

## UPRAVLJANJE MOBILNOŠĆU I PLANovi PUTOVANJA

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**Sažetak:** U radu su predstavljeni osnovni principi upravljanja mobilnošću, pojam i svrha planova putovanja, kao i primeri dobre prakse. Upravljanje mobilnošću je koncept kojim se promoviše održivi transport i upravlja zahtevima za korišćenjem putničkog automobila promenom stavova i ponašanja korisnika. U osnovi upravljanja mobilnošću se nalaze tzv. „soft“ mere, kao što su informisanje putnika, komunikacija, organizovanje različitih vrsta usluga i koordinacija aktivnosti različitih korisnika. „Soft“ mere najčešće povećavaju efikasnost „hard“ mera u okviru urbanog transporta (npr. nove tramvajske linije, novi putevi i nove biciklističke staze), ne moraju nužno da zahtevaju velika finansijska ulaganja, a odnos između uložених sredstava i koristi može biti značajan. U mnogim zemljama, upravljanje mobilnošću je uglavnom povezano sa mestima na kojima nastaju putovanja, kao što su kompanije, škole, administracije itd. U ovim slučajevima upravljanje mobilnošću podrazumeva upravljanje načinom na koji korisnici putuju do određene lokacije, a u ovu kategoriju spada veliki broj mera. Plan putovanja ima za cilj da upravlja i menja navike i ponašanje korisnika u transportnom sistemu koji putuju od i do određene lokacije (npr. zaposleni u kompanijama, učenici i nastavnici u školama, kupci u prodavnicama itd.). Plan putovanja obično kombinuje mere koje promovišu pešačenje, biciklizam, javni prevoz i deljenje automobila, a takođe obuhvata i mere kojima se smanjuje potreba za putovanjem.

**Ključne reči:** *Upravljanje mobilnošću, „Soft“ mere, planovi putovanja, kompanija*

## MOBILITY MANAGEMENT AND TRAVEL PLANS

**Abstract:** This paper presents the main principles of Mobility Management, the concept and purpose of Mobility Plans, as well as good practice examples. Mobility Management (MM) is a concept to promote sustainable transport and manage the demand for car use by changing travellers' attitudes and behaviour. At the core of MM are "soft" measures like information and communication, organising services and coordinating activities of different partners. "Soft" measures most often enhance the effectiveness of "hard" measures within urban transport (e.g., new tram lines, new roads and new bike lanes), do not necessarily require large financial investments and may have a high benefit-cost ratio. In many countries, MM is predominantly a site-based activity connected to a traffic generating site such as a company, a school, entire administrations based in a number of locations etc. In these cases MM seeks to manage the way in which people travel to the site in question. A large number of measures fall into this category. A Mobility Plan is a site based plan that aims to manage and to change the travel patterns of the persons travelling to and from this site (for example employees of a company, customers at a shop, or pupils and teachers at a school). In many countries, this is called a travel plan or trip reduction plan. Travel plans typically combine measures to support walking, cycling, public transport and car sharing, and also include action to reduce the need to travel.

**Key words:** *Mobility Management, „Soft“ measures, Travel Plans, Company*

## 1. INTRODUCTION

Many have tried to define Mobility Management, but it is not possible to define it in one sentence. For this paper the authors used the term defined by EPOMM (European Platform on Mobility Management)<sup>126</sup>: *“Mobility Management (MM) is a concept to promote sustainable transport and manage the demand for car use by changing travellers’ attitudes and behaviour. At the core of Mobility Management are “soft” policy measures like information and communication, organising services and coordinating activities of different partners”*. The definition differs from one country to another. In some countries, MM is not yet known. Sometimes it has a different name: transportation demand management<sup>127</sup>, travel planning, smart travel, sustainable mobility or green travel.

