Successful Travel Awareness Campaigns & Mobility Management Strategies

SIXTH FRAMEWORK PROGRAMME

Project no.: **518368**
Project acronym: **MAX**
Project title: **Successful Travel Awareness Campaigns and Mobility Management Strategies**

Integrated Project

6.2 Sustainable Development
1.6.2 Sustainable Surface Transport Objective
3.1.1.1.3 Advancing Knowledge on innovative measures in urban transport

Title of Report:

WP D: Intermediate deliverable

APPENDIX C

Working Stage Simulations

Common report on 'planning simulations'

Period covered:
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MAX - introduction

MAX is the EU's latest framework research project on Mobility Management (MM) and Travel Awareness (TA) in transport. Four thematic Work Packages (WP) will link these topics to develop products of use to MM and TA practitioners:

- WP A New approaches and innovative campaigns in MM
- WP B Development of a new behaviour change model and a prospective assessment tool
- WP C Linking MM to Quality management - leading to MM certification
- WP D Integrating planning and MM

Accompanying Work Packages 1- 5 will integrate the research efforts. MAX started in October 2006, the State of the Art analysis were completed in April 2007 and the main research will be carried out over the following 18 months.

Previous EU research on MM has in the main studied MM and TA separately, but MAX aims to link them in order to demonstrate the synergies between them and, importantly, to develop products that will be of wider applicability and usefulness than the pilot demonstrations that tended to predominate in earlier projects.

A special focus is on new Member States, as reflected in the partners from 16 EU countries, four of them new Member States. The consortium will provide excellence, know-how and experience from various disciplines, including marketing, psychology and social science. The main results will be translated into the most important languages of these countries, while the final conference will be in the largest new EU Member State, Poland, in the city of Krakow, in September 2009.

Austrian Mobility Research, AMOR (project leader) – AT

Mobiel 21vzw, M21 (leader WPA) – BE

Institut für Landes- und Stadtentwicklungs-forschung gGmbH (leader WPB) – DE

University of Piraeus Research Centre, UPCR (leader WPC) – GR

University of Maribor, Faculty of Civil Engineering, Uni MB (leader WPD) – SI

Agencia Municipal de Energia da Almada, AGENEAL – PT

City Council of Almada, Almada – PT

Aristotle University of Thessaloniki, AUTH – GR

Centre National de la Recherche Scientifique – Délégation Rhone-Auvergne, CNRS-LET – FR

Compagnia Transporti Laziali Societa' Regionale spa, COTRAL – IT

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Eric N. Schreffler, Transportation Consultant, ESTC – US

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FIT Consulting SRL, FIT – IT

Stad Kortrijk, Kortrijk - BE

Lyle Bailie International Limited, LyleBailie – UK

Napier University, NU– UK

Austrian Standards Institute, Ö-Norm – AT

synergo, R. De Tommasi + W. Schenkel, synergo, Zürich – CH

Tallina Linn, Tallinn – EE

Timo Finke Consult Aachen, TFC Aachen – DE

Traject nv, TRAJECT – BE

Trivector Traffic AB, TRIV – SE

University of Central Lancashire, UCLAN – UK

Otto-von-Guericke-University of Magdeburg, UMAG – DE

University of Giessen, Institute for applied and empirical social research, Uni Gießen – DE

Vilnius Gedimas Technical University, VGTU – LT

http://www.max-success.eu

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1 Introduction

MAX Work package D (WP D) concerns the better integration of mobility management (MM) with land use planning (LUP). The WP D State of the Art (SoA) review found how generally little knowledge there currently is on how MM and LUP can be integrated. The theory and practice of integrating MM and LUP is at an early stage. Several major research gaps were identified; particularly the reasons why actors might choose to integrate MM with LUP, and the mechanisms that help to bring this about. Most importantly, the SoA report identified the need for research on how to integrate MM with LUP in practice. The SoA review found rather more prior research on the integration of sustainable transport objectives with LUP. However, this was important, as the WP D research team believes it to be an important precondition for greater integration of MM and LUP.

It appears from some member states' experience that the LUP process can provide points where MM can be leveraged into new developments and renewed developments. A review of the current level of knowledge and practice set out in the WP D SoA report showed that there is relatively little knowledge about how to develop and implement this area of MM practice in the majority of member states. Therefore, the WP D research plan set out a number of steps (Working Stages WS) whereby knowledge of this area could be increased, with the overall objective of producing useful guidance for planners and developers in all member states on how the LUP system can be better used to secure more MM.

The first Working Stage 'Analysis' was carried out by partners who looked at their own countries' LUP systems, and how far sustainable transport objectives, and the integration of MM with LUP, were integrated within these. Three groups of countries were identified: those with almost no integration, those with integration at a policy level (especially at higher levels of government) and some *ad-hoc* integration on the ground, and those with more consistent integration in both policy and practice. This latter situation was seen to be a product of more political will for the integration at various levels of government, plus the creation and/or identification of various tools to assist integration. Nonetheless, ways in which greater integration of MM with LUP could be brought about were seen to exist in most of the states whose planning systems were reviewed.

In the second WS 'Simulation', five planning simulation workshops were conducted in Germany, Lithuania, Poland, Slovenia and Spain. These all considered the planning and building permission process regarding real sites for large new developments and brought together a number of local professionals who are involved in planning decisions and site development for a workshop to discuss how MM might be integrated into the process for the site in question.

The workshops for the site in Austria were added after all the other simulations and served more as demonstration site. The site in Vienna – Aspern (new city development site for mixed use 'Seestadt Aspern') is a whole new city quarter in planning for 20.000 residents and 20.000 jobs. FGM-AMOR has been commissioned to produce a mobility concept for this development and will connect the expertise from WPD and the experience from the workshops. The planning workshops took place on 2, 16, 29 October, 20 November and 1 December 2008. As the Austrian site was added at a much later stage results could not yet be incorporated (Status: 18th December 2008).

The third and final WS 'Guidelines' is dedicated to the development of recommendations and guidelines and complementing tools regarding the integration of MM in the planning process of a new/renewed building or area.

This report summarises the results of the WP D planning simulations, the more detailed country reports can be found in the Annexes I-V.

2 Overview

In Working Stage 'Analysis', the WP D partner countries' (plus Netherlands and Ireland) planning laws and systems were analysed. The planning simulations (German "*Planspiele*") as next research steps were carried out within the second Working Stage 'Simulation'.

Within a planning simulation the main focus is laid on the goal-oriented and planned action (decision making) of the participants in order to obtain more information about human decision making processes within the (simulated) systems and their impacts. What could be achieved by organisations or single persons if different courses of action are taken is tested in this way. The focus point is not to identify one single best alternative but to show barriers and limits as well as the background to actions. At the same time the planning simulation aims to clarify participants' relationship to the project and their freedom of action as well as simulating duties, responsibilities and options for decision making in given framework conditions (Diekmann and Leppert 1978).

During the planning simulations WP D obtained valuable insights into participants' views and opinion about suggested changes and measures, and about the acceptance and perceived barriers for integration and implementation of MM (general findings see chapter 5).

The planning simulation workshops were prepared and organised in several steps (see chapter 4). Based on the research results of WS 'Analysis', the transferability of suitable planning instruments, MM measures and case studies were discussed in general. The countries for the planning simulations were then selected: WP D decided to choose those countries, where no or only little integration of transport and LUP or planning and MM takes place, i.e. Germany, Lithuania, Poland, Slovenia and Spain. Within the planning simulation workshops, a valuable and deeper insight into existing possibilities and barriers for integrating MM into planning in two of the 'Old' and three of the 'New' Member States of the European Union could be gained.

The planning simulation workshops were arranged around five 'real' development sites, which were carefully selected for further investigation. In all countries the case studies / development sites were chosen in order to match some predefined criteria such as large to medium size and significant predicted traffic impact on the surrounding area.

At the different sites, the actual states of the planning processes vary, but in all planning simulations the cities have produced a (general) land use plan and a detailed site development plan for the selected areas. In some cases there are designated developers, which have already prepared a detailed description of technical aspects of the planned buildings, e.g. in Lithuania and Slovenia (see country reports in **Fehler! Verweisquelle konnte nicht gefunden werden.**).

A number of key actors from the public sector as well as private parties were invited to join the country's planning simulation. The participants were briefed about the development and its context, as well as about the concept of MM. If feasible, suggestions were made where to change the actual planning, where and how to change the planning process or planning laws and regulations to offer the possibility to integrate selected MM measures or supporting measures into LUP. The acceptance of changes and suggested measures and the feasibility of the new concept were discussed as well.

Many sites were poorly integrated with walking, cycling and public transport networks, as in most of these countries it is rare for transport to be thoroughly considered in the early process of location selection for the developments. MM is a new concept to most participants, and one whose possible successful transfer to their local contexts was greeted with some scepticism. No legal mechanisms were found that require or encourage the integration of MM with the permission process for new buildings, but it was agreed that this fact does not necessarily mean that such integration is not possible, as the integration could in some cases already be achieved through negotiation.

3 Outline of the five WP D planning simulations

Following for each country (in alphabetic order) a short description of the most important facts is given. The more detailed country reports can be found in the Annexes I-V. For a summary of general findings see chapter 5.

3.1 Germany – Dortmund: Brownfield re-development for technology park 'Phoenix-West'

Date: The planning simulation workshop took place on 11th of April 2008; it functioned as a pilot for WP D.

Site: Phoenix-West was chosen as a case study for a re-development of a brown-field area where the city will test a new mobility concept. The former steel mill site is under re-development and the city of Dortmund aims to transform it into a 'technology park' dedicated as a high density business area for micro or nano-techniques and related businesses. The site has a size of about 100 ha (40 ha for commercial use) and is located 5 km south of the city centre of Dortmund and about 1 km west of the district centre of Hörde. The detailed site development plan is about to come into force. Main roads will be constructed and decontamination should have been finished by the end of 2008; some developments alongside the main road are already in place, but most estates are not yet sold.

Figure 1: Aerial view Phoenix-West in June 2007 (source: Website Projektbüro Phoenix)

Transport related problems: Despite good on-site pedestrian and cycling infrastructure and reasonable public transport access, the development site will have to deal with estimated 34.000 car trips per day (when fully developed). The city intends to solve the predicted traffic related problems (e.g. noise) using a new mobility concept. This includes the early integration of MM for companies into the building permission process, which is a new activity for both sides. Legal and organisational problems need to be solved before the city can start to encourage the developers to take up this new voluntary option.

Participants: Representatives from:

- city departments (town planning, transport planning, architectural control, business development - Phoenix project office);
- scientists (experts for construction & planning law, experts for planning & for MM);
- architect & developer;
- management of existing companies, and
- public transport company.

Agenda: The main focus was on the legal and practical aspects of the possibilities to reduce the required minimum number of parking spaces within the building permission process. Points discussed:

- legal framework for Phoenix-West and state of development: street-design, existing & planned transport infrastructure etc;
- introduction of the MM instrument 'travel plan';
- integration of travel plans in the building permission process, existing minimum standards: examples from UK;
- how to use a company's travel plan for reducing the need for parking spaces in Dortmund;
- discussion of legal opportunities: legal basis in state building code;
- local regulations and processes: type of contract, monitoring necessities, legal handling of the reduction within the building permission process;
- discussion of usage of 'pay-off' money (in UK practice, called commuted payments) from not-built parking spaces to undertake new activities such as the implementation of MM measures or MM consultation and corresponding legal changes.

Main findings: The German planning law and system do not support the integration of MM, but within, for example, the state building code of North Rhine- Westphalia there is scope for interpretation. Thus a travel plan can be used as an additional input (beside use and size of buildings and number of workplaces) for the calculation of the required parking spaces. A travel plan (like the German model travel plan developed by ILS) was accepted as a good instrument to structure the process, select suitable targets and measures and to prove the companies' ideas to the city. Single MM measures were not discussed in further detail because general legal and organisational questions were of greater interest. Some problems need some further discussion within the city administration and need to be solved. This concerns type and content of an additional contract (similar to planning obligation in UK) as well as organisational problems like the future monitoring of the travel plan, its implementation and effects.

The participants welcomed the idea to use the pay-off money from not build parking spaces for mobility management measures themselves or a consultation for mobility management, instead of using it more conventionally for infrastructure measures. There was great scepticism, however, that such use of the money is possible under the existing regulations. This will need a thorough check of existing interpretations of the corresponding paragraph in the state building code, but probably a change of regulations is needed first.

MM is generally not very well known by the participants but nevertheless accepted as a new solution for existing transport related problems (e.g. quality of living within the city, scarce space, noise, climate change etc.). Within current framework conditions, the integration of MM into the building permission process will only be accepted by most of the participants, if it offers additional (financial) benefit to the developer. The participants stated that MM must at the moment be handled as a strictly voluntary option. The existing strong competition between cities is seen as a main barrier for stricter local regulations. A mandatory integration of MM is generally seen as an extra burden and only acceptable, if the regulation would be applied in a wider region – best nationwide – in order not to discriminate a certain city in regards to attracting new developments.

3.2 Lithuania – Vilnius: Brownfield re-development for mix-use area 'VELGA'

Date: The planning simulation took place on 11th of August 2008.

Site: The Lithuanian planning simulation in Vilnius is a former industrial area which will be re-developed for mixed use. The VELGA development area (~13.5 ha) is located at the border of the city (distance to the centre ~5 km) close by the embankment of the river Neris and the park area Vingis. A shopping and leisure centre (~100 000 m² floor space) is planned as well as offices (32 000 m²) and houses (1850 flats -127 000 m²). The detailed site development plan for the site was approved in March 2008, but there is an ongoing public discussion about the perceived negative impacts of the development on the neighbourhood, which might lead to changes in planning. Technical details need to be solved before building permission is finally granted. The developer already started work on the decontamination of the site.

Figure 2: VELGA site (source: "Commercial / residential centre". Territory in G.Vilko st. 2 plan, 2008)

Transport related problems: When fully developed the predicted generated traffic is 2 600 vehicles / peak hour adding to the already high existing traffic volume. A high number of parking spaces is planned, in total 5 340, of which 2 090 for residents rest for commercial uses / offices. The access to the site is mainly planned for car drivers; alternative modes are not taken into account. On-site infrastructure for everyday cycling and walking is missing. The distance to the nearest existing PT stop is about 1 km - according to Vilnius local plan there are plans to improve PT in this area (new line), but the implementation is uncertain. Therefore the actual and planned accessibility of the site and the connection especially to the direct neighbourhood but also to the city centre by foot, bicycle or public transport is poor.

Participants: Representatives from:

- city departments (urban development / building permission, municipal planner);
- scientists (experts for transport feasibility study, experts for planning & for MM);
- city council;
- main site developer, and
- public transport company.

Agenda: To discuss the sustainable transport options for VELGA, one focus was to look at the beginning of site development process and discuss options, where mobility management as well as new transport infrastructure could be integrated. Acceptance and legal aspects of suggested measures where discussed:

- legal framework and plans for VELGA, street-design, existing & planned transport infrastructure etc;
- general introduction of MM (following MAX MM Definition);
- example from Switzerland, Sihlcity (multi-use site with good PT, cycling, walking infrastructure, additional services (delivery; storage boxes) & MM measures) and Germany, Phoenix-West;
- parking management, e.g. acceptance of maximum parking standards, of measures would be implemented like park & ride or change of parking usage purpose;
- supply of public transport, e.g. new PT mode, new line or new route design of existing PT, shuttle bus to VELGA from nearest PT stop or P & R, possible contributions from developer, and
- cycling and walking measures, e.g. internal network & its connection to the neighbourhood and city, bicycle parking;

Main findings: The Lithuanian discussion reflected the difficult current situation, where the preconditions for MM are not satisfied because the options for car-alternatives are not well-developed, or hardly exist at all. The promotion of alternatives is difficult when they do not exist. Another problem is uncertainty with regard to the implementation of the public plans like the planned PT development that are stated in the Vilnius local plan. Here e.g. a new PT line and a new bridge are planned for the district, but implementation is delayed, uncertain and depends strongly on political decisions. Those political decisions are often changed after elections. So the dilemma exists that some of the predicted transport problems for VELGA will not occur if the local plan is implemented as planned and the private side does not want to make contributions to solutions which are seen as a public task.

At current state, the developer is not willing to discuss any further conditions and contributions which would exceed those normally required, that is, improving accessibility is seen as a task which should be solved by the public authorities. Therefore the suggestion to implement e.g. a shuttle service to VELGA was not viewed positively.

A reduction in parking spaces is not seen as necessarily beneficial by the developer. The possibility to use some money from not building parking spaces for other measures is not seen as a benefit, but rather as a barrier. The developer explains that the use of money from bank credits is earmarked for defined investments, and he does not believe that MM is seen by the bank as a necessary investment. The same is true for any other additional financial expenses, for which credits will not easily be given. In such way, a mental barrier in regards to MM becomes a financial barrier as well.

Parking standards and building conditions are defined by the national building technical regulation. It was discussed that those rules are sometimes followed without an overall transport strategy in the cities and towns in which they are applied. New laws and regulations would need some kind of further explanation or training if e.g. the administration should more precisely take into account the local situation or implement new parking standards when dealing with the number of parking spaces for new developments.

Some general mistrust was expressed by several participants that measures ‘from western countries’ do not work in Lithuania as well. Some participants felt that the country and the people are not ready for these kinds of new concepts. But suggested MM measures were also met positively by the city council and the PT representatives, the (low but) increasing use of bicycles and the need of cyclists was discussed as well, e.g. at the moment no bicycle parking is required and therefore parking is difficult at home as well as at any destination like shopping.

3.3 Poland – Cracow: further development of a mixed use area to include an exhibition & conference centre 'Czyżyny-Dąbie'

Date: The planning simulation took place on 25th of June 2008.

Site: The Polish planning simulations discussed the mix-use area 'Czyżyny-Dąbie' in Cracow. It is one of the city's main development areas for science and technologies. It is located in the neighbourhood of the disused runway of an old airport, the polish aviation museum is situated in the central part of the area, and residential uses exist in the northern part, offices and university buildings in the south east corner. The whole area will be developed as a mix-used area and will include as a major development the Cracow exhibition and conference centre (CECC), in combination with a hotel and a shopping centre in the southeast corner of the area. The detailed plans for the CECC are still under preparation. There will be other uses like additional offices, an university swimming pool and housing.

Figure 3: 'Czyżyny-Dąbie' development site (source: Google maps; graph: CUT)

Transport related problems: Site accessibility by car will be good due to three adjacent main roads; changes in planned public transport would offer a more convenient service. Some bicycle infrastructure is planned on site. There is some need for improvements e.g. no bicycle parking spaces are planned as they are not required. Generally the city of Cracow plans to improve the bicycle network and dedicates a separate budget for this task. Despite existing maximum parking standards for Cracow (depending on building density), the number of planned ground level car parking spaces is high, especially for the new Cracow fair complex (130 000 m^2). It is expected that within the current transport situation customers will be highly attracted to use the car as main transport mode and therefore congestion of the local road network is seen as a likely result (generated traffic was calculated with different scenarios).

Participants: Representatives from:

- city administration departments (urban infrastructure office; road & transport administration; Cracow municipal administration);
- developer;
- regional road and transport administration;
- Cracow university (management & students);
- scientists (experts for transport planning, MM, transport psychology, architecture)
- local district / quarter council (inhabitants), and
- bicycle federation.

Agenda: The main part of the planning simulation dealt with integration of sustainable transport modes (not only car & car parking spaces) and MM in the building permission processes. It focused on the major development CECC and discussed the idea to use MM to reduce parking spaces. Detailed plans for CECC are still under preparation; therefore it is seen as a good point in time to discuss the transport impact of this large development. Points of discussion:

- legal framework & plans for Czyżyny-Dąbie, street-design, existing & planned transport infrastructure etc;
- predicted transport problems and MM as possible solution (e.g. examples from university's travel plan, example from Sihlcity);
- joint travel plan for university & CECC with measures like carpooling, real-time information, bicycle facilities, integrated ticket for PT & CECC entrance, car parking restrictions & charges;
- possible improvements to public transport (alternative routes for planned tram line, new bus line);
- legal aspects of suggested measures and instruments (minimum standards for MM to justify the reduction of parking spaces), and
- extra support from public transport operator, suggestions for new services or tariffs.

Main findings: The suggested MM measures were accepted by the participants in general; however, the implementation seems to be perceived as very difficult in real procedures (financially, legally) within the given framework conditions. To keep the focus on the actual site development rather then discussing general transport problems in Cracow was difficult. Infrastructure measures were more easily discussed than soft measures, which are a new approach and all in all not very well known. Carpooling and improvements for bicycles weren't discussed in detail, but suggestions to improve PT service (especially the relocation of a tram line to move it closer to CECC) were welcomed, especially by planners and the PT operator. They also agreed that there is need for a better integration of land use and (public) transport planning. Instead of discussing the reduction of planned parking spaces, the possibility to use them as an occasional P & R station for big city-wide events was found to be more promising, especially by municipal administrative unit. The developer himself was mostly worrying about freight accessibility of the trade fair buildings, and didn't seem to be interested in accessibility improvements for customers or related MM measures. Currently the proof of accessibility is only required in regards to access to public road network. There are no common procedures how some of the costs for e.g. public transport infrastructure investments related to new developments can be shared with the developers.

The legal situation doesn't support mobility management and it is not integrated in any laws or regulations. No definition of MM exists and the planning documents contain no possibility to include MM as a mandatory task directly into the building permission process. Still, there is some scope for negotiations between the city and the developer. There exist some regulations which offer opportunities to integrate MM.

The city's spatial development policy allows setting maximum parking standards for reasons of traffic congestion, environment, health, safety and antique buildings. Here, MM could be integrated as a strategy to cope with these tasks. The policy is setting the framework for the future urban and transport development but it is not directly legally binding. Nevertheless the (legally binding) local spatial development plans need to take it into account, so it would foster the integration of MM. Within the strategy, specific minimum and maximum standards for each district of the city would help to adjust the number of parking spaces to the local situation. If a new development is likely to substantially increase traffic on the surrounding road network (definition of standards should be integrated into the strategy), a travel plan should be required.

For bigger investments the environmental protection act could offer an opportunity to integrate MM into urban planning as well. To achieve this without changing the law, some additional effort is needed. The existing regulations can allow taking transport impacts into account as well and ask for mitigating measures.

The new public transport act is currently under preparation and would offer a good opportunity to integrate MM into some public transport standards.

3.4 Slovenia – Ljubljana: green area development for university campus (relocation of two faculties)

Date: The planning simulation took place on 11th of June 2008.

