decision-making revoke or subvert decisions taken by others.
- Expert knowledge: Certain decisions require expert knowledge of the daily users.
- Motivating force: Participation in the decision-making process ensures that people are aware of the rationale for the decision and are more likely to want to see it implemented efficiently and effectively.

As outlined above, some stakeholder groups are normally more difficult to reach than others due to factors such as: timing of the meetings, restricted mobility, age, social exclusion and language barriers. Thus, public involvement needs to encompass the full range of community interests, yet exactly the groups underserved by transportation do not participate. They not only have

Participation can provide a better understanding of transport problems, help to generate innovative solutions and be a key factor in gaining public support for the final mix of policies needed to deliver a sustainable transport strategy.

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