The main aim of MM is a more sustainable mobility, with the following objectives<sup>128</sup>:

- to encourage a change of attitude and behaviour towards greater use of environmentally friendly modes of transport (EFMT) (public transport, walking, cycling and intermodal combinations)
- to improve (sustainable) access for all people and organisations by strengthening the conditions for sustainable modes
- integrated and more efficient comprehensive land use and transport planning
- to reduce traffic (growth) by limiting the number, length and need of motorised vehicle trips
- integration of different transport modes
- to increase the economic efficiency of the entire transport system.

MM tries to influence attitudes and behaviour of travellers for target groups or certain trip purposes. Ideally, action is taken before traffic originates. “Hard” measures refer to the construction and regulations side of transport planning (e.g. infrastructure, laws, regulations, tax and pricing schemes), which are considered obligatory to the user. The “soft” measures of MM emphasise organisation and service. It deals with human mobility behaviour through information, communication, organisation and co-ordination. Also, the use of mainly existing infrastructure makes MM a less costly approach<sup>129</sup>.

## 2. MOBILITY MANAGEMENT MEASURES

MM consists of a range of measures<sup>130</sup>, as will be shown in this section.

Table 1: Classification of MM measures<sup>131</sup> (source: EPOMM)

CATEGORY	EXAMPLES
Information	Travel information in advance and en route, information centres, web sites, apps
Promotion	Promotional campaigns, personal travel advice, target group-directed measures (for employers, the elderly, students, resi-

<sup>126</sup> EPOMM

<sup>127</sup> Litman, T.

<sup>128</sup> MOMENTUM/MOSAIC

<sup>129</sup> MOMENTUM/MOSAIC

<sup>130</sup> EPOMM

<sup>131</sup> EPOMM

	dents), individual marketing, trial cards, discount campaigns
Organization and coordination	Car sharing, carpooling services, demand-dependent travel, pre- and post-public transport (PT bicycles, train, taxi), transferring (Park & Ride, Bike & Ride), multimodal transport passes (Mobility Mixx, NS-Business Card)
Education and training	Eco-driving, training of hotel and store personnel, bicycling or public transport courses for seniors, young people, immigrants
Location-related measures	Mobility Management for employers, schools, events, shopping centres, recreational facilities, government agencies, hospitals or residential areas, bridges, tunnels, corridors (roadworks)
Flexible in time and place	Teleworking, reducing the number of hospital visits, Peak Avoidance, other visiting hours (government agencies, banks, health care), flexible work hours, self-scheduling
Supportive measures	Parking management, setting up (bicycle) racks for new offices and residences, financial measures, pay-to-drive, fee integration in public transport, combination tickets (event + public transport)

**Information measures** are essentially driven by demand from the traveller and they provide the traveller with information and advice through many possible media.

**Promotional measures** have at their core the idea of encouraging attitudes and behaviour change through awareness raising, promotion of EFMT, and information provision. This group of measures does not actually provide any additional alternatives to the private car, but rather tries to raise awareness and encourage the use of the alternatives that are already in place.

Category of **organisation and coordination measures** offers, organises and coordinates various types of MM service across an area to provide an alternative to driving ones' car alone.

**Education and training measures** refer to the integration of MM into education, and the training of staff in MM issues.

MM is predominantly a site-based activity connected to a traffic generating site such as a company, a school, fairs, hospitals etc. In these cases **location-related measures** require to manage the way in which people travel to the site in question.

Some measures, such **telecommunications and flexible time organisation**, can be taken by organisations to reduce the need to travel by substituting telecommunications for travel and reorganising working practices.

**Supportive measures** may not be implemented directly to manage mobility, but they can have significant impacts on the effectiveness of MM. They can affect the cost of travel by car or other modes, or make the environment more conducive to the introduction of MM measures.