Site: The Slovenian case study for the planning simulation site is the new university complex which is about to be built quite close to the city centre of Ljubljana (distance ~3 km). The new green area development site will contain new buildings for the existing faculties of chemistry & chemical technology and computer & information science (FCCT & FCI). The two faculties will have 40 000 m² floor space. About 330 employees are working at the two faculties and 3 500 students are matriculated; similar numbers are expected at the new campus location. In future an additional new faculty for mechanical engineering and a new technology park are planned in the area as well.

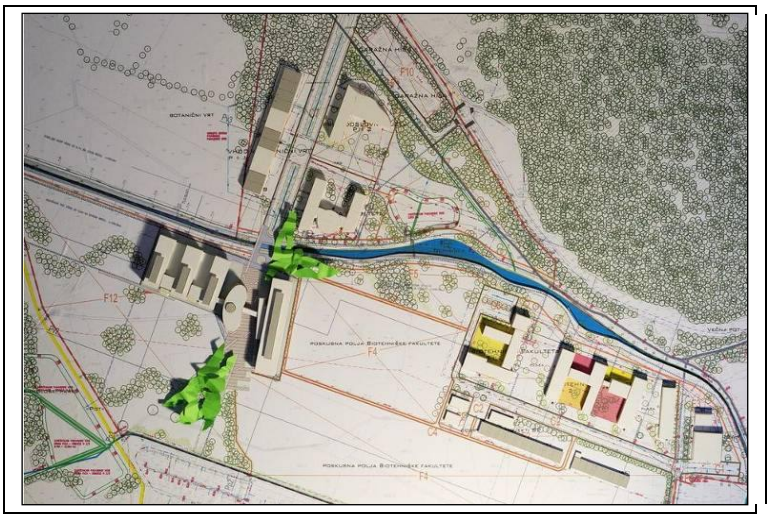

Figure 4: University of Ljubljana new development site (source: 4M architects)

Transport related problems: The calculation of generated traffic shows a minimum of 5 000 car trips a day for the two faculties and the whole complex is expected to generate much more traffic in future. Only a very low number of parking spaces (~350) are planned within the university development. Parking permits will be given only to staff not to students, despite the increasing numbers of student car-users. Additional parking spaces are planned to be built in parking garages at the edge of the university campus, but these will not be built at the same time as the development and participants doubted that they will ever be built at all. Therefore a high spill over of search traffic into the surrounding neighbourhood is expected. The existing public transport service is not efficient and the stops are too far away to offer good accessibility (~450 m). Currently the closure of one existing bus line is discussed. No footpaths are planned to connect the new buildings to the existing stops and on-site infrastructure for walking and cycling is poor as well.

Participants: Representatives from:

- city departments (urban planning, transport planning and public transport);
- urban planning institute: landscape architect, urban & transport planner;
- experts / scientists (university of Maribor: urban & transport planning);
- developer and user: university of Ljubljana (investment management, faculties, technical adviser, students);
- constructor, and
- ministry of environment and physical planning (spatial planning directorate).

Agenda: Main scope of this simulation was to look for possibilities for integrating MM into planning processes and to mitigate the predicted transport problems. The following aspects were discussed:

- legal framework & plans for the university development;
- introduction of MM, best practice examples e.g. from Austrian & British university travel plans;
- problems regarding the development such as expected transport problems and discussion of reasons;
- suggested solutions: parking policy, PT improvements, cycling and walking, mobility plan for faculties;
- discussion of transferability of the above mentioned measures and how MM could be integrated into the planning or building permission process.

Main findings: Most of the discussed MM measures are considered to be promising and potentially useful, but are only seen as relevant if combined with hard measures. A general lack of knowledge of the possibilities offered by soft measures to solve transport problems exists, probably due to lack of awareness of /information about MM. MM measures are nonetheless considered as an opportunity, an important element is the possibility to implement them in short term and slow down the worsening of transport problems. Generally the discussion concentrated more on hard measures as they are more familiar to the participants. Additionally, without improvements of options for alternative modes (a basic precondition) soft measures which e.g. aim to promote their usage can not be effective or make no sense at all.

Minimum parking standards are defined at the local level; Ljubljana sets them with respect to type of use and location. Some orientations for parking standards are given on national level; for two types of uses (residential and kindergartens) the construction by-laws set nation wide binding standards. Negotiations about reducing the number are officially not possible, but in Ljubljana's city centre a partial pay-off of can be arranged. The expected search traffic and parking spill over from university campus requires the implementation of controlled parking in near by areas by the city. Other measures (e.g. parking charges) could be realised by the university itself. Participants agreed that some kind of parking policy will have to be adopted. Possibly this will be done as part of a travel plan (including criteria for allocation of parking permits). To set binding maximum standards for parking, a national regulation or guideline is seen as best solution in order to overcome political unwillingness to set limitations in regard to car users.

No public transport development strategy exists for Ljubljana, routes and frequencies of lines are defined by the PT operator (city owned) mainly on an ad-hoc basis. Generally there is hardly any integration of local urban and PT development. Some integration could be achieved by state guidelines which would set PT access standards for main traffic generators. Within negotiations new arrangements seem possible, e.g. co-financing of a new PT line in exchange to reduce the number of parking spaces. Most of the participants considered the suggestion to relocate a PT line so it would pass directly through the campus would not be a good solution, which might be due to the 'bad' image PT currently has. Present fares seem favourable to all participants, and the PT operator stated that promotional discounts e.g. for first year students can easily be realised by agreements.

Bicycle parking for new buildings is not mandatory in Slovenia. Cities are free to set standards; this is the case in Maribor but not in Ljubljana. Construction standards or guidelines for bicycle stands, storage facilities like lockers and showers do not exist at all. At the request of the users, architects included some bicycle storage facilities and showers, but these will be available for the university's staff only. Problems with justifying these investments discouraged the architects to do the same for students. The participants expressed general doubts about the efficiency of soft measures; therefore mainly infrastructural improvements were discussed.

A traffic impact assessment (TIA) should be submitted for big traffic generators, but to ask for it is at the discretion of municipal administration or the Slovenian Roads Agency. No standards exist; therefore defining national thresholds for obligatory TIAs would be welcome. To mitigate negative effects or cope with predicted transport problems, a travel plan is a suitable instrument. Participants supported the idea to produce a travel plan for both university faculties. They also agreed that a change of location is an excellent opportunity to break with

old habits (car use) and promote new (sustainable) travel behaviour. There was less support for the idea of cross financing alternatives or the mobility plan from parking fees; those will be needed for maintenance.

3.5 Spain – Getafe: new development site for residential use 'Los Molinos'

Date: The planning simulation took place on18th of June 2008.

Site: The Spanish planning simulation workshop took place in Getafe, a city close to Madrid. The new housing district Los Molinos is located at the north-eastern border of the city (distance to the centre less than ~4 km). The whole development has an area of 125 ha. The main part of the site is dedicated to residential use (~58 ha), here about 6 270 accommodation units for 17 500 inhabitants are planned. Some facilities for retail trade, public service and other commercial uses are planned as well. Two motorways (north & east) and a regional railway line set the frame for the development area, close to the train & underground station El Casar in the west some commercial uses are planned.

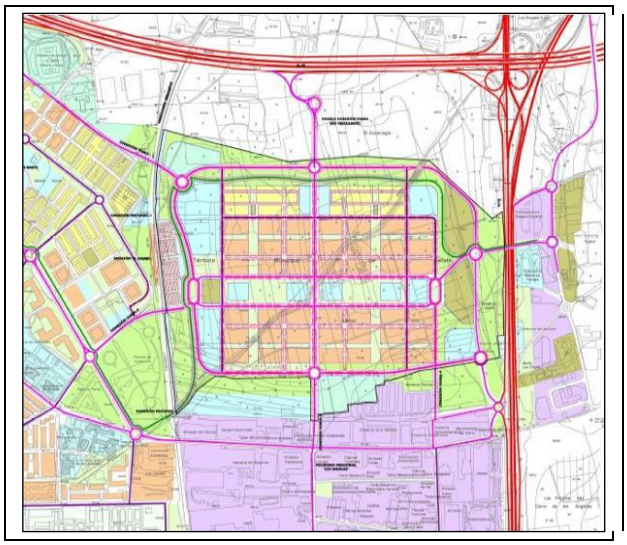

Figure 5: Los Molinos development site (source: plan parcial - ARPEGIO-UTE, 2005)

Transport related problems: With regard to parking, minimum standards are defined regionally and ask for 1.5 parking spaces per 100 m² gross floor space to be built inside the buildings. This standard will result in 9 159 parking spaces inside the buildings, another 2 016 public on-street parking spaces (without parking management) are planned. In addition a P & R unit close to the train station will offer about 1 450 parking spaces for free. The estimated number of trips generated by the new development is 39 700 per day, ETT suggests a more realistic estimation which results in 50 000 predicted trips per day. No bus line is planned to serve the area, and the walking distance e.g. from the centre of the area to the nearest train station is not very convenient (~600 m).

Participants: Representatives from:

- city departments (mobility, urban planning, municipal architects, environment, traffic police, mobility councillor);
- regional land use solicitor and developer;
- regional public transport provider;
- national representative (transport department at national institute of energy saving);
- consultants responsible for the detailed site development plan, and
- scientists / consultants from ETT.

Agenda: The preconditions for sustainable transport modes and the integration of MM are not very good for Los Molinos and the planning process is already completed. The planning simulation aimed at taking a step back

and looking for measures that can be introduced in the detailed site development plan. How and by whom could the measures be implemented, which legal aspects are important? A discussion of the possible role of the investor was not possible, due to lacking participation of real estate agencies.

The following aspects were discussed:

- legal framework and plans for street-design, existing & planned transport infrastructure etc;
- discussion about what the transport situation would be like if no additional measures are implemented;
- discussion about possibilities to introduce MM example and
- possible changes, measures and instruments discussed (with short introduction of each measure): mobility office, changes at public transport interchange & new services, walking & cycling network, traffic calming, parking management, car-free housing, car sharing, support for telecommuting.

Main findings: Participants believe that an early integration of mobility needs of future users (all modes) in the planning process would increase the acceptance of the measures suggested and make them present during the whole planning process. Including the suggested measures in the general urban plan or the detailed site development plan could lead to a change in preconditions in favour of sustainable mobility. Also a transport assessment for new developments should include all transport modes and should be better integrated in the site development plan. The better inclusion of mobility aspects in the planning process and the suggested solutions were generally accepted as a potentially important improvement of the precondition for sustainable transport. Regional legal regulations / conditions that conflict with MM (e.g. min. parking standards: 1.5 per dwelling) should be changed or more flexibility should be given to municipalities to cope with local conditions.

Cultural barriers e.g. in regards to bicycle use are seen as an important influence as well as awareness of problems on all levels. The developers and constructors are in general very flexible and can adapt quickly to changing (legal) framework conditions, with regard to acceptance of sustainable transport and MM, a charismatic key person (e.g. mayor) is important.

Some suggested instruments and measures were discussed in more detail, like establishing a mobility office at the PT interlink. The office would be responsible for organisation and planning of transport tasks for the district, promote car alternative modes, organise a car-pooling scheme or would plan infrastructure improvements. Here no legal barriers exist; the implementation could be done by adding this task to the ones of the existing neighbourhood conservation association. But this would increase the expenses for inhabitants who have to pay for those services and the municipality would need to assist in the start phase. To solve some transport problems, the station should be transformed into a real multi-modal interchange where car alternative modes would be treated with priority. The site development plan doesn't take this into account; therefore the accessibility for alternative modes would need improvements. Some of the planned car parking spaces located at the station could be reallocated e.g. for safe, protected bicycle parking facilities. These improvements could be possible when this plan would be included in negotiations between all PT companies. But the split of competences between national and regional level in regards of PT investments is seen as a barrier for an easy implementation.

A reallocation of space from on-street car parking to walking and cycling would also increase the quality of life in the district (e.g. reduced search traffic). Traditionally the city aims to build as much on street parking as possible in order to face the increasing demand. Free parking could be given to car-sharing vehicles e.g. in the centre area or to car-poolers e.g. at the P & R facility close to the station. Some bicycle parking is considered for the new houses, but participants gave a higher priority to walking, because cycling is not a common mode and there exists no real 'cycling culture' within the city or the region. To reduce parking spaces e.g. by setting maximum standards seems to be a very new idea to all participants, though the energy agency welcomed the idea and favoured parking management for the district, with strict monitoring. Usually the developers will build more parking spaces per unit than required because it is profitable to sell those together with the apartments. If no national standard can be set, in a first step the autonomous regions could gain more independence to set such standards themselves. Car-sharing has no tradition, as well as car-free housing, therefore those ideas where met with greater scepticism.

4 Working procedure within MAX WP D Working Stage 'Simulation'

4.1 Selection of planning simulation sites

In a first step the countries in which the planning simulations should take place were chosen. WP D decided to select those countries, where no or only little integration of transport and LUP or planning and Mobility Management takes place, i.e. Germany, Lithuania, Poland, Slovenia and Spain.

Secondly a suitable case study (development site) for each country was selected. To do so, some predefined criteria were set, which are similar to the Swiss example of 'heavily frequented sites'. In particular the development site must have significant predicted transport impact and it should be a medium or large development in relation to the cities sizes. In order to minimise the potential barriers for discussing suitable instruments and measures, some basic preconditions had to be met, like no green-field development in rural areas or at the very outskirts of a city, or the general existence of a public transport network within the chosen city.

Table 1: Selected case studies / development sites

Country	City	Site	Size	Type of development	Main land uses	Date of workshop
Germany	Dortmund	Phoenix-West	~110 ha 40 ha for commercial use	industrial brownfield	technology park micro/nano/IT-businesses & related services & offices	11 April 2008
Lithuania	Vilnius	VELGA	~13,5 ha	industrial brownfield	mixed uses shopping centre, leisure, offices & housing	11 August 2008
Poland	Cracow	Czyżyny-Dąbie	~13 ha	other fallow land	mixed uses exhibition & conference centre, hotel, shopping, university buildings, housing & students accommodation	25 June 2008
Slovenia	Ljubljana	University campus (FCCT & FCI)*	~33 ha whole area 7,1 ha construction area for two faculties	green field	Education university campus	11 June 2008
Spain	Getafe	Los Molinos	~125 ha 61 ha for construction area	green field	residential use mainly houses, some schools, retail & public services	18 June 2008

*FCCT: faculty of chemistry & chemical technology
FCI: faculty of computer & information science

Four of the planning simulation workshops took place between June and August 2008. The German workshop was the pilot for the other simulations and took place in April 2008. Immediate after that date, the German example was presented at a project meeting, showing the whole procedure, in particular organisation, participant list, defined scope and produced input material as well as first results from the discussion itself.

4.2 Analysis of legal conditions and defining scope of planning simulation

Existing examples of how to integrate MM and LUP were taken from more advanced countries, where such integration has a longer tradition. Good examples for existing MM measures were identified and suitable case studies selected. Case studies and regulations from England and Switzerland were found especially useful, but also university or businesses travel plans from other countries were analysed (e.g. Austria, Belgium).

Those examples were taken as a source of inspiration to transfer ideas and instruments to the respective country or they were taken as a more or less direct input for the planning simulations to look at the transferability into the planning system or the building permission process of the selected country and city.

The analysis of the planning system (WS 1) included a first check of legal opportunities for integrating MM and / or supporting measures into the selected countries' planning system. This analysis built the background information to define the scope and the program of each discussion. One aim of WP D was to suggest theoretically suitable MM measures in the planning simulation and to discuss how the integration could be possible within the existing framework. An important question was also to discuss the defined barriers in laws and regulations or in other fields and talk about possible ways in which they could be overcome.

The state of the local planning processes for the selected development sites were analysed in further detail and some partners discussed the scope and program with the main stakeholders e.g. transport planning department or the actual developer of the site prior to the actual meeting.

Depending on the local situation, each partner defined the scope for the planning simulation independently. Some partners used suggestions regarding a change in land use plans and transport planning practice to make the planning structure more conducive to sustainable transport and thus to MM (e.g. Spain). Some partners like the ones in Poland and Slovenia discussed also single MM measures for the planned development and the users of the sites, which could be implemented by the developer to cope with predicted transport problems. The local building permission process and suitable regulations and contracts were discussed as well, e.g. in Germany.

The scope and contents of the planned workshops were discussed within WP D meetings (Leuven in April 2008, London in June 2008).

4.3 Selection and invitation of participants

All planning simulations dealt with real cases, therefore most of the invited participants came from the local level and were either directly involved or affected by the development. The majority was from the public sector and belonged to different city departments, public transport companies etc. Some upper level representatives (planning departments) were invited as well as representatives from special user groups (students, bicycle association) or neighbourhood representatives. Only few private parties like architects or consultants participated, although the main developers were present.

Typically people from the local departments which are responsible for land use and urban planning, transport planning or giving building permission were invited and joined the discussion. Important for the discussion were the invited local (and some regional) public transport provider, which participated in all cases.

Where feasible, the actual planners who produced the general local land use or the detailed site development plans were invited as well. In some cases they are (private) planning consultants like in Spain, in some they work within the cities' planning departments, as in Germany.

From the 'private' side, namely the main developers were invited. In Lithuania and Slovenia the main area of the selected case study sites will be used and developed by only one developer; naturally each one was invited and participated at the discussion. In Poland, the main developer for the CEC centre took part, but not all of the developers (expected are ~4) are already known at the moment. In Germany only some small developers are currently known to plan to build on Phoenix-West, unfortunately only one out of this group (an architect) was able to participate. In Spain, the land-promoter and land developer was invited and took part, but the actual building contractors (developers) or municipal housing department weren't able to participate. In Poland, representatives of cycling organisations were present, in Slovenia and Poland student representatives participated as well.

Higher level public authorities participated only in some of the simulations, in Slovenia a representative from the national level participated; in Spain the national energy agency was involved in the discussion.

4.4 Programmes and inputs for the planning simulations

The programs for the one day workshops were developed alongside with the input material for the planning simulations, which was presented or handed out to the participants. All participants received the program prior to the date of simulation. In Slovenia some smaller personal briefings took place with each group of participants. This was found to be very useful in discussing the planned scope of the simulation and dealing with the expectations of the invited persons.

All programs included an introduction round, short presentations of the MAX project and of the scope and aims of the planning simulation itself. In most countries this part was followed by general information about Mobility Management, to raise the awareness and knowledge about this concept and support a common understanding for the following discussion.

Another basic and necessary input was the information about each site and the state of the planning process and the state of the current development process. In the presentations the focus was laid on the mobility aspects of the planned development and about the grade of integration of transport and land use planning for the given site. Here the forecast of numbers of trips which will be generated by the development and the number of planned parking spaces offered a good starting point for the discussion in all workshops.

Such background knowledge about the planning system and the status at the given site is needed to involve participants, who are not (yet) directly involved in the planning or building permission process. In some planning simulations these inputs were made by the respective participants themselves e.g. cities planning departments or the main developers.

The predicted transport impact on the surrounding neighbourhood and other expected transport problems were addressed by the MAX partners as well. This step has turned out to be an essential part of the simulations as well, due to the fact that in most cases the mobility related aspects of the planned development and e.g. future transport impact on surrounding network were not considered or not discussed into detail before. Thus, the situation like it would occur without a change in plans built the starting point. In most cases MM measures were explained and 'transferred' to the local situation and were presented as part of possible new solutions for the problems of the actual site.

Most discussions turned then to details about the planned development and suggested solutions. Depending on the country and the case study, the discussion focussed on various different aspects and included pre-defined leverage points within the legal framework, examples of MM measures and planning instruments and principles.

In general the planning simulation workshops offered a good mechanism whereby new ideas, solutions and possibilities were discussed in an open atmosphere and more or less free from existing constraints. The informal discussion alongside existing cases supported the participant's critical but realistic appraisal of the suggested solutions. They were free from pressure to produce certain results and were good starting points for finding suitable solutions for the cases studied.

4.5 Country reports

All five partners, who were involved in the planning simulation workshops prepared separate country reports. They described in more detail the planning framework, the development site, predicted traffic and transport problems, scope, program and input for the discussion as well as results of the planning simulation. A short description about lessons learnt and recommendations for improving the method were included as well. The country reports are part of this document and can be found in Annexes I-VI.

5 Main findings

At the WP D meeting in Ljubljana (August 2008), all five planning simulations were discussed. The main findings resulting from country reports and the discussion are shortly described in the following section.

5.1 Acceptance and transferability of instruments and measures

The general question of transferability from other places or countries' experiences remains – to a certain degree – unanswered and can not finally be solved within such a planning simulation workshop. To discuss transferability seems to be more difficult when concepts, measures and legal details are not well known and new to the participants. Nevertheless, the fact alone that there are good examples to be found is a starting point for introducing these kinds of new solutions. Generally, MM and its measures are accepted by most participants, but the feasibility and direct transferability to their own country, town or development is doubted in many cases. One reason for scepticism with regard to the transferability and effectiveness of soft MM measures are the poor preconditions for alternative modes in most of the selected case studies, here the hard (infrastructure) measures seem to be of greater importance to the participants. Where no or only poor public transport service is offered it is hard to argue in favour of promoting such modes. Other measures, like car-pooling could be implemented despite those poor preconditions, but the awareness of such measures and their feasibility seems to be quite low.

New Member States' participants seem to be especially reluctant to accept solutions which are coming from western countries, indicating that good practice from those countries could be a big step further towards a wider acceptance of mobility management.

A direct transfer is difficult due to differences in (mobility) culture as well. Those differences are expressed especially related to bicycle use and bicycle parking facilities. In some countries bicycles are use as an everyday mode, in some they are not widely used or used mainly for leisure activities. To ask for sufficient bicycle parking for new developments is in some countries like Germany included in respective laws and regulations. Standards are seen as hard to transfer to countries where bicycles are not widely used as every day transport means (e.g. Lithuania). In Getafe (Spain) some standards for bicycle parking were discussed. Here one space for four apartments located in the basement was seen as reasonable, a number and location which would not be acceptable in countries like Switzerland or Germany. Here not only the quantity but also the quality of bicycle parking (ground floor, close to entry, weather protected, secure, thief-proof etc.) are increasingly discussed and asked for new developments.

Some partners stated that in their countries, the car has a great importance as a status symbol. Measures which aim to limit car use or car parking spaces are in many countries quite unknown and are seen to be very unpopular ones. Some participants doubted that such measures would be supported or enacted by politicians, even if it is accepted that these measures can be very supportive for achieve a change in transport behaviour towards less car use.

The importance of cars is reflected in growing car ownership and extensive car use in all European countries. Countries like Poland and Lithuania are 'catching up' quickly to highly motorised countries like Germany or Switzerland. Car ownership increased in all countries in the last 15 years (in some countries like Lithuania very rapidly) as it is shown in ***Table 2*** and visualised in ***Figure 6***.

Table 2: Number of passenger cars per 1 000 inhabitants for WP D partner countries (source: EC 2007)

	1995	2000	2005		2006
Poland	195	261	323		351
Lithuania	199	336	428		470
Slovenia	357	435	479		488
Spain	360	431	463		464
United Kingdom	378	425	469		471
Sweden	411	450	459		461
Switzerland	457	492	518		519
Germany	495	532	559		566

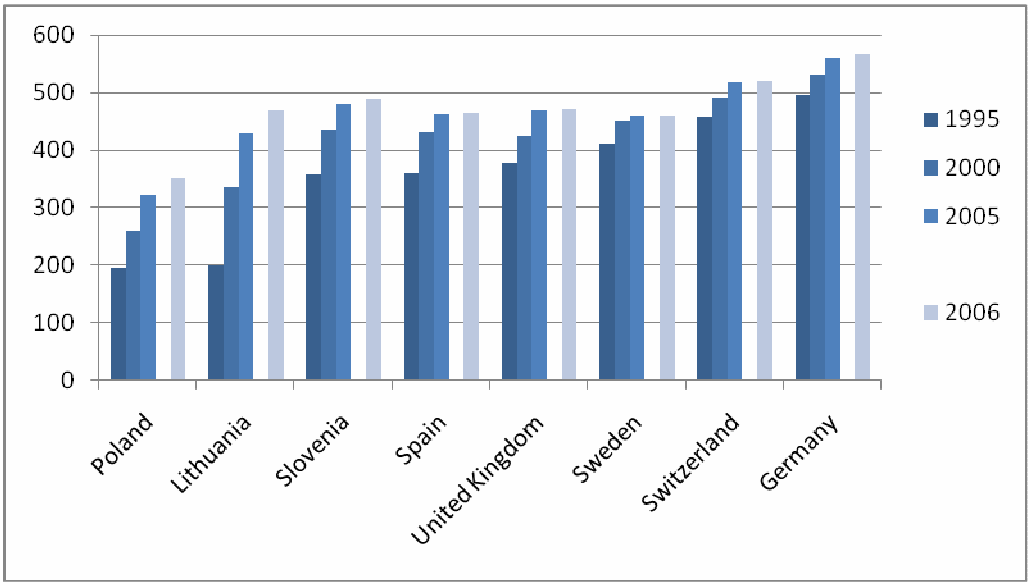

Figure 6: Number of passenger cars per 1 000 inhabitants in WP D partner countries (graph: ILS)

To deal with the (negative) effects of growth in motorisation in order to offer a healthy and sustainable place for living seems to become more important for Europe, in new and in old member states alike.

5.2 Accessibility of sites

It was found that in most of the development sites, the integration of land use and transport is not very good, especially the planned connections to the existing public transport network and bicycle or pedestrian routes are in most cases of poor quality. The wider neighbourhoods or major destination points within the city are rarely taken into consideration when preparing the detailed site development plans. Thus mobility needs of future users and the generated traffic are not taken into consideration in planning process. It was perceived that many land use planners do not seem to be aware of user needs and emerging transport problems. Alternative modes of travelling, i.e. other than car, are normally not taken into consideration. On the other hand the planning for a special site does normally not need to deal with further connections to other parts of the town, it's seldom within the scope and responsibility e.g. of the single site development plans.

Here, the problem of poor preconditions for mobility management comes into focus. MM alone can not solve all problems of accessibility; a minimum of infrastructure and public transport supply is needed before additional measures that are based on information, promotion and cooperation can be suggested. This is especially true in countries where public transport (infrastructure, supply and organisation) is seen as the exclusive responsibility of the public sector.

This relates to the assignment of public and private tasks within the countries' planning system. Problems emerge especially where the public sector seems not to be a reliable partner e.g. for providing the planned public transport supply. In the Vilnius planning simulation this seems to be the case: there the private developer is not willing to finance the solution of such problems (i.e. bad public transport accessibility) because if the city would realise it's own plans, PT accessibility would not be such a big problem. A strategy for and the implementation of a network of comfortable and safe pedestrian and bicycle paths is also seen as a task for the whole city. Nevertheless the local connections to major destinations like train stations, main shopping areas for daily consumer needs, schools etc. should be considered as part of the detailed site plan.

5.3 Parking standards

In most countries the parking standards for new developments are minimum standards. For those it mostly seems to be a totally new concept to offer a reduction of those numbers if other measures are implemented instead, in order to minimise transport problems for new developments and to encourage alternative modes. This matter was discussed in all simulations. In most cases, the parking regulations are not completely under the local authority's responsibility, instead, these standards are set by higher level of government. In many German states, some flexibility is possible in order to take into account e.g. the local conditions like accessibility of public transport. Special cases are developments which are planned as car-free / car-reduced areas. Here the laws have been adapted to some local initiatives and a reduction of minimum parking spaces is possible, if additional (private) contracts are closed or additional regulations are set up in order to guarantee to the city the low demand for car parking spaces.

In contrast to the other workshops, where high numbers of planned parking spaces were discussed as a major problem, the small number of parking spaces was one of the main problems for the site in Ljubljana. Here, a small number of car parking spaces was accepted within the building permission process without an obligation to implement additional measures. This number will not be sufficient and will not fulfil the expected demand, therefore additional efforts are needed to cope with the situation that no parking spaces will be available for the students of the new university campus. To avoid a massive spill-over to the neighbourhood (search traffic & parking) the need for implementation of additional measures was discussed and accepted during the planning simulation workshop.

5.4 Developers contributing to MM and obligations on developers to implement MM

The suggestions that developers could contribute to an improvement outside of the development area, as is done in the UK or Switzerland, is generally seen as a problematic task which was not usually accepted by the private party. Furthermore, in most countries this suggestion is not legally possible within the existing planning laws and regulations. Developers were, perhaps not surprisingly, not particularly supportive of being asked to pay for measures that they do not currently fund. However, in some cases, including Poland and Spain, it was noted that the detailed site development plan (DSDP) *could*, with sufficient political will, be modified to require developers to provide MM measures. However, this is perceived as risky, and leadership from higher levels of government is required in order to make MM a more accepted and common part of the land use planning and building permission process.

In none of the five countries an obligation exists to include MM into the planning process; but in most of them there are some points within the planning process where either the preconditions could be improved or MM could be negotiated with the developers on a voluntary basis. For example, in Dortmund (Germany), there exists the possibility to negotiate the number of parking spaces required at a new development, to a certain degree, between the city authority and site developer. Here, the local conditions have to be taken into account and a reduction of the number of spaces in exchange for the adoption by the developer and site occupier of other measures e.g. a travel plan could be possible. But, as long as there are no higher level standards, any obligation to reduce parking spaces and use MM instead was rejected e.g. in Germany. These kinds of solutions are only accepted as a voluntary and additional option to existing regulations. The main barrier seems to be fear of competition between cities / sites for new developments and businesses. The participants perceive a strong competition between the cities and fear to weaken their cities' attractiveness if they would oblige the developer to undertake additional efforts in order to minimise transport from new developers. Additionally there are many open questions about how to secure and guarantee such commitments and about the monitoring of the effectiveness of agreed MM measures. In Slovenia, the traffic impact assessment process is an opportunity to negotiate about accessibility improvements to the site, and not only access by car.

However, once again, the use of these "leverage points" depends a great deal on local knowledge and political circumstances. Given that the simulations all showed a quite low level of knowledge about mobility management in general, let alone MM in the planning process, then the research project MAX can have an important role in enhancing knowledge throughout the EU.

5.5 Usefulness of the planning simulation workshops - method, additional insights and side effects

The method 'planning simulation workshop' was generally seen as a useful tool from both sides; from WP D partners as well as from workshop participants. It is recommended by all partners as a useful tool to introduce and raise awareness about new concepts like mobility management and to discuss the integration of MM into the planning process.

One main advantage is achieved, if a good sample of different parties and participants is invited and takes part in the discussion. New ideas and solutions can be presented from a more or less neutral position (experts or scientists who are not involved in the actual planning process) and are discussed with views, opinions and know-how from various angles. In all countries the participants themselves stated, that in their normal working practice there is a lack of such discussions, where the people involved in land use and transport planning can exchange opinions and discuss some open questions for an actual case together with other affected parties like developers, public transport companies or user associations. The open atmosphere of the planning simulation facilitated this exchange, while other more formal public consultations often lack such atmosphere e.g. when they are the main occasion for formal objections from private parties.

Such a meeting can also be a novelty for people working in different departments of the same city. Some of the participants stated, that they miss such an opportunity to exchange arguments and discuss matters between e.g. the mobility and the urban planning departments. It seems that sometimes those departments (or the people) act as competitors and not as colleagues, so they are 'jealous of each other and seldom exchange ideas'. In such a more informal workshop, which is organised by a third party, they have a chance to interact with one another more easily.

Such a round table discussion is seen as a good opportunity for the real case studies as well: to look at given planning situations from different sides and use the more or less neutral place and occasion (the MAX WP D partners were not involved in the actual planning) for an open exchange about details of the plan and emerging problems. If all affected parties have the possibility to discuss problems and barriers together, many decisions and plans can be better understood and can more easily be accepted.

The real cases gave the opportunity to show how, within the actual steps in the planning process, there are possible opportunities to integrate MM, but also to discuss emerging problems, so that the discussion is not too theoretical. The possible effects of MM can also be more easily discussed by means of a real case study. A direct visualisation of changes for the development and the expected effects on transport was asked for by one of the participants; this seems to be a good idea but would probably go beyond the scope of such a workshop. Some of the most suitable MM measures should be selected for the presentation, but not too many should be discussed if the concept is new to most participants and the time is short. It was noticed that in such a workshop a first impression about integrated land use and transport planning and MM can be given. It can therefore function as a first step towards implementation.

It is important give all participants the opportunity to get to a similar level of knowledge. Here a short personal briefing of the participants prior to the workshop can be a solution. At this meeting, information about the scope of the workshop, the concept of mobility management or the current stage the planning process can be provided. In Ljubljana this procedure was found very useful to cope with the participants expectation, especially because MM was mainly unknown to most of them. If there is enough time, the workshop could also be split in to separate sessions, but then it might get more difficult to convince private parties to join the discussion twice. A good moderator, who has, in addition to communication skills, adequate knowledge about planning and MM plays a key role as well. In all workshops the moderator sometimes needed to remind the participant about the main points of the discussion to put them back on track.

In some countries, where the planning process was more or less finished, the participants said they would have appreciated such a workshop in an early or earlier phase of planning. They see it as a good opportunity to discuss expected problems for new developments. In an earlier stage, much can be gained from such an interdisciplinary open discussion and the possibility exists that plans could be adapted in order to minimise future transport problems and raise the opportunity to implement MM effectively from the first day the site gets into use. In Ljubljana representatives from public transport welcomed the invitation and the informal discussion as an opportunity to talk about emerging transport problems before they occur and be able to contribute to a solution before the campus will get into use (e.g. consultation about special student tickets). They see the need of a better integration of transport and land use planning, but a formal procedure is missing at the moment.

An early integration would also avoid confronting developers in the middle or at the end of a planning process with additional requirements in regards to mobility aspects, which was rejected e.g. in Vilnius. Such questions should be transparent from the very beginning and can then be discussed as early as possible within the building permission process. In Getafe (Spain) the participants stated that they believe, an integration into region or city wide (development) plans would be most effective, then any requirements would need to be integrated in lower level plans. This could be especially helpful in regards to acceptance of the new measures and ideas (e.g. mobility office, MM measures, separation of car parking spaces from the residential building – central parking or limitation of parking spaces).

Within the workshops the participants discussed special site related problems as well as some important other problems, barriers and preconditions. Some legal or financial conditions (e.g. taxes) are not under the control of the local planners or politicians, but influence decisions as well. Here an additional insight could be gained, e.g. in Getafe, where the developer can gain a financial benefit from building underground parking spaces. Here, underground parking is not defined as usable space and therefore need no building permission and no payment is required, in contrast to the space on above ground level. The built parking spaces (usually two per accommodation unit) are therefore sold together with the apartments, which is profitable for the developers and is seen as one reason why the developers are not interested in limiting the maximum number of parking spaces for residential uses, but actually augmenting the standard.

The name planning simulation (German: Planspiel) was chosen to reflect the real case approach as well as the idea to discuss possibilities within the planning process together with the participants. In some countries, the word simulation was used; this caused some irritations because ‘simulations’ are mainly associated with

computer simulations, traffic simulations or other calculations of different scenarios and therefore raised 'wrong' expectations. Thus one suggestion was to change it into a 'workshop about mobility and planning'.

There were some unexpected but welcomed side effects of the workshops as well. For example in Spain, one of the participating planners is actually integrating the idea of separating the parking spaces from the rest of the buildings, a concept which is considered to help to reduce the everyday car use. The representative of the national energy agency was very pleased with the discussion and stated that such workshops could be used for training sessions (the workshop was also presented as a good example at a conference). In Vilnius the participants decided to proceed with such meetings to discuss general mobility problems within the city and those for other developments in a similar way. In Ljubljana, the university is planning to implement some of the discussed measures. In Dortmund a meeting between the city and a developer was planned, now there are first negotiations going on about a mobility concept (travel plan) for one of the developments where the architect was present at the planning simulation. In Krakow the relocation of the tram line seems to be a possible result of the discussion, and a concept of how some of such transport related infrastructure costs can be related to and paid by a new development is currently developed.

6 Summary of conclusions

This report has presented summaries of the planning simulations and explained how they were carried out. They were a diverse set of cases but all shared the common characteristic that they referred to actual and not hypothetical sites the possibility of using the latter had been considered but all partners were able to identify real sites for their simulations. The simulations also shared the characteristic that their participants all found the process valuable. From the process, some common findings about the integration of MM into the building permission process can be drawn, and these are summarised below.

Acceptance and transferability of MM to planning process

Generally, the MM concept and its general transferability were accepted by most participants, but the feasibility and direct transferability to their own country, town or development is doubted. Another reason for scepticism with regard to the transferability and effectiveness of measures are the poor preconditions for alternative modes to the car in some of the selected case studies. Specifically;

- New Member States participants seem to be especially reluctant to accept solutions from western countries, so good practice examples from the NMS themselves could be a big step further towards gaining wider acceptance of mobility management.
- A direct transfer is also difficult due to differences in (mobility) culture.
- Some partners stated that in their countries, the car has a great importance as a status symbol, to the extent that they see this as an insurmountable barrier.
- Measures that aim to limit car use or car parking spaces are little known in many countries and it is perceived that they would be very unpopular.

Accessibility of sites considered

In most of the development sites, the integration of land use and transport is not very good - especially the planned connections to the existing public transport network - and bicycle or pedestrian routes are in most cases of poor quality. It was noted that link to wider areas and/or major destination points within the city are rarely taken into consideration when preparing individual site development plans and thus mobility needs of future users and the generated traffic are not taken into consideration in planning process. In some cases, predictions of future car traffic are made, but then nothing is done to mitigate the impact.

Parking standards

In most countries the parking standards for new developments are set as minima. For most of these countries the simulations found that it seems in the main to be a totally new concept to propose a reduction in those numbers if other measures are implemented instead, as a means to minimise transport problems for new developments and to increase the use of alternative modes.

The role of developers in MM implementation

The idea that developers should include (and finance) MM as part of the planning process is (at present) perceived to be a difficult issue for planners, specifically because:

- To ask developers to implement and contribute financially to wider MM measures (outside of the actual development) does not currently occur and would be likely to be met with much resistance
- In most countries there is no legal obligation for developers to include MM within the planning process, although, it is possible for voluntary arrangements to be made. For this to become more widespread practice new regulations at a national level would have to be introduced, and local political knowledge and commitment would also be required.

Usefulness of the planning simulation workshops

The planning simulation workshops were generally viewed as a useful exercise by both WP D partners as well as by workshop participants. Specifically;

- They were viewed as a useful 'tool' to introduce and/or raise awareness about MM and to prompt discussion about the integration of MM within the planning process.
- The value of similar workshops was identified to be most useful at the initial (early) stages of the planning process.

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8 Annex I: Country report Germany

8.1 Introduction

8.1.1 Purpose of this report

This report presents the results of the third step of working stage (WS) Simulation: Execution of planning simulations in Germany. According to the WP D research plan by using a planning simulation, the possibilities of the integration of mobility management (MM) in the process of planning of new or renewed buildings and sites were explored in the context of concrete cases, each grounded within an actual planning context. Two planning simulations took place in old Member States (MS) (Germany, Spain) and at three in new MS (Slovenia, Lithuania, Poland). In the reported planning simulation the process, how MM can be integrated into the land use planning and building permission was discussed and best practice MM measures and supporting measures were selected and their transferability to Germany was analysed.

8.2 Preconditions

8.2.1 State of LUP and transport integration

The German simulation site "Phoenix-West" is located in the county-free city of Dortmund and is part of the Ruhr-Region of the federal state of North Rhine-Westphalia (NRW). NRW is divided into five administrative districts. The regional plan (Regionalplan) for the administrative district of Arnsberg, to which the city of Dortmund belongs, gives information about issues of land use planning (LUP) with regional impact. Due to the scale the shown information is not related to exact lots. This is the responsibility of the lower-level planning processes. In the regional plan the area of Phoenix-West is classified as an area for commercial and industrial use. The green corridor north of the development is shown as a general free space of regional relevance and with the function of securing landscape and landscape-related recreation.

On the municipal level, the local land use plan (Flächennutzungsplan) shows information about designated land uses for the whole administrative area of the city. In the local land use plan for the Dortmund the area of Phoenix-West is shown as a special use area for the purpose of a technology park. Green areas are shown as public park, forests or areas for nature-oriented development. The detailed site development plan (Bebauungsplan) for the area of Phoenix-West gives more detailed information and is explained further in chapter 0. On the level of this detailed site development plan land use and transport planning are quite well integrated.

8.2.2 State of local (and if relevant regional and national) transport plans as they affect this site

Transport issues are shown in the regional plan and local land use plan as well. On the level of counties and county-free cities, local transport plans (Nahverkehrsplan) are set up in cooperation with the public transport purpose associations. The local transport plan contains all major points of the public transport (PT) system.

The 'mobility master plan ' contains the most important strategic future developments regarding all transport modes and mobility matters in the city of Dortmund. It sets the framework for future development and includes

the issues of Mobility Management and sustainable transport, which are both mentioned and are supposed to be promoted by the city.

New brown field developments like Phoenix-West are mostly well integrated into the existing PT network, if no direct services exist or if it is not satisfactory, new services and/or modifications on existing lines are considered. It is planned to introduce new bus lines and services for Phoenix-West step-by-step, depending on the progression of the development. On-site, the city of Dortmund limits the amount of public available on-street parking spaces and sets quite strict limits to the building of ground-level parking within the given legal framework for construction (Stadt Dortmund 2007a; see chapter 0).

8.2.3 Local transport data

The transport network of the city of Dortmund consists of more than 100 km metro lines, another 111 km railway lines, 1,814 km roads (incl. freeways) and 540 km bicycle lanes. The main railway station offers international and national services as well as local and regional ones. There are several regional railway stations (Regional-, S-Bahn), closest (distance: ~800 m) to Phoenix-West is the station at Hörde district centre. The city offers a combined tram/underground system, the so called 'Stadtbahn' (74 km incl. ~20 km underground and 123 stops) and local and regional bus services (existing and planned bus service see chapter 0). There are 304,651motorised vehicles owned by Dortmund citizens. In June 2007 Dortmund had 587,137 inhabitants (source: eMail contact with city administration from 19.07.2007; Stadt Dortmund 2008).

Week day modal split in Dortmund 2005:

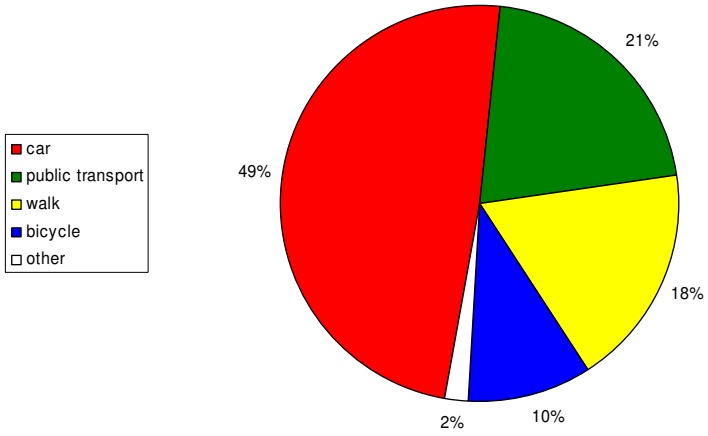

Figure 7: Modal split in Dortmund 2005 - (source: ibid. - graph: ILS)

In 2002 419 passenger cars were registered per 1000 inhabitants in Dortmund (Stadt Dortmund 2007b), in the same year the average in Germany was 542 (Website Statistisches Bundesamt). Despite the high level of car ownership, these numbers are still growing: in January 2008 there were 599 passenger cars registered per 1000 inhabitants in Germany (Website Kraftfahrt-Bundesamt).

8.2.4 Legal situation

Sustainable transport and land use is one aim amongst others of transport and land use planning policies, but only seldom finds its way into reality in a thorough and systematic way. Land use and transport planning is only partly integrated and other framework conditions (e.g. financing of infrastructure, legal limitations within LUP

laws and regulations) limit a more sustainable development. Another reason can be seen in the lack of awareness regarding alternative solutions within the city administrations which have far reaching competence in decisions in LUP due to the principle of subsidiarity. The uptake of alternative or innovative solutions is often limited due to a lack of resources (economic, skills, knowledge) as well. Higher level guiding principles e.g. to achieve a better sustainability are therefore quite often neglected at the local level.

The minimum number of required parking spaces for bicycles and private cars (in North Rhine-Westphalia legally requested) is up to a certain degree a matter of negotiations between the city and the developer within the building permission process, as the local conditions need to be taken into account. In the end, the developer needs to deal with a certain minimum number of parking spaces. The number, place and design of the parking spaces must be defined for each building depending on the uses. Where appropriate, the number of parking spaces which are to be paid-off must be defined and/or the reduction of the need for parking spaces must be taken into account (e.g. good PT accessibility). Only if this issue is finally agreed on can the building permission be granted and the construction phase begin. At the moment, there is no administrative rule in force which guides/binds the city's administration in their decisions but the former proposed a minimum of 1 parking space per 30 m^2 (usable) floor space.