Typically, MM measures are rarely isolated. They often come as a package of measures, i.e. information campaigns combined with infrastructure, pricing policy or regulations. MM is demand oriented, instead of supply-oriented. This means that building new tram lines, new bicycle paths, new roads etc. are not treated as MM measures, as these are all supply-side measures. This is reflected in the policies of many European countries, where it is in mandatory to first look at the potential of MM before permission for supply-side measures. Infrastructure measures can be supportive measures for MM. On sites, such as companies, hospitals or business parks, a MM measure package might include infrastructure (bicycle parking, tram stops, car parking, a bus shuttle service – typical supply measures) and they are considered as supportive measures (but not as MM). HOV-lanes (high-occupancy vehicle lane), congestion charging, parking management and road tolling, whilst being typical demand oriented measures, are not MM, but can be supportive measures for MM. As parking management is often central to site based MM, parking management as part of a MM bundle of measures is considered to be an integral part of MM<sup>132</sup>.

### 3. TRAVEL PLANS

A **Mobility Plan** is a site based plan that aims to manage and change the travel patterns of the persons travelling to and from this site (for example employees of a company, customers at a shop, or pupils and teachers at a school). In many countries, this is called a **travel plan** or **trip reduction plan**. Also, there are a large number of travel plan definitions. Energy Efficiency Best Practice Programme (EEBPP) uses this definition<sup>133</sup>:

*“A travel plan is a general term for a package of measures tailored to meet the needs of individual sites and aimed at promoting greener, cleaner travel choices and reducing reliance on the car... ...It involves the development of a set of mechanisms, initiatives and targets that together can enable an organisation to reduce the impact of travel and transport on the environment, whilst also bringing a number of other benefits to the organisation as an employer and to staff.”* According to Enoch<sup>134</sup> *“Travel Plans are a mechanism for delivering a package of transport measures targeted at a specific site by an agent with a strong relationship with the local transport users to deliver transport and wider goals to the organisation and society as a whole”*.

Large companies produce a lot of traffic as their employees need to commute to and from work. Further, commuter trips take place in certain time intervals in the morning and evening. The commuters have the same destination (their employer), they have similar schedules to start and finish working and they can be informed and motivated by using communication channels in their workplace. These are characteristics that increase the chance of success of MM in companies. There are many concrete benefits for companies, from environmental, economic and corporate angles.

The purpose of travel plan (TP) is to rationalise the organisation of a company's business-related travel. It is a coherent planning policy, which may be either voluntary or mandatory, but always concerted. A TP's initiatives are directed towards limiting the use of private cars

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<sup>132</sup> EPOMM

<sup>133</sup> EEBPP

<sup>134</sup> Enoch, M.

by developing alternative solutions: walking, bicycles, public transport, car-pooling and car-sharing<sup>135</sup>. TP includes a large number of different measures that lead to<sup>136</sup>:

- A reduction in car journeys to and from the work site
- An increase in the number of people who share their journeys by car
- A reduction in the need to travel, especially during the peak-hour periods
- Enabling staff to use alternative modes of transport.

According to its circumstances, each company sets targets which are specific to its operations. However, the central target of all TP's must be the reduction of the use of cars by a single person, in favour of other means of transport. Travel impacts can be measured in the following ways: modal split, average vehicle occupancy, average vehicle ridership, vehicle trips or peak period vehicle trips<sup>137</sup> etc.

### 3.1. Case studies

There are many good practice examples of travel plans' implementation<sup>138139140</sup>:

***Institut Gustave-Roussy - IGR (Villejuif, France)*** is leading European cancer-treatment centre. It has 2200 employees, 1700 patients and 400 visitors per day. Key initiative was creation of a shuttle service between IGR and the public transport network, as well as setting-up of a car-pooling service and introduction of permanent transport information in company. After implementation of travel plans, the reduction in the number of car users was 17 %. Greenhouse gases and energy recorded a reduction of 10% (357 tonnes of CO<sub>2</sub> per year and 144 of oil per year), and atmospheric pollutants were less for 4% (1.6 tonnes of NO<sub>x</sub> not discharged). The largest gain was for employees: up to EUR 600/year savings on the cost of home-to-work journeys.