Integration of Mobility Management is not supported by most parts of the planning system and instruments in Germany. There are some options where MM could be integrated e.g. in the building permission process where the cities need to estimate the number of required parking spaces. Some states' planning laws and regulations work more in favour or give more space for interpretation than other (only Berlin has no obligation to build parking spaces for new developments). Dortmund is a pioneer city in NRW, which intends to use the options the existing law offers.

8.3 Simulation site description

8.3.1 General information

Location of the simulation site

The chosen site (Phoenix-West) for the planning simulation is located within the city area of Dortmund, about 5 kilometres to the south of the city centre.

Figure 8: Position of Phoenix / Hörde area within Dortmund city area (Stadt Dortmund 2006: 2)

It is a brown field area where for about 150 years steel production took place, the first blast furnace (Hochofen) on the area of Phoenix-West came into use in 1852. The former industrial sites are divided into two re-development areas (Phoenix-West and Phoenix-East). They are positioned in close vicinity to the district centre of Hörde. Both sites were connected via rail and other infrastructure and worked on different steps in steel production. The last blast furnace located in Phoenix-West was closed down in 1998; the steel mill (Oxygenstahlwerk) in Phoenix-East was closed down in 2001.

After the closure of the sites about 200 hectares (ha) of brown-field area remained for re-development. The revitalisation of both areas is handled in an integrated process and Phoenix-West is supposed to become one of the key future development sites in the whole Ruhr-Region. The re-development process is funded by the State of NRW, the federal republic of Germany, the European Union and the city of Dortmund. In September 2002 the city parliament of Dortmund decided on the framework planning for Phoenix, in December 2002 official notification for funding (10 million Euro) was confirmed to start with the first construction stage (Website Dortmund project a).

Phoenix-See (Phoenix lake) located in Phoenix-East will be developed as a mainly housing and leisure area with some services and office buildings. It is supposed to become a somehow 'upper class' housing area and is integrated into the recreation area Emscher landscape park (Emscher Landschaftspark, see *Figure 9*), which includes many different projects to revitalise the river. The river Emscher is flowing at the northern edge of the Phoenix-West area and is currently being re-designed (in connection with construction work for the new lake and in line with the regional plan and landscape plan). The river valley is highly modified and was used as a dumping site for industrial waste for the last few decades. The small river itself still functions (partly) as an open sewage channel but is getting redesigned step by step.

Figure 9: Phoenix See as part of the Emscher landscape park (Stadt Dortmund 2006: 11)

Phoenix-West is located in close neighbourhood of two existing recreation areas, Westfalenpark and Rombergpark. The Westfalenpark is located close to the northern river bank. Within walking distance (west of the trunk road) is the botanic garden Rombergpark. The connection to these green areas is made by a kind of green wedge/triangle.

Figure 10: Aerial view Phoenix-West in June 2007 (Website Projektbüro Phoenix)

Adjacent in the south of Phoenix-west is an existing business area with mixed uses, to the east there are residential areas and a school.

Type of utilisation of the site as stated in the detailed site development plan (Bebauungsplan Hörde 253 – Phoenix-West)

Phoenix-West is also called 'Phoenix technology park'; the size of the whole area is about 110 ha. Thereof, 40 ha are reserved for commercial uses. The special site development plan identifies most of it as an area of special use: 'technology park' (Sondergebiet SO1 Technologiepark; see area number 1 in Figure 11). It will be developed as a business park; no housing is permitted (mainly due to potential limit exceeding noise exposure). On this special use area the land use is mainly restricted to 'future' technology industries, laboratories, offices and start-ups. The area is designed for attracting branches like micro system and nano technologies, production engineering, software development and other IT-industries and corresponding services (B-Plan Vorentwurf) (Stadt Dortmund 2007a)

Furthermore there will be some smaller services, shopping and leisure/cultural facilities. Some former industrial buildings are listed (heritage-protected) and will be redecorated. The buildings are integrated in the overall concept (e.g. blast furnace and gasometer).

Despite of the fact that the corresponding detailed site development plan (Bebauungsplan Hörde 253 – Phoenix-West) is only just coming into force in 2008, parts of the site are already developed (e.g. construction work for the main road 'Konrad-Adenauer-Allee' and for the MST-factory started in 03/2003). This is due to the fact, that the decontamination and restructuring of the area was split into separate steps to speed up the whole redevelopment process. For all streets which are of general importance for the accessibility (Erschließungs-straßen) a parallel planning procedure took place. By the end of 2008 it is planned to build all basic (road) infrastructure and decontaminating and restructuring of surfaces should be finished by that time for those areas which are designated for construction (Stadt Dortmund 2004). One important reason why the redevelopment was/is organised in such a way is the (time-restricted) availability of funding from European Union (only possible until the end of 2008).

Figure 11: Phoenix-West areas of different uses (Stadt Dortmund 2006: 9)

The Phoenix area development is also part of the 'dortmund project', which was created in 2000 for dealing with the overall economic structural change in Dortmund as an imitative from the city and ThyssenKrupp AG (in cooperation with consulting McKinsey). This organisation aims to create good conditions for (and foster) the new future business branches, in parallel it works as well for improving the conditions for existing companies. Dortmund aims to develop a former location of heavy industry into a leading IT, high technology and logistics location (Website Dortmund project b).

The city of Dortmund together with the LEG (LEG Landesentwicklungsgesellschaft NRW GmbH) is responsible for the Phoenix-West development and project organisation, the contract for the cooperation between the city and LEG was signed in 2002. Most of the Phoenix-West area is owned by the LEG. The city established the 'Projektbüro Phoenix' as part of the business development department to take over its responsibilities. The project office functions as a mediator between (other) city departments, LEG and other third parties.

In 2005 the competence centre for micro-system technology (MST.factory.dortmund) was ready for use; this was the first new settlement for Phoenix-West. It is the first establishment of its kind and is designed to help business start-ups to get ready for the market, but established companies can rent offices and laboratory space as well. MST factory provides an equipment park; clean room facilities and advanced technical infrastructure which can be used by the tenants. MST.factory offers mercantile (commercial) advice for the tenants and other training. The MST factory is an initiative of the dortmund project.

Figure 12: MST.factory (Stadt Dortmund 2006: 9)

In 2007 construction work started for the new centre for production technology (ZfP - Zentrum für Produktions- und Fertigungstechnologie) it should be ready to use in summer 2008 (topping-out ceremony took place on 8th of March 2008). The floor space will be 5,000 square meters with office, laboratory and storage / shed areas, the tenants will have access to modern machinery. At the moment there are four companies located at the ZfP. The ZfP is part of the technology centre Dortmund (TZDO - Technologiezentrum Dortmund). The shareholders of the TZDO are the City of Dortmund, Dortmund credit institutes, chamber of commerce and industry (IHK) and chamber of trades (Handwerkskammer), Technical University and Technical College Dortmund (Website Technologiezentrum Dortmund)

Both centres are publicly funded and are meant to function as business incubators for the site and Dortmund. The ZfP is built for material technology and surface technique, robotics and automation technology, sensor systems, signal processing und measurement technique as well as related services (see area number 9 in *Figure 11*).

Estimated number of users (e.g. employees, residents, etc)

The estimated number of new jobs/employees working within the re-developed Phoenix-West area is 10,000 (no forecast is available which shows any more details).

8.3.2 Technical description of buildings

There are several buildings already in use or soon under construction. The public funded MST factory and the ZfP are amongst the first buildings on Phoenix-West. The existing MST factory was constructed in two steps and has a total gross floor area of 9,400 square metres. On its website there are 16 companies listed as tenants. The MST factory itself employs about 5 people; the other companies employ about 75 people (Website MST factory). There are a number of 'normal' parking spaces on the factory ground, directly beside the building. A representative of the MST factory stated at the telephone (Brückelmann 01.04.2008), that he thinks that they have less than 50 spaces (but doesn't know exactly and would need to check it). The ZfP is under construction, it will have a gross floor area of 5,000 square metres.

For the 'Phoenix-Arcaden' some private developers (Degener Architects and Dr. Hesse and Partner GmbH) are redesigning a former industrial hall. The company guts the building and places an internal building within the existing structure that will contain mainly offices and a restaurant in the entrance hall. The gross floor area will be about 5,000 square metres.

Close to the existing heritage protected building (Waschkaue – dry/locker room, pithead baths) a new office building (by Warns-Löschmann + Partner) will be built in a similar style (gross floor area 2,000 square metres). Another new building is planned for offices and a laboratory (by Freundlieb project development in cooperation with architects Schamp & Schmalöer), it will be a 4-floor building with a gross floor area of 400 square metres on each floor. The offices will be flexible in size, depending on the users' demands.

There is no official information about the number of car or bicycle parking spaces for these buildings.

Description in the detailed site development plan

The detailed site development plan gives a number of figures, which give guidance in regards to the use and the construction of buildings (see **Fehler! Verweisquelle konnte nicht gefunden werden.** below). The allowed uses are described in the text information for each 'special use area' (SO). A dense built up area is planned, but some 'pocket parks' for recreation are mandatory, including a pedestrian footpath (light green area) and rain water retention areas.

Important elements are: building lines (red lines, close to the main road), where you need to build on and building boundaries (blue lines), within theses boundaries you are allowed to build. Building heights and total sizes are determined by figures like:

1. GRZ (Grundflächenzahl) which set the permitted lot coverage area;
2. GFZ (Geschossflächenzahl), which is the floor area ratio;
3. TH (Traufhöhe), which sets the eaves height of a building. There is a general maximum height for the respective parcels of land (orange areas) and a minimum height (TH min), which is set mainly close to the main road (to guarantee an urban townscape).

For most of the technology park, parking spaces are only allowed within the building boundaries, exceptions are marked separately with St and red-dashed lines, and here it is allowed to build commonly used parking spaces, garages or other minor constructions.

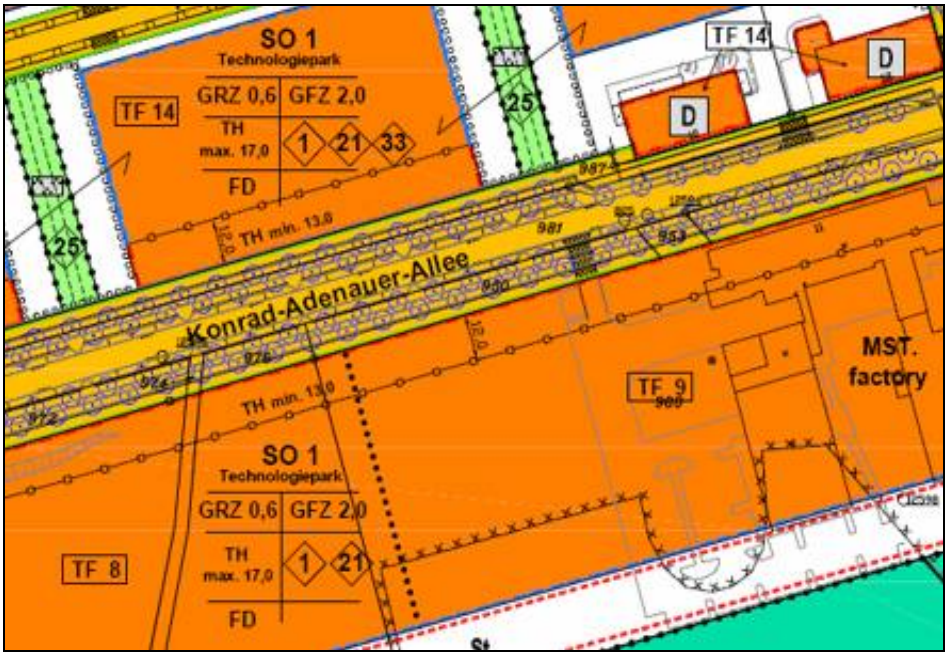

Figure 13:Excerpt of detailed site development plan (Stadt Dortmund 2007a)

MOBILITY CONCEPT PHOENIX-WEST

The regulations for building will make it difficult to build the required parking spaces on the same ground as the building, or at least not in the 'normal' and cheapest way: as open ground-level parking spaces next to the buildings. Instead there will be the need for underground parking or (multi-storey) parking garages.

The aim of Dortmund city is, to come to a modern and up to date transport regime within Phoenix-West. An intelligent mix of different modes should be achieved (motorised and public transport as well as cycling and walking). Within the planning process the city is offering therefore several possibilities to reduce the (legally) required parking spaces and communicates this to the developers and the users of the area.

The LEG and Dortmund city, together with the architect and urban planning company stegepartner (winner of the competition for a Phoenix-West urban development plan), produced three guidebooks on energy, design and mobility. These books are more or less informal instruments for advising developers which are interested in the site. The new buildings must be constructed in an energy saving way as stated in the energy guidebook (Energiehandbuch). The energy saving obligations (heating, isolation, cooling of buildings) emerged from European funding. The buildings must as well be in line with the design guidebook (Gestaltungshandbuch).

The underlying mobility concept for Phoenix-West aims to (Stadt Dortmund, LEG 2008):

1. Minimising the investment for mobility
   the number of required parking spaces should be minimised and the parts of building grounds which are used for parking should be as small as possible.
2. Minimising the company's mobility costs (operating costs)
   a small number of built parking spaces minimises the maintenance costs. Furthermore there are other costs for company mobility which can be minimised as well.
3. Environmental protection
   good organised company mobility will result in less car traffic and is therefore a contribution to environmental protection.

The mobility concept and the mobility guidebook are in parts based on experiences with the existing technology park close to the university campus, where the lack of parking spaces is a problem (Website Pressestelle Stadt Dortmund). A set of problems occurs in relation to car parking within the Phoenix-West area due to the fact that the existing space will be scarce and it will not be possible for the developers to build all parking spaces at ground-level parking on their own estate (Interview Hachmeyer-Isphording). The mobility guidebook offers some solutions to this problem. The city offers advice to every developer on the topics of the guidebooks, especially on energy saving and mobility:

One aim of the mobility concept is the **reduction of the required amount of parking spaces** (minimum amount required by NRW state building law). A reduction is possible (Stadt Dortmund, LEG 2008):

1. if the developer offers high quality bicycle parking infrastructure (the amount depends as well on additional facilities like showers, changing rooms, lockers for drying clothes…),
   If high quality bicycle parking (close to entrances, weather protected, quality bike stands) is given for 5 % of the employees; 2.5 % of the normally required parking spaces can be saved. Additional showers or changing facilities can save another parking space (Interview Meißner);
1. if the company is producing a mobility/travel plan, or if single mobility management measures like job tickets, car-sharing for business trips or car pooling platform for employees are offered and shown to the city;

2. if other measures like parking charges are planned and guaranteed.

The companies are not obliged to produce a mobility concept or a travel plan, it's a voluntary option. The mobility guidebook promotes as well the building of automatic car parks on the companies' estates as an effective utilisation of the scarce space.

If there is not enough space to build the required parking spaces on their own estate or if the company doesn't want to build multi-storey parking spaces, German companies can generally negotiate with the city transport planning department to pay off a certain amount of parking spaces to the city. In this case the company will need to pay a fixed amount (Ablösebetrag) per parking space which they can not build. The amount depends on the location of the site within the city area, for Phoenix-West this is 7.000€. The price is legally set by the city council within a special city charter (in Dortmund: 'Stellplatzablösesatzung' from 13.02.2008). The city is obliged to use the money in favour of the paying company and in order to come to a solution for parking problems. The federal state law gives the framework for the allowed usage of the money (near by parking spaces, support of mobility infrastructure e.g. bicycle stands at nearby public transport stations)

The city of Dortmund is earmarking this money from Phoenix-West developers for building / funding 2-3 'central' multi-storey car parks ('Quartiersgaragen') or underground car parks in the Phoenix-West area. It is planned that the car parks will be built by private companies and the number will depend on future demand. The mobility guidebook gives design examples of what the car parks should look like.

Another general possibility is to put a building obligation on another estate ('Baulast'), which normally must be located in close vicinity to the own parcel of land. The obligation to accept the parking spaces is registered in a special register (as a future use on a neighbouring estate). The detailed site development plan shows the estates where the 'Baulast' will be placed; these estates are dedicated for future use as the above mentioned multi-storey car parks.

The whole procedure is part of the building permission process: the proof of fulfilling the required number of parking spaces permanently is one precondition for getting the permit. The city of Dortmund is applying a new system to estimate the usually required amount of parking spaces for each new development. Normally the determination of the required number is made by the 'usable' floor space. Dortmund transport department will determine the number additionally by the expected numbers of employees and visitors, thus a call centre with many employees will require more parking spaces than a normal office with a similar floor space area. The required amount of parking spaces will also take into account the time or working pattern and the expected share of employees, who will commute as car drivers to come to a sound and realistic estimation of the actual traffic and the actual need for parking spaces (Stadt Dortmund 2007a).

8.3.3 Accessibility of the area

The Phoenix area is located 5 km south to the city centre of Dortmund (see *Figure 8*).

Car access

The Phoenix-West site has a good connection to the existing local and regional road network (see *Figure 14*) and is already accessible by car. The main junctions (1-3) will be re-designed to fit to the estimated volume of traffic. The existing main roads are marked in yellow, the doted yellow line shows an optional road, which could be built later if the traffic volume exceeds expectations. The B54 on the west side is the biggest road from the southern direction towards the city centre and has two separate lines for each direction, it's estimated that about 60 % of the car traffic to and from the site will use this road and entrance side to Phoenix-West. The B54 is

connected to the B1, which is shown in *Figure 8* as the west-east motorway-like street which cuts through the southern part of Dortmund.

The main on-site road (Konrad-Adenauer-Allee) is already constructed and accessible from the west end (No. 1). At the moment there is no drive through possibility from west to east. The other on-site roads still need to be built; the location of some roads will depend on the sizes of the companies' estates.

Figure 14: Road network (Stadt Dortmund, LEG 2008: 34/35)

Public transport access

EXISTING PUBLIC TRANSPORT

The nearest train station (local and regional trains) is the station of Hörde and is located in the district centre (see *Figure 15*). The closest stop of the existing metro line U49 is 'Rombergpark', it is located about 1 km to the west of the centre of Phoenix. In the district centre of Hörde which is located about 1 km to the east of the centre of Phoenix-West is another metro stop (U41). The bus line number 440 stops at the Rombergpark but doesn't serve the Phoenix-West area directly. It has a frequency of 10 minutes.

Figure 15: Public transport (Stadt Dortmund, LEG 2008: 38/39)

PLANNED PUBLIC TRANSPORT

The most preferable solution would have been a direct rail bound service to Phoenix-West area, but according to a pilot survey, the construction of a train stop will not be feasible due to high infrastructure costs and an existing high service frequency. In addition, the already short distances between the existing train stops would be a problem (oral statement of transport planning department).

There is an option of constructing another metro line (U) which would serve the Phoenix-West area directly. A dedicated track is included in the detailed site development plan, no buildings are allowed in this area. Three stops are planned to the east the line which will continue underground to Hörde centre. The construction is not directly planned as it would currently have a cost-benefit rational which would not allow additional national infrastructure funding and is too expensive for the city alone. The construction will be considered again when the site is fully occupied, taking the city's economic situation into account.

It is planned to run two bus-lines on Phoenix-West: line number 470 (5 stops on-site) and line number 445 (8 stops on-site). A minimum service frequency of 20 minutes is planned - when the site is fully occupied it could be increased to every 10 minutes (Stadt Dortmund, LEG 2008).

Pedestrian and bicycle access

Figure 16: Konrad-Adenauer-Allee, separate cycling path (Website Projektbüro Phoenix)

The Phoenix-West main road is constructed as a boulevard with separate pedestrian and cycling paths. The pocket parks will function as connections between the on-site roads. Two squares are planned close to existing heritage protected buildings; they are reserved for pedestrians, cyclists and probably buses. Except for the main road, there are no separate cycle paths planned on the Phoenix-West site.

As in the rest of the city area of Dortmund a cycling network exists around Phoenix-West. In Dortmund, the existing cycle paths are often accompanied or combined with pedestrian footpaths. This network has gaps and is generally not constructed in a high quality way. The use of the cycling network is a combination for leisure trips

(e.g. alongside the river Emscher) and everyday trips alongside main roads. The cycle paths alongside the big trunk road B54 in the west are not very attractive, but are the quickest way towards the city centre (personal judgement).

Figure 17: Combined existing and planned bicycle network (Stadt Dortmund, LEG 2008: 40/41)

Dortmund city and Hörde district centre are within cycling distance.

8.3.4 Projection of generated traffic (Projection of trips per day generated by the new development)

For Phoenix-West within the borders of the detailed site development plan there is a forecast of 34,000 motorised trips per day by the year 2015. The main road network and adjacent junctions will be designed to fit this estimation, but the necessity to foster environmentally friendly transport is stated in the information text for the draft detailed site development plan. A mobility concept was developed to cope with the amount of traffic and to mitigate the negative effect of car traffic, it is described in the chapters above.

8.4 Simulation description

8.4.1 Scope of the simulation

The simulation will concentrate on the actual situation at Phoenix-West. At the moment several development stages exist in parallel. Part of the site is still undergoing some decontamination and is not yet ready for (infrastructure) construction. The central parts of the area are already developed, the bigger part of the main road (Konrad-Adenauer-Allee) is constructed and in use and connects the MST factory to the existing road network (west end). Some heritage protected buildings are located here; two of them are recently renovated and are used as office buildings. The southern part is used as a business area.

The detailed site development plan is just about to come into force (mid 2008). In connection with the estimated traffic volume the plan places emphasis on the need of a mobility concept and the need to encourage the use of other modes (especially public transport).

One of the innovative parts in the Phoenix-West planning process is the mobility concept and guidebook (see 0), which is meant to solve or reduce the predicted parking and transport related problems in an innovative way (at least for Germany): to offer the possibility to produce a company mobility concept in addition to the above mentioned traditional solutions. The discussion focuses on this aspect.

Until now, this possibility for reducing the required amount of parking spaces is not used by the developers, the standard possibilities seem to be easier and more attractive (statement by city transport department).

8.4.2 Content of the simulation

Due to the restructuring process of the ILS the original date of the planning simulation had to be postponed. It was planned to invite the participants to the MST factory in Phoenix-West for a one day discussion. The new date (11.04.2008) was arranged together with the transport planning department as our main partner in city administration.

The idea to compress the whole building permission process into small steps was discussed, but it was decided to start with the given planning situation in Phoenix-West. The city already integrated the transport needs for all modes into the detailed site development plan and into the mobility concept for Phoenix-West, so the preconditions are rather good. The simulation focused on the implementation process and on gaining building permission and on the questions of implementing, monitoring and financing company MM.

The main part of the simulation concentrated on the point in the building permission process where the developer and the city administration are concerned with the calculation and the proof of the required amount of parking spaces. The planning simulation concentrates on discussing the new possibility to use Mobility Management to reduce the estimated need for parking spaces.

In order to transfer existing knowledge and good practice examples, the ILS produced a prototype travel plan (ILS-Mustermobilitätsplan), a document which shows the scope and core content of a company travel plan as well as the production procedure. The prototype travel plan is based on several existing examples (from UK, Germany, Austria and Belgium), but mostly uses UK examples and existing guidelines. This model plan is used as an input, so everybody can see an example of what such a plan could look like. Another input is the presentation of minimum standards for such a travel plan.

Using MM to reduce the need for parking spaces during the building permission process is a new idea, that's why quite a lot of open questions exist. Minimum standard (content), processes for monitoring, there is the problem of the 'unknown user' (if the developer wants to sell the building, or doesn't know the tenants yet) and the problem of penalties in case of non-compliance or non-effectiveness.

Another point for the discussion is the earmarking of the money from paid-off parking spaces, here a new possibility was discussed (proposed by ILS): Using the money to raise a fund for a mobility consultant for (all) companies in Phoenix-West. This solution would probably need a change of the state building code. Up to now, the pay-off money needs to be reinvested to solve the parking problem close to the given site, it is mainly used to fund parking infrastructure, but in some of the 16 federal states also public transport or cycling infrastructure.

The simulation was planned as a one day simulation. During the invitation process it became clear that some private developers could only attend half a day, therefore the whole discussion was compressed and the simulation took part from 9:30 – 14:00 (see 8.4.4).

A planning simulation can show existing conflicts and different interests in relation to Mobility Management between private and public parties. The ILS functions as a third party, offering possible solutions to the early

integration of MM into the planning process. Open questions about the implementation and legal possibilities exist, e.g.:

- Is it feasible and desirable to be able to use the city's money (Ablösebetrag) from paid-off parking spaces for funding a mobility manager (consultant, adviser or coordinator)? This person would act on behalf of the city to give advice for (all) parties who are interested in the building project in Phoenix-West.
- How to campaign the positive effects of MM? How to show to the developers the positive economic effects (saving money if you don't need to build as many parking spaces as normally required and you save the money which is otherwise needed for maintenance of the parking spaces) and the positive image effects? What preconditions and circumstances are needed to see MM as a good prospect and not as a restriction or barrier?
- What would help the developer and the existing companies to implement Mobility Management in Phoenix-West?

8.4.3 Relevant MM measures to be integrated at the simulation site

No single MM measures were suggested and discussed except a prototype travel plan.

8.4.4 Programme of the simulation

The planning simulation Phoenix-West took place on 11th April 2008 at the ILS and was conducted with joint input from "MAX – Successful Travel Awareness and Mobility Management Strategies" and the German project "Mobilitätsmanagement in der Stadtplanung", it followed this agenda:

09:30 Welcome and introduction of the participants

09:45 Input (ILS):

2. What does the planning simulation means for the two projects "Mobilitätsmanagement in der Stadtplanung" and "MAX – Successful Travel Awareness and Mobility Management Strategies"?
3. What is Mobility Management: what does it aim for, which are the measures, what are the experiences?

10:15 Input (City of Dortmund):

4. State of the detailed site development plan and the mobility concept for Phoenix-West

10:30 First round of discussion:

How Mobility Management can be implemented in addition to traditional ways to reduce the required amount of parking spaces and in order to deal with the company's mobility needs(and to minimise the effort for reducing the parking spaces).

Input (ILS):

5. introduction of the prototype travel plan as a feasible solution

Open questions:

6. Is this a feasible approach for Phoenix-West?
7. What can developers and companies gain? What are the positive effects?
8. What problems and barriers are anticipated /are seen (by whom)?
9. What kind of support would the developers and companies need (technical advice, economical assistance…)?
10. What kind of support gives the public transport operator DSW21? Infrastructure, services, tickets and rates (tariffs), car sharing…

12:00 – 12:45 Lunch break

12:45 Second round of discussion:

11. What kind of minimum standards for Mobility Management should be fulfilled and demonstrated to the city in order to justify the reduction of parking spaces in a legally profound way (within construction law)?
12. What judgements have the participants about the suggestion to raise a fund for mobility consultation for companies (using the money from paid-off parking spaces)?

13:45 Résumé / Conclusions

14:00 End of planning simulation

8.4.5 Who was invited and took part in the planning simulation?

In the Phoenix-West area different public and private parties are involved in the planning process. All have their own interests and views about the area and about transport and parking. The ILS invited, in consultation with the Dortmund transport planning department, the following organisations / parties' representatives to take part in the planning simulation.

CITY ADMINISTRATION DORTMUND

The transport planning department of the city of Dortmund can be seen as the main driving force for the implementation of the mobility concept for Phoenix-West.

Within the city administration the town planning (Stadtplanungsamt), architectural control (Bauordnungsamt) and transport planning (Verkehrsplanung) departments are involved in the planning process in Phoenix-West and therefore were invited to participate at the planning simulation together with representatives for special tasks like development planning (Bauleitplanung) and juristically issues for planning and construction (Baujurist).

Within the administration there are no employees specialised on or have explicit responsibility for Mobility Management. Two employees from transport planning are responsible for the 'Masterplan Mobilität' and therefore responsible for those parts of MM which are mentioned / planned there (Stadt Dortmund 2004). The local building authority (architectural control) is concerned with every building project with the proof of parking spaces, and in this matter also partly concerned with MM.

Until now, there exists no routine integration of MM into the planning and building regulations. The department for transport planning stated that they think it is possible to better integrate MM into building law. Like stated above, this could be achieved by giving the possibility to prepare a travel plan and thus reduce the number of required parking spaces (Interview Meißner).

The project office Phoenix (7 employees) was invited as well, it plays a special role for Phoenix-West and it is part of the business development department of Dortmund city. The office has to take into account the different needs of the single city administration departments and in relation to Phoenix (town planning, architectural control, transport planning, environmental agency – Umweltamt). It has to assure the communication between the departments and works in close cooperation with LEG and other parties.

The city aims to handle the transport on Phoenix-West in a modern way. The mobility guidebook was produced to achieve this. The guidebook was developed through a negotiation process between several city departments (town planning, transport planning, and business development) and was produced in cooperation with LEG. For the project office a voluntary integration of Mobility Management into the planning process is sufficient; the private developer should not be confronted with unnecessary barriers; during the building permission process, the developers will be confronted with several alternative solutions to proof the required parking spaces anyway (Interview Hachmeyer-Isphording).

LEG – STATE DEVELOPMENT AGENCY OF NORTH RHINE-WESTPHALIA

An LEG representative was invited but couldn't take part. The LEG Landesentwicklungsgesellschaft NRW GmbH (state development agency of North Rhine-Westphalia) is the biggest provider of building land (Bauland) for industrial and commercial uses in Phoenix-West. It is working on behalf of the estate fund of the federal state. The aim of the LEG is to sell all parcels of land until ~2015 (Stadt Dortmund 2004: 5f). Parts of the LEG (e.g. housing supply) were sold and privatised in June 2008, but LEG Stadtentwicklungsgesellschaft GmbH remains responsible for the development in Phoenix-West as it belongs to the non-sold 'public services' department.

DEVELOPERS/INVESTORS AND ARCHITECTS

To discuss open questions with the private sector is of great importance to get an insight into their view about the topic of Mobility Management and the suggestions for solutions from the city administration and research. A spectrum of developers were invited: established companies like MST.factory and ZfP (Zentrum für Produktions- und Fertigungstechnologie) and existing and potential future developers (Architekten Schamp und Schmalöer, Degener Architekten, Freundlieb mbH & CO KG) which are known to plan to invest into renovating existing heritage protected buildings or plan to construct new office buildings in Phoenix-West.

The companies aim at an economic solution for the required amount of parking spaces. The possibility of reducing the number of parking spaces by building high quality bicycle parking facilities seem to be of interest; but further Mobility Management measures are not popular yet. Instead of trying to further reduce the amount of parking spaces, the developers tend to pay off those numbers, which can't be build on their own estate.

At the time, when the matter of parking spaces is discussed (during the building permission process) often no information about the majority of the potential users / tenants of the planned building is available, therefore the estimation of car trips and other mobility issues is difficult (or too much effort).

LOCAL PUBLIC TRANSPORT COMPANY DSW21 – DORTMUNDER STADTWERKE AG

The DSW21 (Dortmunder Stadtwerke AG) is an umbrella organisation for public services of the city of Dortmund, the core business is the local public transport service (bus, Stadtbahn and the suspended monorail at the university campus called H-Bahn). For Phoenix-West, the Stadtbahn and busses are important. The

municipal transport services play an important role for a modern and sustainable transport system and good services play an important role for successful implementation of Mobility Management.

ILS, ISB AND ZIR

The planning simulation was organised and run with the help of colleagues in the ILS who are working on similar questions about how to integrate Mobility Management in the planning process. The ISB (institute for city engineering and urban transport) of the University in Aachen is a partner of the German project Mobility Management in urban planning. The ZIR will join the discussion as well (Zentralinstitut für Raumplanung Universität Münster), they are specialised on planning law in Germany.

PARTICIPANTS AT PLANNING SIMULATION

Institution	Name
Architekten Schamp und Schmalöer	Richard Schmalöer
DSW21 Dortmunder Stadtwerke AG	Andreas Friedhoff
DSW21 Dortmunder Stadtwerke AG	Lars Hirschfeld
ILS Institut für Landes- und Stadtentwicklungsforschung GmbH	Dr. Ulrike Reutter
ILS Institut für Landes- und Stadtentwicklungsforschung GmbH	Janina Welsch
ILS Institut für Landes- und Stadtentwicklungsforschung GmbH	Mechtild Stiewe
ISB, Institut für Stadtbauwesen und Stadtverkehr	Tobias Brandt
MST.Factory Dortmund GmbH	Dr. Heinz Brückelmann
Stadt Dortmund, Stadtplanungsamt - Bauleitplanung	Birgit Niedergethmann
Stadt Dortmund, Stadtplanungsamt - Verkehrsplanung	Andreas Meißner
Stadt Dortmund, Stadtplanungsamt - Verkehrsplanung	Winfried Sagolla
Stadt Dortmund, Wirtschaftsförderung – Projektbüro Phoenix	Konrad Hachmeyer-Isphording
ZIR, Zentralinstitut für Raumplanung	Cornelia Wellens
ZIR, Zentralinstitut für Raumplanung	Dr. Susan Grotefels

8.5 Simulation results

The planning simulation took place in an open and friendly atmosphere. Phoenix-West as a development site and case study was introduced. The preconditions of transport and land use planning and the degree of their integration weren't discussed in detail, but the regulations set by the detailed site development plan were explained by the city and generally accepted. The development concept for Phoenix-West aims for a high quality development and was approved by all participants. Actual problems like non-existent public transport accessibility during the first stage of development were discussed shortly but in general the discussion focused on the problems about how to implement monitor and secure MM (how can it be handled to become a serious alternative to building parking spaces in order to 'solve' transport and mobility problems).

Figure 18: Planning simulation at the ILS in Dortmund, April 2008 (photo: Simon Grotthoff, ILS)

8.5.1 Description of discussed planning and MM instruments & measures

At the beginning of the planning simulation the concept of MM was introduced and some measures were mentioned to illustrate the idea and possibilities of MM. The prototype travel plan was discussed as an instrument to offer a strategic and well organised approach to company Mobility Management. Minimum standards and questions of monitoring and evaluation of the effectiveness were discussed in general, but no detailed MM measures were suggested.

The mobility concept of the city of Dortmund was discussed as it is described in chapter 0. The transport planning department offers to the developers of Phoenix-West several possibilities to cope with the required number of parking spaces. The developer can either construct (all/part) or pay-off (some) parking spaces, by an obligation to build the parking spaces on someone else's estate in close vicinity, or reduce the required number of parking spaces if a company offers a mobility concept to the city and implements measures accordingly. Until today the 'normal' developer will either build all required parking spaces or choose a mixture of the first three options.

The main part of the simulation discussed the offer to reduce the number of parking spaces and ILS introduced therefore the concept of a travel plan as a MM instrument.

Main points of discussion have been:

- Reduction of parking spaces – using MM
- Use of money from paid-off parking (for the not built parking spaces) for MM consultation instead of earmarking it for central parking / multi storey car parks as suggested in the detailed site development plan

High quality cycling parking and shower facilities were discussed briefly because they are already used / installed at Phoenix-West and give a 'bonus' for the estimation. The potential of high quality (close to entrances, weatherproof, well-lit and lockable) cycle parking for reducing the amount of required parking spaces is already estimated by the city's transport planning department. Per 5 % of the staff, 2.5 % less parking spaces can be built, in general one space is reduced additionally, if a shower is installed as well.

As described above the public transport stops will be built in parallel to the development, the planned bus lines will start/increase their services step by step (see 0). At the moment, the local transport company DSW21 sees no

possibility to start with a full service as long as there aren't more potential customers working on the site. The service for the site will start with a small change in the existing network: every second bus of the existing line in the south will connect Phoenix-West with the subway station Rombergpark and the Stadtbahn and railway station in Hörde district centre. There is a limited amount of public on-street parking planned but the key leverage points are the private parking spaces.

Using a travel plan to reduce the required number of parking spaces

LEGAL BACKGROUND

The most important legal levels in regards to parking spaces are the ones of the federal states and at the municipal level: The governments of the federal states set up building codes ('Bauordnungen') including amongst many other aspects the framework regulations for parking spaces. The city administrations are allowed to set up local parking charters for filling in the framework given by the relevant state building codes. In NRW they are free to set up a charter, but they don't have to. The number of required parking spaces for a development is estimated by the city administrations in the early stage of a building permission process. In Dortmund the transport planning department bases their decision on regulations in state building code as well as the site development plan and gives allowance separately for every single building application. A local parking charter was set up and can help by speeding up this process.

Most state building codes allow a reduction of required parking spaces in the case of a good public transport accessibility to the site. In North Rhine-Westphalia the reduction in case of good PT accessibility goes up to 30 percent. An exception is the state building code of Berlin, where there isn't any duty to build parking spaces. Berlin's government has the opinion that developers will build as many parking spaces as are really needed without additional regulations. Some states allow a reduction in regards to other reasons than PT accessibility: In Hamburg and Lower Saxony this is the case if a company offers rebated public transport passes ('job-tickets') to its employees. In the State of Hesse a reduction is possible due to additional 'special measures' that are not further defined. City administration can interpret this in its own way. Therefore it looks like in Hesse the legal integration of MM on the state or communal level would not be as difficult as in other states; MM could be integrated as one possible interpretation/version of 'special measures'.

BUILDING PERMISSION PROCESS

In Dortmund, an additional solution for reducing the amount of required parking spaces has been introduced. The new concept of a travel plan was introduced and discussed to give an idea how a strategic approach in setting up a company's Mobility Management concept could look like and what it should contain as minimum requirements.

Developers on the site of Phoenix-West can set up a travel plan during the building permission process, submit it together with the other required documents to the city administration and then reduce their required parking spaces by a certain number in return. The building code of North Rhine-Westphalia (BauO NW) neither allows nor forbids this approach directly. For fixing MM measures within the building permission process, the city's transport planning department sees a possibility of considering this for each individual case (§ 51 BauO NW – 'Einzelfallbetrachtung'). According to this paragraph, the amount of required parking spaces needs to be estimated individually. According to the ZIR, this is why individual solutions are admissible within this part of the building permission process. The need to deal with the particular cases authorises the city to take MM measures into consideration whilst dealing with the estimation of the number of required parking spaces.

A travel plan would be submitted within the building permission process and the city administration will handle it as a small expertise. It will be judged according to the question: what degree of reduction of parking spaces is

likely to be achieved? The suggested measures have to have a reducing effect on the need for parking spaces. A basic condition is that the effect needs to be evaluated and be proven after a certain time. The transport department prefers an annual proof of implementation and effectiveness of MM measures/ travel plan.

It is not answered conclusively how to handle the 'reduction' legally, what kind of construct is most suitable. One possible solution is to defer (suspend) part of the obligation to build parking spaces for a certain time. This is the case in Lower Saxony (Niedersachsen). A company can offer a job ticket and therefore doesn't need to build a certain percentage of parking spaces as long as it proves this measure annually.

ZIR stated that this option was once included in the state building code of NRW as well but has been abolished in the year 2000. It was believed to create too much administrative work. Nevertheless, in their opinion this does not mean that it is illegal in NRW to defer the duty for a given time ('Aussetzung der Stellplatzpflicht').

Another solution is to first define the number of parking spaces that will be 'replaced' due to the suggested MM measures. Second this number will be handled as they would belong to the number of parking spaces that are paid-off to the city. Instead of paying the total amount, the company will not need to pay the money for the reduced parts at once. Instead, the payment will be deferred as long as the company can prove the existence and effectiveness of the travel plan/ MM measures (Stundung des Ablösebetrags). According to the transport planning department this kind of construct will be most likely chosen in Dortmund.

The transport planning department stated as well that those solutions could legally be handled as a normal 'beneficial administrative deed' which works in favour of the developers ('begünstigender Verwaltungsakt'). The suspension is then seen as a special advantage to the developers as long as they provide the proof. Both solutions will bring along a relatively high amount of administrative work to be monitored but wouldn't need a change in laws and regulations. After coming into use there is usually no regular checking of the agreements stated in the building permission, therefore parking space related agreements are not checked as well. The building permission is given once, but might be checked again e.g. if changes in the building's use are announced. Despite of this, the city administration agrees to perform the additional work needed for checking the implementation of MM measures for the pilot project in Phoenix-West.

WHAT KIND OF AGREEMENT IS NEEDED TO INTEGRATE A TRAVEL PLAN INTO THE BUILDING PERMISSION PROCESSES?

One solution could be a commonly used collateral clause (Nebenbestimmung -side agreement) which can be placed like a planning condition (Auflage) and deal with certain minor aspects of planning permission. The city administration doubts that securing travel plans by using a 'simple planning condition' is possible. ZIR and the transport department of the city of Dortmund instead have the opinion that it is possible to do so. A condition can be placed for developments with a low amount of required parking e.g. students accommodations. The condition includes the duty that additional parking spaces have to be built if there is a change in use or an unexpected high demand for parking.

Another solution is the more complex 'urban planning contract' ('Städtebaulicher Vertrag'). According to the planning department, agreements for monitoring the implementation of the travel plan and agreements on consequences in the case of not fulfilling it, can not be legally secured within normal building permission. Here a separate contract may be the best solution. The business development department is sceptical and doesn't like the idea of a separate agreement. They state that there is a great danger that additional contracts are seen as a barrier by developers.

HOW CAN MM MEASURES BE MONITORED WITH REGARDS TO THEIR EFFECTIVENESS, I.E. HOW CAN THE USERS PROVE THEIR ACTIVITIES IN MM AND THEIR MEASURABLE EFFECTS?

Examples of the minimum requirements of UK 'district councils' show that the developers are expected to prove the effectiveness actively, the user would have an active burden or obligation of proof (Nachweispflicht). It includes implementing the travel plan as well as proving the effectiveness of measures and reaching the targets included in the travel plan. Sanctions in case of non fulfilment need to be agreed on and a contact person in the company has to be announced as well. This mobility coordinator is responsible for the travel plan and implements the measures included in the plan. For doing so the coordinator needs their own budget (time and money) as well as the support of the company's management. Mode and frequency of monitoring and responsibility for proving MM activities (company or city administration) have been discussed controversially.

The transport planning department sees a main problem in proving the measures in the long run. The developer or contact person for the travel plan aspects has to prove the effectiveness periodically e.g. every year by conducting a mobility survey and analysing of transport aspects. The city administration would then check if the contract or the planning conditions are fulfilled. The transport planning department predicts a problem due to current lack of regularly re-checking any conditions after initial planning application on the one side and the need for periodical checking on the other.

The business department states that an annual duty to prove MM activities would be too much to ask for and therefore doesn't see this as a promising approach. If building applications including a condition is granted, this should not automatically release an active burden of proof, because this additional administrative task would have deterrent effects. ZIR instead has the opinion that a burden of proof is the only feasible possibility and refers to other legal fields, e.g. in environmental law where additional measures for danger prevention or check-ups by the chimney sweeper are compulsory.

INDIVIDUAL SOLUTIONS

Individual solutions that are needed to produce and implement a travel plan won't be attractive and working for all situations and all companies in the same way. The participants agreed that setting up a travel plan will presumably be interesting if the developer is at the same time the user after construction. Other good options for taking up a travel plan could be companies that relocate their business site to Phoenix-West or if most or all of the future users of a building are already known in the time of building application and therefore some survey about their (past) travel behaviour could be feasible.

Setting up a travel plan is seen as more difficult (but not impossible) for developments built for resale, especially in the case of unknown future users. The business development department sees a barrier in legally securing additional agreements between the developer and tenants and if so legal successors regarding implementing measures and taking over the travel plan.

FINANCIAL BENEFITS

Conditions fostering travel plans are often related with cost savings for the developer. The cheapest solution for coping with required parking spaces should be at the same time the most comfortable one for the users. This means that a travel plan needs to be cheaper for the investor than building all parking spaces or paying them off and this is seen to be more likely the case with bigger companies (and the duty to build a high number of parking spaces). The financial benefit of a travel plan for the investor has to exist over several years and has to have be an amount that is bigger than the costs for proving and implementing measures. The annual administrative expanse has to be on rational terms with these costs.

A mobility concept as well as measures should be designed to fit the users' needs of the site and have to be accepted by employees as well as customers to be effective. These are the preconditions for changing mobility behaviour and securing the parking space reduction durably.

According to the city's transport planning department, setting up a travel plan will create financial benefits for the investor (mainly through saving money for buying, constructing and maintaining parking spaces). In this context companies should reach a certain minimum size (which should be specified) showing if a travel plan pays off regarding financial and expanse issues. Financial benefits for developers have to be communicated in a more concrete way, as has to be, too, the possibility to estimate these benefits in advance. At least the costs for setting up a travel plan and the manageable expanse for burden of proof stand vis-à-vis with huge savings regarding building or paying off as well as maintaining parking spaces.

Other than financial benefits didn't seem to be of great interest to the participants and their opinion about what they think that developers and companies would find convincing or how they would act in regards to mobility management. The costs of producing a travel plan are seen as an additional barrier. It might be higher in the beginning where no benefits can be seen yet and the people question the outcome. There is a lack of experience regarding a 'normal' price, timescale or content of the plan.