***ST Microelectronics (Grenoble, France)*** is leading European semi-conductor supplier with 2000 employees. One of the main problems was that 9 out of 10 employees came to work by car and the plan was reduce car use by a single person from 75% to less than 50%. Some of the measures that have been implemented are: doubling the number of covered bicycle parking spaces, extension and covering of the car park reserved for motor-bikes and scooters, creation of a cycle path serving the site etc. The results were in change of means of transport: 15% reduction in the use of private cars in favour of public transport (8%) and bicycles (7%) in under a year.

***Oracle Corporation (Reading, the United Kingdom)*** is the world's largest software company based in a business park and faced with a lack of parking spaces. The main goal was development of a "sustainable home-to-work travel" programme, including surveys, research and

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<sup>135</sup> CO<sub>2</sub>MMERCE

<sup>136</sup> DTO Dublin Transportation Office

<sup>137</sup> Litman, T.

<sup>138</sup> CO<sub>2</sub>MMERCE

<sup>139</sup> EPOMM

<sup>140</sup> ELTIS

implementation to reduce dependency on car use by a single person. The travel plan consisted of car-pooling plan, free shuttle for staff and visitors to the town centre, bicycle plan with rent-a-bike system, and promotional activities and events. The reduction in the number of car users was 13 %, thus reducing parking requirements. Per month is saved 13000 litres of petrol, 33000 kg of CO<sub>2</sub> not discharged and GBP 51/month saved per employee.

**Coimbra Hospital (Coimbra, Portugal)** had a problem with growing use of private vehicles (72% of commuter journeys). The main objective was to contribute to a more sustainable modal shift by emphasising other means of transportation besides the private car. Some of the measures that have been implemented are: personalised travel planning, car pooling, improved pedestrian and cycling conditions and parking management scheme. The key results of this measure are: modal shift of 10.3% from private car to public transport, a reduction in overall energy consumption for travel of 15% and a reduction of 273 tonnes of CO<sub>2</sub> during the first year of mobility plan implementation.

**Toulouse (France)** metropolitan area has over 170000 employees and 120 implemented travel plans in companies carried by the Toulouse Public Transport Authority. A lot of companies in Toulouse are located outside the city with not enough public transport infrastructure, which has led to a large use of the private car. Between 2001 and 2004, for example, company Thales Alenia Space reduced the use of the car by its employees from 88.7% to 80% and increased the use of public transport from 1.5% to 5%, of the bicycle from 1.7% to 5% and car-pooling from 3% to 5%.

**The Brussels-Capital Region (Belgium)** currently provides employment to about 680000 people. More than half of these workers live outside the region and 57% of them travel to work by car, most of them driving alone. To make commuting more efficient, a decree imposing a travel plan on any company and organisation with more than 200 workers or employees came into effect on 1<sup>st</sup> July 2004. The travel plan aims to involve around 280 sites and 240000 workers, which constitutes around 35% of total employment in the Brussels region. It includes measures which aim to promote the sustainable management of mobility linked to the activity of companies. Over the course of three years, the introduction of travel plans in the Brussels-Capital region brought about a 5% decrease in the share of cars in the modal split for commuters in workplace to home journeys. At the same time the use of public transport to reach Brussels has increased, reaching 35.4% for train (+3.9%) and 17.9% for the Brussels' public transport system (+3.4%).

#### 4. MOBILITY MANAGEMENT AND EUROPEAN POLICY

MM is not yet established as a legal term, but is achieving a more and more important place in European traffic and transport policy<sup>141</sup>:

- 2001: In the White Paper "European Transport Policy for 2010", the European Commission encouraged more conscientious car use. The Commission also emphasised the importance of spatial planning to prevent unnecessary growth of car traffic. The White Paper sought to separate economic growth from mobility growth and wished to promote alternative transport means.

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<sup>141</sup> EPOMM

- 2007: The Green Paper “A New Municipal Culture” places municipal mobility on the agenda.

- 2009: Behaviour change has become a current topic in preparation for the new White Paper. The Municipal Mobility Action Plan consists of 20 measures, such as the promotion of safe walking and bicycling and campaigns for sustainable travel behaviour.

- 2011: Publication of the new White Paper “Transport 2050 - Roadmap to a single European transport area”, which focuses on a competitive and economical transport system.