Using pay-off money for funding mobility consultancy

The city of Dortmund will earmark the money they will get from paid-off parking spaces on Phoenix-West to support the construction of central parking, up to 3 multi-storey central car parks are planned on this site.

ILS asked the participants their opinion if it is acceptable, feasible and legally possible to use this money for mobility consultancy for Phoenix-West developers. All agreed that this use would be acceptable, the city wouldn't see a problem in feasibility, but the legal framework would need some changes.

In the state building code of NRW the use of the money is 'limited' to special tasks. It can either be used for additional parking, like central parking, if possible in close vicinity to the development where the money came from, or it must be invested in an improvement of the accessibility by public transport or bicycle.

The idea was to create a fund and use the money for a mobility consultant for Phoenix-West. The developers would be supported during the set up and/or implementation and monitoring of a travel plan. ZIR pointed out that the money must be used in favour of the developer or the group where the money came from. This would not be directly possible if the very first phase of producing the travel plan would be supported. The ones who profit would not have paid their part yet because the number of parking spaces for which the developer will pay-off is only defined later on in the process after the travel plan is produced.

Another problem is that the use of the money is strictly limited for the set of special tasks by law. A profound legal expertise would be needed to check the possibility to use the money for staff instead of infrastructure (the German word 'investiv' plays a central role here).

One option to avoid the first problem 'who profits when' is a variation: to use the fund for supporting the implementation of MM measures and the probably even more difficult phase of monitoring and evaluating. This would help to secure the reduction of parking spaces which needs to be long lasting. It is formulated as a precondition to the building permission process that the parking space issue is solved permanently. It could even be possible to use the fund area-wide for all companies which pay into the fund additionally.

During the discussion the business development department stated that it might be a good idea if the city can support the developers in the phase of setting up a travel plan. While doing so, the city would pay for the needed consultancy or offer it within their administrative work by the transport planning department. It was believed that this would help to push the process - maybe this could be offered in a pilot phase e.g. for the first five travel plans.

8.5.2 Description of acceptance for Mobility Management

In general Mobility Management is seen as a useful concept and accepted by the participants themselves. In particular the transport planning department sees it as a good additional option to the traditional '(road) infrastructure supply' and has confidence in the effectiveness of MM measures. A travel plan as an instrument is accepted as well, the main problems were seen with a regular evaluation of the effects of measures, in the monitoring of the plan and its implementation as well as with legal successors, if the developer wants to sell the building.

The business development department / Phoenix-project office itself accepts the approach as well but sees a (mental) problem in regards to their clients awareness because this concept and the advantages of MM are not (yet) widely known. This fact makes it complicated to convince a developer that using MM is a good thing and that they can expect benefits. They fear that the developer will see MM as an additional barrier in the planning process (on top of design and energy consumption regulations, which are special for this site as well). Business development placed emphasis on their experiences that companies normally are on the one hand interested in a worry-free/total-care package in the content of parking spaces. They therefore tend to build as many ground level parking spaces as necessary and as close to the entrance as possible to offer a convenient and sufficient supply to their employees or customers. To propose to the developers the possibility that they can build fewer parking spaces if they do MM, is therefore an unexpected solution and not easily explained. A long discussion process is needed for communication of alternative solutions and (financial) advantages. On the other hand the developers are willing to discuss new solutions as well if there is not enough space (for cheap ground level parking) or other constraints and problems (e.g. at Phoenix-West, where site history makes it extraordinary expensive to build underground parking).

If only one single city or site is trying to deal with transport problems in such a way (less parking spaces, more alternative modes, use of MM) it is an isolated application. All participants agreed that as long as no general standards exist (federal, regional or local) Mobility Management has to be voluntary and needs good promotion and communication. MM needs to be explained and promoted as an additional alternative which offers a real cost-benefit to the developers. It is important to start the discussion about the new alternative at the very beginning in the pre-application phase between developer and the city. The option to make it a mandatory task for every new development to implement a travel plan is generally rejected. No one wants to come up with additional mandatory regulations given the existing framework conditions, especially with regards to the competition between the cities.

The representatives of the local transport organisation DSW21 were in general the most sceptical participants compared with the other participants. They very much see themselves as a bus and Stadtbahn provider but not as a 'mobility' provider, i.e. they aim for customers who use the busses every day and don't see the synergies between bike and bus as well as they don't see the chance that they could gain new customers in the long run.

Their statement: 'what happens if we as a PT provider support MM and then the people cycle instead of using our busses?' The attitudes of the transport companies vary a lot, at the Darmstadt simulation the public transport provider was much more open minded and supportive and there are several other city-owned local transport providers which are forerunners e.g. in the case of MM and intermodal travel support (e.g. Bielefeld, Munich).

To make MM and the mobility concept for Phoenix-West a success, some preconditions should be fulfilled. The participants pointed out that Mobility Management especially needs to offer a real cost-benefit to the developers. At the same time good preconditions for all modes are necessary for the effectiveness of suggested MM measures. Preconditions for public transport are not very good at the moment, the existing Stadtbahn-stops are too far away for walking (distances of ~800-1000 m) and the site itself is still under construction which makes it even more unpleasant to walk that far to the next PT stops. Therefore the local conditions must be taken into account: e.g. it will not be effective at the beginning of the development in Phoenix-West to base the mobility concept mainly on supporting public transport use (giving job-tickets to the employees etc). At the moment there

are no bus services within the whole area. MST.factory pointed out that the employees ask for a good accessibility both by car and PT. There are other special conditions for Phoenix-West, it is for example meant to attract mainly skill-intensive businesses which are known to recruit their staff from quite long distances. This would mean that cycling will not play a major role on it's own but maybe it might become important in intermodal trips. At the same time car-pooling or car-sharing could play a bigger role as in other areas. Most preferable, there would be a consultant who knows the special conditions for Phoenix-West and would offer some assistance to the companies.

PERCEIVED PROBLEMS AND BARRIERS

MM is still a new concept, especially if it is used for new developments e.g. to reduce the number of required parking spaces. Therefore a lot of information, promotion and consultation is needed to raise the awareness of advantages of MM. The business development department is afraid that the quite high amount of regulations at Phoenix-West might be a competitive disadvantage for attracting developers and selling the estates on Phoenix-West. They have the impression (from their experience so far) that the restriction in the area regarding design and energy saving are more easily accepted than the ones in the mobility field. Other development's sites within the region don't ask that much from the developers. Due to the far-reaching structural changes of the Ruhr-Area there are a lot of brown-field re-development sites available. Especially for 'new-technology' businesses there is a strong competition between the cities within the region as well as all over Germany.

Within the cities administrations normally no one is especially responsible for these tasks and the resources are scarce (a lot of German cities suffer household constraints). Good awareness and knowledge about MM are uncommon, or concentrated around very few people within transport departments. In the early stage people with strong intentions are needed to start with pilot projects to integrate MM into planning.

MM is not mentioned and not defined in any upper level *legal* regulation or law. The lack of a legal definition of MM is seen as a barrier for a wider uptake. MM needs to be defined in order to be included e.g. into the state building codes as one reason to reduce the required amount of parking spaces (like it is in the case with public transport accessibility).

A barrier to use this new concept of MM in the cities' everyday building permission processes for reducing the need of the required number of parking spaces is that the city's administration wants to be prepared for the case of failure of MM as well. They state that there is the need to have some kind of fall-back regulation as well. In Dortmund the discussion came back every now and again to the case of failure of the travel plan or of re-selling of the building (and the new owner doesn't want to continue with MM / doesn't want to take over the travel plan etc).

In many of the German car-free or car-reduced developments there is an estate in the vicinity of the houses where a building obligation (Baulast) is placed for the case that too many inhabitants will buy/own their own cars despite of the contracts they have signed (potential use is normally a (automatic) multi-storey parking to get as much parking spaces as possible on one parcel). The problem is that a parcel of land needs to be bought and assigned to future use as parking. This land can therefore only be used temporarily for other activities or uses. In this case the financial benefits for the car-free households are not as high as otherwise possible.

A similar aspect is covered by the question how the original negotiation results about the use of MM can be maintained if the developer sells the buildings or the owner / tenant will change. In this case a civil contract would need to be set up between the parties, no official approval is needed. A change of the ownership doesn't need a notification. The planning department of the city needs to be notified of a change in use of the building only; at this point the number of parking spaces needs to be checked again and sometimes needs to be adjusted.

In Germany there seems to be a general lack of tradition to take over responsibility for a company's direct and indirect transport related problems (emissions, commuter traffic, traffic jams, freight transport, accessibility to site for all modes and social groups etc.). Accessibility to the road network and (sufficient) supply of parking are

the main points of interest and mostly looked at only at the beginning of the planning phase, sometimes job tickets are relevant for bigger companies as well.

The duty of monitoring and evaluation of a travel plan and its effectiveness is seen as a difficulty as well, especially for the pilot cities/sites because of the lack of experience in the framework of German laws and regulations (e.g. no prototype contracts available…). The business development department is sceptical to put another 'burden' on the developers; therefore tends to prefer that the transport planning department takes over the active part (and not to put a regular duty to present the evaluation data on the developer's side). The legal experts see no difficulty to put such a regular duty of monitoring and evaluation into a side-contract – there exists several situations where the company needs to fulfil similar requirements (e.g. for emission checks due to environmental laws).

8.5.3 Description of other results

The existence of some small leverage points and opportunities in the existing legal framework and the awareness of local transport problems allows cities to find a solution of how to handle the use of MM in the planning permission process. But within the given (legal, financial and political) framework the use of new concepts has some uncertainness and needs 'brave' people in a city's administration to test new solutions, despite the existing non-supportive laws and regulations. The (none)willingness to take that risk can not be changed in a half-day discussion, but the direction how to proceed and the existing barriers can be discussed.

Transfer of knowledge and experience from other European countries proved to be useful and helpful in the Dortmund discussion. E.g. the references to guidelines and experiences of the widespread use of travel plans and the discussion about district counties minimum standards in England were helpful to show the general usability of these instruments and MM measures. The prototype travel plan (ILS-Mustermobilitätsplan) was a good example of how to transfer the collected and translated information in a practical way. But no direct transferability is possible due to differences in legal framework conditions.

A change of the regulations about the proof of accessibility of the development estate (including effects surrounding road capacities) to a real 'transport impact assessment' for all modes would help to broaden the scope of planning. This could work in favour of sustainable transport, e.g. if not only the given estate and direct surroundings are taken into account but the existing network as well e.g. for the next train station of the main destinations within an area (bicycle access to cinema, shopping centre etc.). Therefore cooperation between transport, development planners and private developers would be needed.

PLANNING SIMULATION DARMSTADT (07.08.2008)

In Darmstadt, the cooperating German project "Mobilitätsmanagement in der Stadtplanung" conducted another planning simulation workshop. ILS joined forces to integrate the European perspective with the German ones and discussed the integration of MM into planning for a housing re-densification project. The participants were all representatives of cities administration, a city-owned housing company and the local public transportation organisation.

Figure 19: Planning simulation in Darmstadt, August 2008 (photo: Janina Welsch, ILS)

Most of the participants seem to be more sceptical than in Dortmund (some discussion had already taken place and there is a will to test the concept). The transferability of 'foreign' experience and knowledge was generally doubted, especially in regards to the legal framework. In Darmstadt the architectural control was generally very sceptical in regards of setting up new rules and regulations, mainly due to possible lack of legal certainty. They didn't seem to see the need to find new solutions to the existing transport problems. They saw no practical possibility and no capacity to monitor such kinds of new regulations. Therefore those rules should better be avoided completely. Even so Darmstadt belongs to the state Hesse and has, as stated above, a somehow more supportive regulation within its state building code, this department doesn't seem to be willing to consider any new concept because legal certainty is of greater importance to them.

But to be able to use MM to reduce parking spaces some new arrangements and legal solutions will be needed. The legal situation, where no obligation and no support to integrate MM exist, can easily be used as a 'killing-argument'.

Figure 20: 'Postsiedlung' existing (yellow) and planned buildings (red) (Stadt Darmstadt 2006)

The transport planning department is on the other hand looking for new or additional options to deal with transport problems. Darmstadt is a growing city and in the near future will need to deal with quite big conversion sites (former military uses) in the south of the city. There the existing road network has no free capacity and other solutions will be needed if the idea to build new housing districts should get a chance to be put into practice.

The local public transport organisation was open minded and the city's department responsible for public transport as well. They were both interested e.g. in 'welcome packages for new inhabitants' which was presented as a MM information measure by ILS.

For housing areas the same point in planning permission process is suitable as the above described one for business sites, they both need to fulfil the obligation of building parking spaces for new developments. In Darmstadt the discussion concentrated on a 'fall-back' option which includes an allocated space on the own estate on which a building obligation for future parking spaces is laid on, in case of failure of the original concept. This kind of 'solution' wouldn't solve the actual problem: the housing company looks for an opportunity to re-densify the 'Postsiedlung' area without needing to allocate as much space as normally required for parking. They look as well for solutions to avoid a second underground parking level. This would make the whole project much more cost-intensive. They want to 'keep' as many of the existing tenants, but those are used to low rents due to buildings being of a low standard.

The housing company didn't seem to have a clear picture of what they are willing to invest or willing to contribute to be able to reduce parking spaces for their new development. They would be willing to work with the city together but e.g. wouldn't like to be responsible for the travel plan (partly due to perceived lack of knowledge and skills and the fear of not being able to judge mobility measures and their effects). They only had vague ideas about what it could mean to actively try to influence the mobility behaviour of their tenants and the other users of a site and to take over responsibility for mobility related problems originating from their own development (even outside of the own estate).

Participants agreed that the concept of MM is considered to be especially useful for Darmstadt in regards to the new developments of the bigger conversion sites; the 'Postsiedlung' itself was not discussed in such great detail. The process of taking MM as an additional concept into account seems to have only started and no detailed measures were discussed, which would especially fit the area.

The possibility to use existing or new parking spaces for mixed uses (similar to the trip-quota model in Zurich) was discussed brieftly. But it was seen as too complicated to put obligations on existing parking spaces; it was not discussed in detail if ior seen as a good solution for a new multi-use high frequented site.

AACHEN SIMULATION – STRATEGIC INTEGRATION OF MOBILITY MANAGEMENT INTO CITY POLICY

In the city of Aachen ILS was not directly included but could gain insight within a workshop, where the preliminary results of the German project "Mobilitätsmanagement in der Stadtplanung" were presented (in Frankfurt, June 2008). The simulation concentrated on the internal city administration and the strategic integration of Mobility Management into the city's long-term / general policies. Different variations were discussed how to best integrate a MM concept into urban planning: make it compulsory for all new developments, offer consultancy from city administration or come to an arrangement for (bigger) developments through urban planning contracts.

Only recently Aachen needed (due to European environmental law) to produce an air quality action plan ('Luftreinhalteplan'), here the city joined forces with the private sector, e.g. with the chamber of commerce and industry. The chamber wants to prevent the installation of a clean-air zone ('Umweltzone') for the city centre, they are afraid of putting off future developers and want to avoid any discomfort and competitive disadvantage for the local economy (a clean air zone would mean that old and polluting cars and lorries would not be allowed in the city centre). The city promised not to install a clean-air zone and the chamber has promised to employ a mobility consultant for their client .

8.5.4 Description of simulation as a method

The two planning simulations in Dortmund and Darmstadt were both organised as group discussions about actual development sites. They were a good opportunity to discuss the new concept of MM with all responsible departments and other third parties and gave an insight into existing options and barriers.

It could have been useful to have a short preparation meeting to discuss some points in more detail (to give the participants more information before the actual simulation). But this would increase the organisation effort, and probably would set an additional barrier (time and effort) in regards to participation.

Such kinds of discussion seems to be useful as well to transfer knowledge and give input from research/science (or other cities/other European countries experiences) to local participants.

A good starting point were the development sites, it allowed the bringing together of many different parties to discuss transport problems and solutions with a real case study in mind. Here the site in question and the local situation can be discussed in an open atmosphere. Such an more informal meeting (organised by a third party) helped facilitate an open exchange of opinions, which most participants seemed to appreciate.

To bring all participants on an equal level of knowledge is of great importance, this is true for framework conditions and site specifications as well as for new ideas like MM.

The participants seemed not to distinguish between soft and hard measures, most tended to discuss transport problems more easily on the level of infrastructure and other preconditions. It is necessary to take these on board as well, to have a basis for discussing other measures. If a similar discussion is taking place earlier in the planning process, the effect of the planned developments and the importance of good transport preconditions will probably become even more important. For a given site, it could be useful to have therefore several meetings, depending on the progress of the planning and the detail level of the question and possible solutions.

To start earlier in the planning process could have given the opportunity to ‘simulate’ changes according to different designs and measures; in the meetings the site development plans weren’t discussed.

The role-changing part was not taken into account in these kinds of planning simulations, if the focus is more on the participants and educative side - to learn about mobility problems and solutions - this element could be introduced to support a change in awareness of the problems of the different parties.

Due to the local scope of the simulations, no real suggestions for changing the higher level regulations were made. But problems, possible solutions and barriers from a practical point of view were discussed (more detailed in Dortmund than in Darmstadt).

The planning simulation is a good instrument to give an input for new possibilities and add a momentum and a push in the direction to widen the view of the participants and to discuss different alternative solutions. It can give an initial overview which can give the impetus to go into further detail and where to find support and existing experience. A direct transfer for suggestions of legal changes is difficult, but barriers and leverage points can be detected and discussed from a practical point of view.

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9 Annex II: Country report Lithuania

9.1 Introduction

9.1.1 Purpose of this report

This report presents the results of the third step of working stage (WS) Simulation: Execution of planning simulations in Lithuania. According to the WP D research plan by using a planning simulation, the possibilities of the integration of mobility management (MM) in the process of planning of new or renewed buildings and sites were explored in the context of concrete cases, each grounded within an actual planning context. Two planning simulations took place in old Member States (MS) (Germany, Spain) and at three in new MS (Slovenia, Lithuania, Poland). In the reported planning simulation the identified best practice MM measures and supporting measures were selected and their transferability to Lithuania and its planning system was analysed.

9.2 Preconditions

9.2.1 State of LUP and transport integration in Lithuania

Strategic planning documents (important for transport) in Lithuania are:

- strategies for some issues (like national economic strategy, City transport strategy),
- strategies for some areas (like Vilnius county strategy which covers lot of “activities”),
- various feasibility studies, which often don’t have document status, these just complement documents prepared before (like new development investment projects, visualisation before the detail planning).

Documents for territories planning are:

- Comprehensive plan (CP) or so called Local Plan (LP): this one is most likely to be a spatial plan, because it covers all areas (land use, social infrastructure, transport and engineering systems, landscape, heritage, recreation and so on);
- Special plans (SP) (these are meant for one or two of above mentioned areas, e.g. special plan for cycling routes, special plan for water-supply, special plan for streets networks in developed area etc.);
- Detailed plans (DP) (these are prepared only for concrete site, with aim to receive building permission later on).

Strict rules for making transport plans don’t exist at all. These might appear on the level of special plans, as a key part of a CP (LP) or it might have the status of a strategy for a transport issue, but mostly it lays just in feasibility studies for concrete towns (not sites). Transport planning isn’t statutory (like LP or some SP), that’s why there are almost no transport planning traditions in Lithuania.

9.2.2 State of LU plan chosen for simulation

The conversion of a former industry zone to a multifunctional area with commercial, residential and leisure buildings, was projected in Vilnius City Local plan and approved in 2007. A detailed plan "Conversion of industrial territory "Velga" was approved in March 2008. However, although the process of land use planning is theoretically complete, the project is at the technical-constructive designing stage with building permission still not received. New conditions for land use have since been produced so it is possible that the detailed plan may be changed..

After the detailed plan was approved, there were big debates amongst society and municipal representatives as to the impact of the development on generating new traffic flows and the negative impact this would have on the social and environmental quality of the neighbourhood surrounding the site.

City, where simulation will be implemented

Vilnius is the largest city of the country. According to the 2001 census, the population of Vilnius is approximately 580,000 people, which accounts for 17 percent of the total population of the country. Vilnius occupies an area of about 400 square kilometres of which 20.2 % approximately is developed and the remainder is green belt (43.9% approx.) and water (2.1% approx.). The historical centre of Vilnius, the Old Town, (Senamiestis) is one of the largest old town centres in Eastern Europe (covering almost 360 hectares).

Legal situation

There is one main technical building regulation in Lithuania, which is the same for all areas (doesn't matter if it's the capital city or small village). The biggest limitations of this regulation is:

- Decision to limit parking spaces cannot be made by the developer but only passed by the Municipality Council who have one parking policy for the whole municipal area Politicians are therefore very loath to change municipal parking policy;
- Developers are unable to make decisions regarding extending public transport (PT) routes to the site;
- There are no regulations for bicycle parking spaces, so there are no mechanisms to "force" developers to build them.

9.3 Existing situation analysis

Site chosen for simulation

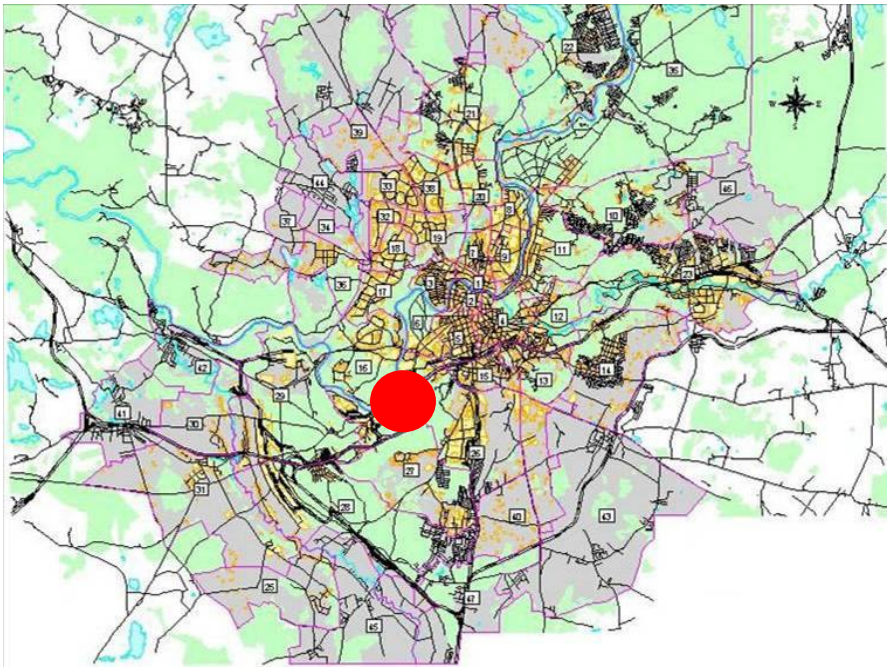


Figure 21: Red circle – VELGA site position in Vilnius context (source: Study "The influence of Vilkpedes – Miskiniu territory conversion to Vilnius transport system", prepared Territory planning research institute, 2008)

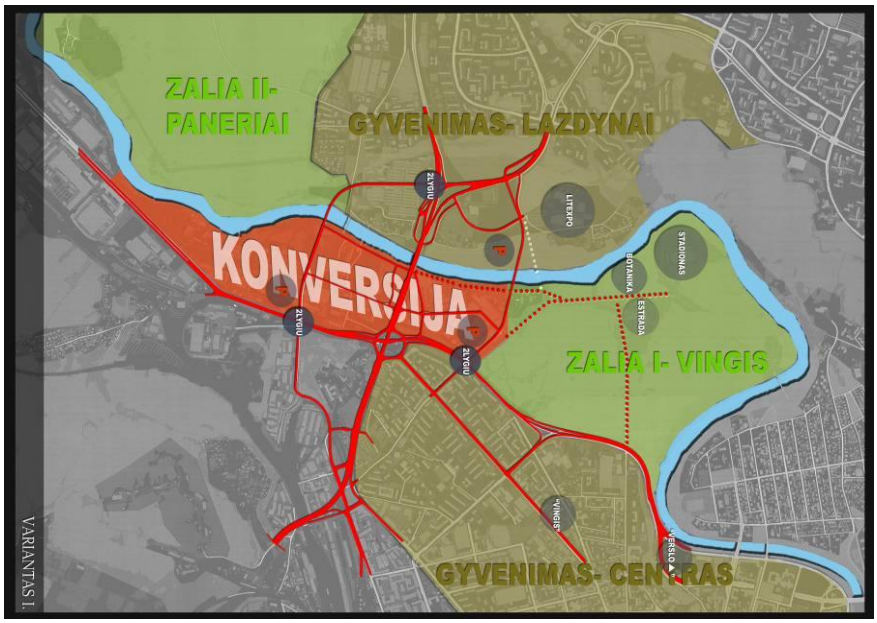


Figure 22: Red area „Konversija" – planned conversion for VELGA and other sites, Green area „Zalia I – Vingis" – biggest Vilnius park, Brown area „Gyvenimas – Centras" – Vilnius city central part (source: Vilnius Local Plan)

Figure 23: "Conversion of industrial territory "Velga" (source: "Commercial/residential centre". Territory in G.Vilko st. 2 plan, 2008)
Site area – 13.5 ha
Area of shopping and leisure centre - 100 000 m²
Area for offices - 32 000 m²
Area for housing - 127 000 m² (1850 flats)
Parking for 5340 cars (2090 for residents, other for commercial – administrative zones users)

The new development site, VELGA, lies between two existing points - Vilnius Park VINGIS and the Exhibitions Centre. It lies close to the main arterial Vilnius street, where there is no public transport service and no possibility to reach the site by bicycle or foot. The nearest public transport stations are a distance of almost 1 km and while the neighbourhood is well served by public transport, accessibility for users of the new site has not been solved.. In the Vilnius Local plan a new line for PT is outlined, although this would require a new bridge over the Neris River. Traffic flows in the main arterial streets around the site are currently about 4000 cars/per peak hour. It's anticipated that after the VELGA development there will be about 4500 new residents and1500 new working places, resulting in apx an additional 2600 cars/per peak hour.

Planned solutions for VELGA accessibility by car, PT, bicycle and foot

When solutions for serving the VELGA development were designed it was taken into account, that by 2015 the area will generate circa 2600 vehicles at peak hour and the total load of transport infrastructure in the neighbourhood area will be 2015 m. - 15270 vehicles at peak hour, an average increase of traffic flow of 4.5 %.

The following solutions for tackling the projection of generated traffic flow were designed (see ***Figure 24***):

- inner streets network;
- extension of Gerosios Vilties street;
- overpass for cars through Gerosios Vilties street;
- paths for pedestrians and cyclists in zone of Neris riverside and connection with „Eurovelo“ network;
- conjunctions from Laisves prospect;
- approaches and widening for deceleration and acceleration lanes form Geležinio Vilko (main arterial street) and Gerosios Vilties Streets;
- underground pedestrian path;
- reconstruction of part of Geležinio Vilko street (according to technical project).

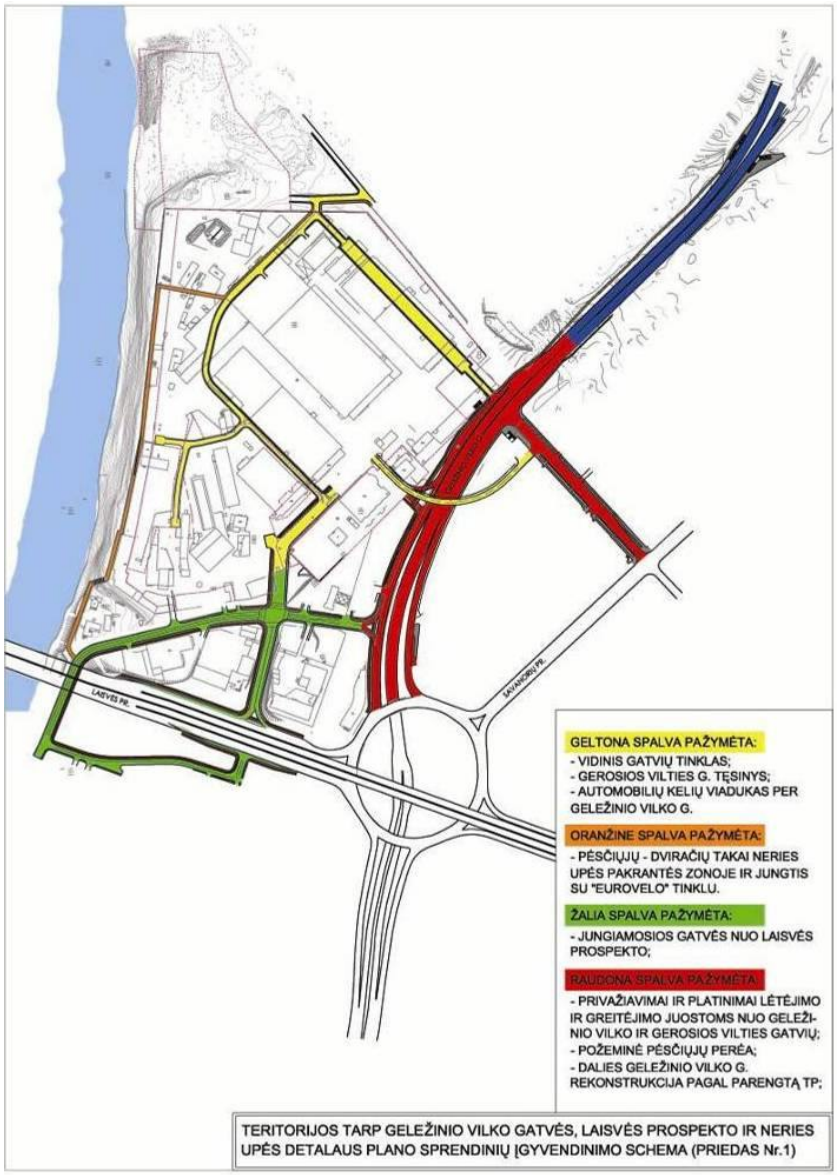


Figure 24: Solution implementation scheme (source: Study “The influence of Vilkpedes – Miskiniu territory conversion to3 Vilnius transport system”, prepared Territory planning research institute, 2008)

9.4 Simulation description

9.4.1 Scope of the simulation

The simulation will focus on a newly planned conversion in the former industrial zone VELGA in a very sensitive area of Vilnius. In the detailed site development plan residential, commercial, public and administrative zones are outlined. Moreover – about 5000 new parking spaces are planned for permanent and temporary site users.

The main idea of this simulation is to encourage simulation participants to return to the very beginning of the planning process and to discuss the possibility of integrating both mobility management measures and new infrastructure, if necessary, for a sustainable transport system in site development.

The existing situation is not satisfactory even without building a new attraction in this area. Traffic flows are already at a peak, public transport isn't accessible for new site users and there are no cycling – pedestrian paths for reaching the central part and other city zones.. As in new plan A large number of parking places are planned for the new site, but no other measures are planned to encourage travel by transport modes other than the private car. Therefore the main objective of the simulation exercise is to discuss all transport possibilities to the site and mobility management measures to encourage site users to choose PT, bike or pedestrian travel to access VELGA.

As conversion of this site was outlined in the Vilnius Local Plan, no special preconditions for developers were given at the planning stage. Instead the plan followed the main building density, structure of site (these are indicated in the local plan) and existing planning and designing norms in Lithuania (for site zoning, parking numbers, new entrances parameters and so). In the same local plan, some transport infrastructure changes (new multilevel intersection, detour and bridge, possible new public transport mode - metro or tram) for this site were detailed as well. So in producing the detailed plan only a transport flows modelling feasibility study and assessment to the environmental impact were prepared. As development of transport infrastructure is the remit of municipality plans, planners are free to "ignore" possible transport problems, and need only be concerned about providing substantial parking which is attractive as a business element. All other issues must be solved by the municipality. This raises another problem – if the municipality won't implement their local plan solutions (like new bypass, new PT line), the developer will be left alone to deal with their accessibility problems.

So far, complaints about the prepared plan have been received from residents of the neighbourhood surrounding the VELGA development with many saying they were not made properly aware of its contents or implications. This dissatisfaction may contribute to the success of the planning simulation as 'publicity procedures' requires that if a plan is revised it has to be presented to the public again. Therefore, developers, planners, and municipal representatives have to be ready to provide or at least to discuss some other possibilities to serve this site in terms of accessibility.

As the environment for sustainable transport planning in Lithuania is really poor, during simulation it is planned to look to MM integration through:

- Feasibility to integrate some conditions for MM in the new development into the local city plan;
- Implementation of MM measures in the development plan.

9.4.2 Content of the simulation

The main part of the simulation will concentrate on the point of the detailed planning preconditions process where the developer and city administration have to deal with infrastructure and mobility management measures

at the site and the legal and negotiable ways to integrate mobility related solutions into the planning or building permission process.

One of the most difficult tasks is to prepare a set of mobility measures which could be adopted by both the planner and developer as necessary for this site. Otherwise discussion about its integration into LUP might fail, just because they wouldn't agree on the need for these measures.

VGTU and VELGA planners input:

- Highlighting possible transportation problems near the site as new car trips are created as a result of the development and to show that there is no infrastructure in place to encourage site users to travel to VELGA by transport modes other than the car. An earlier prepared study "Influence of conversion to Vilnius transport system" will facilitate this.

VGTU input:

- Possible solutions for solving future transport problems with new public transport and cycling infrastructure measures.
- Possible solutions for solving future transport problems with mobility management measures:

Participant's input:

To prepare to discuss:

- What preconditions should be imposed on the developer and in what planning stage?
- Changes in planning law (as representatives from Environmental Ministry will be invited);
- Changes in permission to plan land use (as representatives from the Municipality will be invited there will be discussion on the infrastructure e agreement between the developer and Municipality of the developer to provide financial contribution towards new infrastructure and changes in the planning conditions process);
- Changes in the Vilnius Local Plan (as representatives from the municipal enterprise "Vilnius planas" will be invited) – discussing both the possibility of establishing mobility management measures for newly developed areas and to determine the exact obligations of the developer at this site and in other developments within the city;
- What financial and administrative contributions are acceptable from the developer and investors regarding the measures agreed him (especially in the case of PT - how and when in the planning process should public transport enterprises be consulted? What level of funding is necessary for PT development and what proportion should be paid by the developer and Municipality?).

9.4.3 Relevant MM measures to be integrated at the simulation site

More specifically the simulation will focus on the following MM measures:

- Parking management - to accept maximum parking standards norms (in both national law and as a municipal council decision according to changes in "Building Technical Regulation"). Currently, the following standards exist: minimum 1 parking space for one flat, 1 per 25 m^2 of useful administrative area, 1 per 20-30 m^2 of useful shopping area etc., but these can be decreased 0.5-0.75 times by

municipal council decision (for example: instead minimum 1 per 25 m^2 useful administrative area – maximum 1 per 37,5-50 m^2 useful administrative area). These standards can only be accepted only if other measures are also implemented such as:

- Park and ride system – concentrate parking near the main city and national public transport routes and offer parking at a reduced charge for those travelling VELGA leisure, shopping and administrative area;
- Changing parking usage purpose – day time for commercial and administrative areas users, night time for residents.

- Appropriate supply of public transport services. Currently it is not attractive to use existing public transport modes, the following measures will be discussed:
  - New public transport mode or new route design for the existing mode;
  - Free shuttle buses from the nearest public transport stations to the VELGA territory (the distance is approx. 1 km.).
- As the VELGA site is situated near the river, the existing embankment and Vingis parkas infrastructure could be used by cyclists . The following measures will be discussed:
  - Internal cycling and pedestrian network with connection to the city centre (approx. distance – 4-5 km.);
  - Parking for bicycles.

9.4.4 Programme of the simulation

Date: 11 July2008

Place: VGTU, Sauletekio av. 11, 2504 a. Vilnius

9.00	Welcome and introduction of meeting purpose and participants – Marija Burinskienė, VGTU
9.15	Presentation of simulation site – VELGA *(it's purposes, chosen place in Vilnius, relations between developer, investors and 3rd parties (municipality and community)* – Vladas Mykolaitis, AKROPOLIS (site developer)
9.30	Presentation of simulation site – VELGA *(chosen layout, historical changing of layout changing and reasons, barriers met in different planning stages)*
10.00	Presentation of simulation site – VELGA *(feasibility study of possible transport demand after site will be built up, proposals for solving forecasted problems (new infrastructure and reconstructions of existing one)* – Vytautas Grigonis, VGTU.
10.30	Coffee break
11.00	Presentation of MM concept *(definitions and competence)*, possibilities of integrating MM

	into land use planning process *(European experience)* - Marija Burinskienė, Kristina Jauneikaite, VGTU.
11.30	Presentation of MM measures which could be integrated into the VELGA project *(using good practice example,)* - Marija Burinskienė, Kristina Jauneikaite, VGTU.
12.15	First round of discussions *(Is subject of discussion clear? Is presence of invited representatives clear? First impressions of developer and planner, municipality representatives and city politicians, law makers and PT representatives)* – moderator Marija Burinskiene, VGTU
12.45	Lunch Break
14.00	Second round of discussion *(see Participants input above):* - *What preconditions should be set and in what planning stage? What financial and administrative contributions are acceptable for the developer and investors?* Moderator Marija Burinskiene, VGTU
15.30	Resume and conclusions
16.00	The end of simulation

9.4.5 Participants of the simulation

To the simulation the following companies and public administrations have been or will be invited:

- UAB "Akropolis" – the main site developer V. Mykolaitis. There are some other investors in this site, but the main decisions and negotiations are made through this enterprise;
- UAB "Parko investicija" – VELGA planners. Arch. A. Asadauskas (they organised preparation of VELGA detail plan and traffic assessment and modeling feasibility study) – couldn't come, but project and process of planning was presented by a developer representative;
- VGTU representatives, who conducted the above mentioned transport feasibility study. V. Grigonis, G.M. Paliulis;
- ME "Vilnius planas" – municipal planners. V. Valeika. Authors of the main Vilnius strategic and land use plans, responsible for Vilnius Local Plan implementation.
- Vilnius City Municipality, Urban Development Department. M. Miškinis, S. Čapiene. Responsible for the preparation of planning conditions for new sites and planning and building permission process.
- Environment Ministry, Department for Land use planning, urban planning and architecture – responsible for planning norms legislation, authors of projects for minister prescripts related to legislation issues.
- ME "Public transport services". R. Gerasimoviene, V. Antanavicius – enterprise responsible for organising passengers carriage by public transport, paid parking, PT users exemption etc;
- VGTU representatives, responsible for planning simulation. M. Burinskiene, K. Jauneikaite
- Vilnius City Council – V. Avin.

9.5 Simulation results

9.5.1 Description of discussed planning and MM instruments and measures

The results of discussed MM measures (described in chapter 9.4.3) are presented in following table:

Measure	Existing planning instruments	Changes needed in planning and legal basis	Other barriers hindering implementation of proposed measure
Parking management *(maximum norms, Park and ride system)*	Since 2008 01 Building technical regulation (further BTR) allows the acception in each municipality of some restrictions for number of parking places in the city centre and surrounding area. Existing minimum standards can be decreased 0.5-0.75 times (see chapter 9.4.3) but anyway it wouldn't be maximum standards, in that case the same minimum standards would be lesser. BTR is the regulation for the whole country, but the above described decisions can be taken by a particular Municipality Council. If the council would support such decision it would be obligatory for the whole central part of the city (delineated in local plan or other relative document). The same BTR regulates norms for giving planning conditions. These are the very minimum, even if Municipality and developer agrees on reducing the number of parking spaces it can't be less than described in the BTR. A few years ago it was proposed that this law was amended so that parking standards	At least 2 changes are necessary in national Building Law and BTR: 1) Parking standards at national level should take the form of recommendations for municipal (local) decision makers. To supplement this: - the BTR should contain some concrete date and responsible authorities stipulated for preparing particular standards for each municipal territory. These concrete standards might solve not only parking, but e.g. PT accessibility and frequency, cycling standards etc. - or to create a mechanism for the decision to be made on a case by case basis. Generally changes have to be made first of all at national level. Later on it might be regulated at local level, especially since there are only few cities in Lithuania, and the rest of urban territories are small towns and villages - practically such changes would raise lot of "problems". Such changes are not really feasible for Municipalities with poor	The park and ride system was well known by transport consultants, PT and municipal representatives. Everybody had heard about it but none of them were overly keen on the idea. The same reaction was given to all measures not proposed by themselves. "It's too early for measures like that in Vilnius" said municipality, although they have already planned P+R locations in the local plan and two of them not far from Velga territory. Municipal representatives and the developer claimed that Vilnius is too small for using P+R. The argument was: who would like to drive a car for 10 minutes, to wait 10 minutes for PT and then make a trip by foot and PT for another 15 minutes if he could do his trip in 15 minutes only by car or 30-40 minutes only by PT. P+R would only be an advantage to visitors to Vilnius guests. The developer said that he wouldn't like to pay e.g. for PT tickets (used by passengers who left their car in P+R and got to the development place by PT or any other innovative M measures). The developer

	were set by each municipality, but it was not approved. (However, in some cases Municipalities have been able to change this regulation and the developer has to accept the changes or face long delays in gaining building permission. In Vilnius each developer has to pay the municipality for each new parking place and therefore the Municipality has no incentive to reduce parking due to the revenue raised from it. There is no national law governing infrastructure to state the developers obligations to the Municipality, it is more a case of negotiation. There are no clear mechanisms for determining developers payments to the city. All participants agreed that such a protocol should be developed. Park and ride stations are designed in the Vilnius Local Plan, but it doesn't obligate the developer to build or to support it.	awareness of mobility management. If developing local standards was obligatory the necessary studies required to do so would be very costly. A possible solution would be for developers and planners to conduct a parking feasibility study with a view to reducing parking although developers are likely to favour maximum parking spaces to make their investment more attractive. 2) Maximum parking standards norms. These norms can also be recommended in national law and later solved at local level. During the simulation it seemed that participants had not considered this an option and deemed it irrational.	said that they invested too much into this development so they really wouldn't like to be "pioneers" and to invest into such innovative things which are not really profitable. The main argument for this was that they have justify every measure as profitable to their creditors, the banks. It's very alike that we still miss acceptance and awareness in local decisions making level, that's why any changes in national law might be interpreted differently and met not always positively…..A solution would be to raise awareness of those administering planning conditions (like environmental agencies, Health care centres and alike) who could "force" planners to implement it. But again these institutions often enjoy formally following existing norms and not really thinking about other solutions than those described in regulation – the same problem of awareness, competence and not willing to take responsibility. The system of awarding planning conditions has to occur through changes on a legal basis. Another important point is that politicians usually try to keep developers "happy". That's why they are not rushing to make decisions which wouldn't be attractive for investors; they try to support any investment into city.
Supply of PT services *(new mode*	1) Vilnius Local Plan (and generally local cities and towns local plans) solves PT supply services. PT is usually administrated by	All the streets in urban zones have stated categories. According to BTR, PT cannot be allowed in the main arterial streets as it would slow	The benefit of increased VELGA accessibility by PT was appreciated by all simulation participants. The main problem remained how to reach it;

or new route design, free shuttle bus to VELGA)	municipal enterprise. 2) Separately some municipalities solve these questions in strategic plans, special schemes, feasibility studies and other documents which do not always have legal status. 3) Almost 100 % of responsibility for planning, implementing and maintaining PT services belongs to municipalities. Although developers usually pay some money to the city budget for developing an area, and a municipality might give conditions to build some infrastructure for PT but it isn't fixed in any law (see info above). 4) All requirements for building PT lines and setting up PT stations are described in BTR. Usage of PT priority lines is described in "Rules for road traffic".	down car traffic speed. A possible solution could be to allow PT on category A category if a separate lane for PT is built.	1) About 20 years ago the idea of a new transport mode (tram or metro) in Vilnius was born. The debate over whether it should be tram or metro changed every 4 years (after cadence of mayor and council ends). After the new Local Plan for Vilnius was approved with designed routes for a tram system, the municipal authority has changed and new politicians are discussing the options of a metro , air gondolas, electric buses and bicycles. But it is more than likely that no new transport modes will be created in the near future. One of the problems is that the municipality cannot force a developer to support PT systems as part of the development conditions. Developers will not be willing to pay for new infrastructure if the local plan already states that a new metro line is to be built near by. 2) The land which is needed for building new PT facilities is a big barrier too. It is expensive and even with a huge budget there are no assurances that the current owners will sell it. 3) Developer's reactions to supporting new PT transport facilities was met in the same way as the proposal about supporting a P+R system; 4) Discussion about public transport was the main focus of the simulation. Everyone agreed that PT is a problem within the city and can't be solved by one developer. If "promises" of the Local City Plan were kept, this discussion would

			not be necessary at all.
Cycling and pedestrian paths network + parking for bicycles	1) Network of cycling paths can be designed in a special plan and(or) indicated in City Local plan; 2) Need for it can be discussed and stated in the strategic plan for city(district) as well; 3) All requirements for building cycle lanes are described in the BTR. 4) National law for non-motorised transport indicates conditions for non-motorised transport development and common requirements for non-motorised transport infrastructure design, building and maintenance.	There are no standards in any of the laws for obligatory network and cycle stands in newly development areas. If such appear in documents and plans this is only due to the awareness of planner or developer. National law only says that the development must be planned following sustainable development principles. There should some changes in BTR, stating: 1) frequency or length or any other criteria for paths necessary e.g. for resident districts, accessibility of suburban areas etc. 2) at least something like minimum parking standards for bikes near public buildings and near multi-storey residential buildings(5-16 or more floors), where normally flats are quite small, so people don't have space to keep their bikes within the flats.	The problem is that bikes are not widely used in Lithuania and so cycle stands are rare. People usually don't have the opportunity to store bikes close to or within their place of residence and so those who do own bikes tend to use them rarely and for leisure trips.