The strategy established in White Paper 2011<sup>142</sup> shows how transformation of transportation system can be realized. It defines 10 very challenging goals (including phasing out conventionally fuelled cars from cities by 2050, and a 50 % shift in middle distance passenger and longer distance freight journeys from road to other modes by the same date ) to achieve a 60 % reduction in CO<sub>2</sub> emissions and comparable reduction in oil dependency. These are underpinned by 40 concrete initiatives to be developed over this decade<sup>143</sup>. This requires not only behaviour change, but a cultural shift in the attitude of travellers, as well as in the outlooks of politicians, officials and organisations that determine municipal mobility policy. MM raises awareness and draws attention to sustainable mobility, while providing instruction and influencing travel behaviour.

A SUMP (Sustainable Urban Mobility Plan) is comparable to a municipal traffic and transport plan. The starting point is a coherent area; thus this may also be a regional traffic and transport plan. SUMP answers the question of how the municipal or regional mobility policy contributes to sustainability goals. Here, “sustainability” is broader than climate or energy alone: attractive cities and open space for healthy living and working are also involved. According to Fred Kent<sup>144</sup>, “If you plan cities for cars and traffic, you get cars and traffic. If you plan cities for people and spaces, you get people and space”.

The SUMP at their core present a new approach in planning by integrating urban and transport planning along with all principles of sustainability. A starting point for SUMP targets are the general principles of sustainability: protection of basic human rights, involvement of citizens, businesses and social partners in the decision making processes, policy coherence and integration at local, regional and national level, with consultation and exchange of experience and knowledge with other cities, make polluters pay for the damages caused to the society and environment for irreversible processes and actions taken. The SUMP is essentially about integration. Without full integration with other plans, it is incomplete, if not fundamentally undermined. A horizontal integration must be achieved with transport/mobility plans and other municipal plans and programmes as well as spatial planning. At large extent the SUMP builds on the local transport plans and uses the models as a baseline in integrating further the urban and transport planning in an agglomeration. In particular, large scale metropolis counting more than a couple of million citizens rely on local transport plans based on modelling, therefore integration and alignment of the SUMP with existing transport and urban plans is of utmost importance. On the other hand, vertical integration shall be established with other municipal, regional and national plans. Taking into account that the cities of the Southeast

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<sup>142</sup> CEC

<sup>143</sup> Mitrović, J., Basarić, V.

<sup>144</sup> Kent, F.

Europe aspire to joining the EU, these plans shall also be aligned with the EU plans in order that their preparation and/or implementation is supported through the EU funds<sup>145146</sup>.

## CONCLUSION

Mobility Management is a relatively new approach and it is still in its early stages. Its development is rapid in a large number of European countries. The demand for MM in Europe is growing, especially in cities and regions that are aware of the disadvantages of car use. This is achieving a stronger position in European and national policy<sup>147</sup>. MM increases travel options for travellers and encourages people to choose the most efficient mode of transport for each trip. It does not eliminate travel by car, since cars are the best mode for certain types of trips, but it tends to significantly reduce the amount of personal vehicle travel, particularly in urban areas<sup>148</sup>. In a regional perspective, the effect of a change in commuter trips towards a more sustainable mobility is considerably large, because commuter trips contribute significantly to congestion during peak hours. This is the reason, why companies and administrations as employers are among the most important clients of MM. A travel plan consists of a package of measures aimed at encouraging a target group of people to shift from travelling individually by private car to using environmentally friendly modes of transport, such as walking, cycling, public transport and car-sharing. The plan sets out percentage targets for modal splits to be achieved over a specified time period<sup>149</sup>. Regular monitoring and updating of the plan is required as travel planning is an on-going process. The best practice examples show how the plan takes account of the specific nature of the problem and implements initiatives which best meet identified requirements.

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<sup>145</sup> Rupprecht Consult

<sup>146</sup> Basarić, V. et al.

<sup>147</sup> EPOMM

<sup>148</sup> Litman, T.

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