9.5.2 Description of acceptance of Mobility Management

Is MM a good approach to tackle existing transport problems?

Generally, the proposed MM measures for solving future transport issues in VELGA were welcomed. Everybody was interested in the Zurich and Dortmund examples presented and the composed set of concrete measures for VELGA. However, the participants felt that Vilnius wasn't yet ready for such new initiatives despite acknowledging that they had noticed an increased in the number of bicycle users and an increase in the number of foreign tourists and students who prefer to use PT.. The main conclusions:

- Politician (member of Vilnius City Council) was the biggest fan of MM. He was the first who noticed that these solution are very important not only for accessibility of VELGA, but for the whole city, and that these measures would be useful not only for users, but for the environment. In particular he wanted to discuss more widely the idea of a new transport mode in Vilnius which would also be used to access the Velga territory. He stated that most importantly emphasis should be given on environmental and economical aspects. In his opinion measures like that should ensure the increased attractiveness of Vilnius. He said that he would like the developer to think about the possibility of a social advertisement in the area - website, brochures, promoting healthy way of living, usage of friendly transport modes and giving necessary information about it (like was shown in the Zurich example). But once again he state that understanding necessity and benefit of objects like Velga should enforce local authority to do more to help developer, but not to straiten his initiatives.

- ME "Public transport services" representatives were very positively regarding the initiatives related to PT. Whilst other participants were of the opinion that the developer should not be responsible for providing services set in the local city plan, the PT representatives thought that due to estimated passenger flows to the Velga development, extending the PT line to the area should be discussed further. Especially because it's not clear when and how the transport solutions set in the Vilnius Local Plan will be implemented (in the local plan not only the new PT mode but a new bypass is planned). Unfortunately discussion regarding financial and administrative contributions to be paid by the developer and investors was not realised as the developer did not agree to the possibility of financially contributing to such schemes. Municipal officers and planners from ME "Vilnius planas" were of the same opinion about the proposed MM measures. They agreed that developers proposed plan is adequate if the municipality implements the local plan solutions. The municipality liked the examples presented regarding parking standards, but still they said that these are not suitable for Lithuania. First of all it can't be legally set in planning conditions (see chapter 9.5.2). Secondly if some changes would be made in national law and regulations, there are not enough specialists in municipalities to give considered planning conditions for every individual case. They would need be trained to analyse every situation not just copy andpaste requirements from the BTR and other documents. The municipality highlighted the increasing number of bicycle users and their needs. Bicycle users can be used as an example that every initiative needs time and resources; nobody was using bicycles 5-10 years ago and now situation has been changed. Maybe after some failed examples Vilnius will start to use P+R systems, "home delivery service" etc.

- The most negative of the participants about implementation of MM measures was the developer. He wasn't denying the importance of MM importance, but his main argument was that he wasn't prepared to pay for any extra infrastructure that would not bring direct benefit. However, had this been brought up at the early planning condition stage, he would have been prepared to negotiate on this point.

9.5.3 Description of other results

Could plans and practice be changed to influence the location of development towards areas that are capable of being well served by sustainable modes?

Municipality planners (those who made Vilnius Local plan): The local city plan and transport infrastructure were designed with thought to existing and future urbanisation. The new tram line was designed to be accessible from a distance of 500 – 700 metres from existing urbanisation. New intensive urbanisations (like multi-story residential buildings or big commercial centres) are planned in the surrounding area of existing and planned transport corridors. To serve the Velga territory with sustainable transport systems, there are new tram lines, 2 P+R locations (one of them not far from VELGA territory) planned in City local plan. The developer chose the best location for the new development based on this and has already invested a lot of money demolishing existing factories, cleaning the area and providing engineering infrastructure, the rest, in his point of view, is a public problem that should be solved by the municipality.

Developer: he noted that usually the blame fell on developers for increased traffic flow caused by new developments and did not appreciate that developers have paid to improve or build new infrastructure to support such developments..

All participants: agreed that huge changes in existing planning law system wouldn't be necessary if there wasn't a requirement to justify innovative ideas that do not fall under existing BTR/planning law. Also, because the council is changing every 4 years, plans and solutions prepared and agreed with an existing authority may not acceptable to the newly elected council.. Technically, the suggested changes in law are feasible only at a national level, which can't be done by MM supporters at the municipal level. Some changes (see 4.2) might be done at municipal level with separate council decision or in the Local Plan (this is currently done in Vilnius), but to prepare a "document" isn't enough. The implementation has to be led by additional council decisions. Everybody agreed that national policy is declarative and non working, that's why a new phenomenon called "diarchy" is appearing. Local authorities do not have the power to adopt beneficial decisions for current cases (for example theoretically they have no legal power to force developers to implement MM measures and to raise any specific conditions in the planning process even if they deem it necessary) and also has power not to pass beneficial decisions (for example not to approve land use plan which is implementing MM measures (e.g. less parking spaces) by developer initiative) if they don't want to (their argument would be – the prepared plan doesn't fit to BTR e.g. too less parking spaces).

Other important outcomes related to MM in Vilnius

When using examples adopted in old EU member states, it should be acknowledged that there are some cultural differences with new member states. Participants emphasised the difference in resources (money, insitiution, practice, human resources etc) available to countries such as Lithuania in comparison to western European countries. They found it more beneficial to discuss good and bad practice examples form the Baltic States and Poland as opposed to , Scandinavia and the UK.

Charges for parking spaces in Vilnius city are too cheap and simple. Charges must be progressive and bigger than they are currently (most expensive – about 0.85 Euro per hour, the cheapest – 0.3 Euro). Even in Kaunas (second biggest Lithuanian city) charges are higher. There are no such parking lots, where the duration of paid parking is restricted, only free parking is regulated, e.g. the first 15 min are for free or the first 2 hours are free of charge and then you either leave or you pay if your car is parked for a longer period.

Another example of a planned new development in the centre of Vilnius was discussed. Here the developer doesn't want to provide a large amount of parking (space is limited and underground parking too expensive). As this goes against the BTR the planners are looking for a solution to solve this problem. This illustrates how planners are often forced to provide parking despite its limitation providing environmental benefits. The main

problem highlighted was the absence of political decision and the fact that cities and towns don't have their own strategy, they often just follow national strategies which are sometimes not suitable for BTR.

9.5.4 Description of simulation as method

What worked and didn't work?

Most participants knew each other before the simulation and had knowledge of the detailed site development plan for Velga.. This made discussion more calm and open. All participants were keen to discuss general transport/building problems within Vilnius and it was necessary to keep steering the discussion back to the purpose of the simulation. However, due to the breadth of experience of the participants, discussion of similar projects implemented was of benefit to the simulation.

Planning simulation workshop as method could be used if at least one of the involved parties is interested in it. It would be especially useful if planning simulation would be organised on behalf of a municipality initiative, but in this process independent consultants should be involved as well, not only planners and developers. In this case, during such workshops the best solutions for a single site and the overall city transport system can be crystallised.

Is a planning simulation workshop a good method to integrate MM into land use planning within a negotiation process?

It is possible within Lithuania, but first some changes in existing law are necessary (e.g. in the case of parking standards), but generally, those things which are not regulated in existing BTR or other laws and normative legislation could be the subject of negotiation between developer, municipality and municipal enterprises (for PT, for planning, for health, environment and etc.). Obviously such negotiation must be discussed before giving planning conditions, so the developer would know from the onset his obligation regarding supporting PT and that he won't be asked later support further infrastructure changes.. Participation of independent experts/–consultants is key at the beginning of the process. The negotiation process could also could be described in implementation measures of infrastructure law (which is not yet prepared

Description of other results or effects

Unfortunately from the beginning of the workshop it was clear that no practical changes were going to be made in the prepared plan, but all participants agreed that the simulation workshop was useful not only for discussing particular site issues, but also for exchanging knowledge and opinions about existing land use and transport planning systems in Lithuania and Europe. During this workshop different questions about existing problems and possible solutions in Vilnius were raised, so participants agreed that it would be useful to have such workshops on a regular basis, if not to discuss particular issues but at least to exchange their knowledge and experience.

9.6 Conclusions

I. It is necessary to make some changes in national Building Law and BTR:

- Minimum parking standards at a national level should be more like recommendations for municipal (local) decision makers. Minimum parking standards should be adapted to different situations, e.g. in

different towns or parts of cities. The regulation should allow a decrease in the minimum standard norm if some MM measures are implemented.

- Maximum parking standards: these norms also can be recommended in national law and later solved at a local level.
- Frequency or length or any other criteria for cycle/pedestrian paths should be set in BTR. Particular requirements should be stipulated on a legal basis for resident districts, accessibility of suburban areas and main destinations (schools, shopping centres), so planers and developers would be obliged to design it into new land use plans.
- Something like minimum parking standards for bikes near public buildings and near multi-story residential buildings should be adopted.

II. The first step is done in Local Plan – here some supporting measures (P+R stations, new PT (metro or tram) lines, new cycling path network) are set. Now it is necessary to create a mechanism for enforcing the municipality, developer and other stakeholders to negotiate about their implementation or additional soft MM measures.

III. Everybody agreed that national policy is declarative and non working (there are no clear mechanism how to implement and monitor tasks named in national policy), that's why new a phenomenon called "diarchy" is appearing. Local authorities doesn't have power to adopt beneficial decisions for current cases and also has power not to pass beneficial decisions which they have right to pass but don't want to (see 9.5.3).

IV. There is no national infrastructure law, which would define the developers' obligations to the municipality. Such clear mechanisms would be useful – this was agreed by the developer, city council and municipality representatives.

V. A solution would be to raise awareness of those tasked with issuing planning conditions (like environmental agencies, health care centres and alike) who could "force" planners to implement certain measures or to change their plans. The existing system of issuing planning conditions has to be changed from the top and therefore changes to the legal system and recommendations are necessary.

9.7 References

Study "The influence of Vilkpedes – Miskiniu territory conversion to Vilnius transport system", prepared Territory planning research institute, 2008

"Commercial/residential cente". Territory in G.Vilko st. 2 plan, 2008

Vilnius Local Plan

10 Annex III: Country report Poland

10.1 Introduction

10.1.1 Purpose of this report

This report presents the results of the third step of working stage (WS) Simulation: Execution of planning simulations in Poland. According to the WP D research plan, the possibilities of the integration of mobility management (MM) in the process of planning of new or renewed buildings and sites were to be explored in the context of concrete cases, each grounded within an actual planning context: these were the planning simulations. Two planning simulations took place in old Member States (MS) (Germany, Spain) and at three in new MS (Slovenia, Lithuania, Poland). In the reported planning simulation the process of how MM can be integrated into the land use planning and building permission was discussed; best practice MM measures and special supporting measures were selected and their transferability to Poland was analysed.

10.2 Preconditions

10.2.1 State of LUP and transport integration

In Poland, three governance units are responsible for the planning process. On the country level, the Ministry of Regional Development with National Council Spatial Development set the main regulations for local development planning taking into consideration the role of each characteristic spatial unit (housing, commercial, green, industrial, etc. areas), which must be provided for on the planning site.

At the regional level, the conditions for chosen site are connected with directives of the Regional Spatial Development Plan. During the enactment process, the correctness of scope in the Local Spatial Development Plan is checked with all planning documents on the country, regional and local level.

On the local level, the mayor of the city prepares and enacts the Local Spatial Development Plan (LSDP), which is a legal document and essential for sustainable development areas. In practice, the Urban Development Planning Office is responsible for preparing LSDP for city. Depending on the planning area, the planners should prepare the LSDP including housing, cultural, scientific, technological, and industrial, sports, green areas, etc.. Now in Krakow, the areas covered by LSDPs do not exceed 14 %. For the chosen planning simulation site, the authority prepared and enacted the LSDP – “Czyżyny Dąbie” [1] The main assumption of the LSDP provide legal and spatial conditions for scientific and technological development, for topographical and area protection which are connected with values of historical and culture elements of the landscape, but also for investment process which will lead to an economic activation of this area.

Local Spatial Development Plan, as a planning instrument, defines the role of the site, land use, building and transport indicators, etc. Based on the LSDP, the private planners prepare a Partial Plan which defines the structure of the new site, street organization, infrastructure needs and accesses to the transport network, and the size of streets and footpaths. In some cases, private planners predict public transport service for the site, but that approach is rather seldom used. Therefore, in the building permission process, requirements for the public transport or bicycle service are not normally taken into consideration.

10.2.2 State of local regional and national transport plans

However, in Poland, some documents could be helpful for the integration of sustainable transport, mobility management and land use planning. For example, transport issues are included in following documents: Transport Policy, Development Strategy, Spatial Development Policy and Integrated Public Transport Development Plan. Some of those documents exist at the country, regional and local level, but not always. Transport Policy is the main legal document, which take into consideration general transportation aspects. It plays a great role in making decisions of transport development. On the national level, "Transport Policy for State for 2006-2025" [4] defines main transport problems, diagnoses transport/roads preconditions, and proposes solutions to mitigate harmful impacts of transport for the citizens' health. A regional Transport Policy for Malopolska Region (Krakow is the capital for Malopolska) does not exist. The main assumptions for transport development are contained in Krakow Development Strategy [7] and Spatial Development Policy [8] for Krakow. At the local level, the Transport Policy defines main transport problems, diagnoses transport/roads preconditions and proposes solutions between harmful causes of transport and citizens health. In Krakow, the local Transport Policy [2] has been in existence since 1993. The most important conclusion is the priority for public transport with regard to investments as well as to road design (bus streets and lanes, priorities in traffic lights etc). This document is focused on improving public transport accessibility, especially for the new development areas, decreasing traffic levels in the downtown (by concentrating transit traffic on the ring-roads), better access to bus stops, rail stations and parking systems "Park & Ride", and increasing the number of bike paths and improving bicycle connections. There is also another document, which focuses on public transport's role in transport service. In 2004, Krakow City Council enacted the "Integrated Public Transport Development Plan for Krakow" [3], which focused on a major plan for improving public transport service. These documents play an important role in increasing the importance of MM in new development in Krakow. Another document, which could have a great impact for improve in daily trips sustainable transport is Parking Policy. Parking Policy is one of the most important planning measures; it defines the recommended or maximum numbers of parking spaces for new/renewed developments. Such a separate document exists in only few Polish cities (Kielce, Poznan), in other cities it is included in the Spatial Development Policy. In Krakow, recommended and maximum numbers of parking spaces are established for the whole city, depending on the building development intensity. For example, for the city centre the maximum number of parking spaces is two per 1000 m² of buildings and five per 100 employees [8].

Local transport data

In Krakow, there is a special document "Comprehensive Travel Study" [5] which focuses on the traffic research and sociological transport aspects. The conclusion on this document was to define values of main transport data and to make a forecast for future transport measures. As a result of the research, the following results can be seen:

- Inhabitants in city – 757 000 (continuously decreasing)
- Car ownership is increasing continuously: from 303 vehicles per 1000 inhabitants in1995 to 458 vehicles per 1000 inhabitants (in 2006 - 533 vehicle per 1000 inhabitants statistic information); the forecast predicts a continuous increase as a result of the expected improvement of the economic situation for most of the inhabitants in Krakow;
- Modal split in Krakow – 27 % individual transport, 43 % public transport, 29 % pedestrian, 1 % bicycle
- Mobility – 2,06 trips/day/inhabitant
- Number of tram lines – 23; number of bus lines – 125; number of private bus lines – 220

- Number of transport passengers – 302 mln passengers; that number is continuously decreasing since 2002 (331 mln passengers)
- Total length of bicycle paths in Krakow – 40 km; to the end of 2010, total length of bicycle paths will be 110 km (in this year the authority ensured 0,83 mln € of the city's budget for bicycle network development).

Legal situation

The Land Development Act has no clear regulations for sustainable transport planning in LSDPs. In practice, integrating MM and LUP could be very difficult to bring about, but not only for that reason. Despite the existing "Transport Policy for Krakow" [2] and "Integrated Public Transport Development Plan for Krakow" [3] documents, the authorities (especially the city council) do not understand that the sustainable transport is a key solution to city congestion. Sustainable transport awareness is rather high among transport planners, but the main decisions are taken by the city council. Moreover, not all the stakeholders have enough awareness of sustainable transport, but at the same time they have huge power over transport decisions.

"Transport Policy for Krakow" and "Integrated Public Transport Development Plan for Krakow" are the internal executive/management documents, but do not have a legal overtone – they are rather a political document. This could be a legal reason that integrating MM and LUP could be not easy to execute.

10.3 Simulation site description

10.3.1 Location of the simulation site

The simulation site is situated between the historical city centre and the industrial area Nowa Huta. The area under analysis is located on an open area which separates large housing estates from development city land. The role and function of the area is vital to the development of economic-technological-sciences in the city. The main aspect of the chosen site is its location and important role for the development of Krakow. The area analysed is located on the eastern side of Krakow, near the old runway. A simulation model and the description of the specific area were carried out based on the LSDP for Czyżyny-Dąbie quarter. The main area is located at the northern side and limited by three main streets (from the northern by Bora-Komorowskiego St, from the south by John Paul II Avenue and from eastern side by Stella-Sawickiego St). The function of these three streets is very important in existing transport network. Additionally, in the future, the importance will be even higher as a result of the transport network development which will complete the ring road system in the city. The distance from the centre does not exceed 6 km.

The main aspect of the chosen site is its varied land use character. Linking technology, science and housing, the chosen site is a model site of sustainable development. In that area, at the start of investment, it would be possible to integrate mobility management and land use planning. However, due to lack of mobility management in land use planning in Polish experience, it is not quite easy to ensure developers'/investors' understanding of sustainable transport. Moreover, CUT took part in the EU CIVITAS CARAVEL project, in which many measures recommended by MAX were carried out, but only in very particular aspects/cases like the travel plan for university students and employees. In the MAX project and simulation workshop, there was an opportunity to explore the CARAVEL experience and to connect some measures from CARAVEL and MAX (due to the location of some CUT buildings in the neighbourhood).

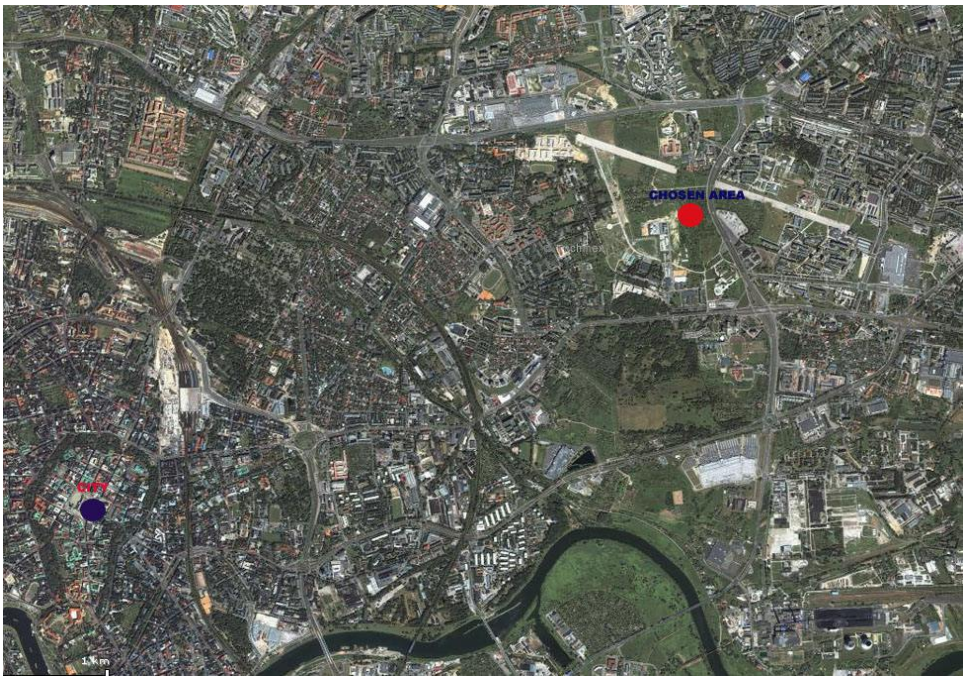


Figure 25: Location of the simulation site (source: www.google.pl)

Figure 26: Border of the simulation site (source: www.google.pl)

10.3.2 Type of utilisation of the site in LSDP plan

The area selected will be developed as an economic, technological and sciences quarter. Some housing buildings (also for CUT employees), student hostels, university campus of CUT and buildings of COMARCH Software Company are already built and used. It is also covered by green area with the old runway. Nowadays, there are some allotments, but they are continuously removed. In the future, the city predicts to develop a great Krakow Exhibition and Conference Centre (KECC) with hotel, shopping centre, but also new buildings of CUT campus with swimming pool. Presently, there are 4 student hostels of CUT with 2100 inhabitants and buildings of

Mechanical Engineering as largest faculty at the CUT, and also one of the biggest faculties among universities of technology in Poland.

The Krakow Exhibition and Conference Centre plays a great role in the development area. It will be designed for conference, congresses and fairs, with 4 big and 8 smaller exhibition halls, a great multifunctional hall, hotel and shopping centre. KECC should be ready for use in 2011. The multifunction hall will be able to contain/accommodate 8,000 people, the auditorium 2,000 people, in 4 exhibition halls 1,260 people and 1,200 people in smaller halls. KECC will be also developed as a place for banquets and balls, besides that as sport and concert hall with extensible walls and decomposed tribunes/platforms will be established. Krakow University of Technology will be the main investor in KECC. Visitors will have also the possibility to use the old runway for getting to conferences or congresses by small air planes. The Polish Aviation Museum, which is located near the simulation site, is trying to reactivate the old runway, in the course of the predicted redevelopment of the museum. The investor also plans to install on the outside the buildings "media grid diode", on which there will be presented huge moving pictures. KECC will cost ~215 million € and will be financed by the European Union, from the state budget and by private investors. The land on which KECC will be built, belongs to CUT.

Investors predict a large number of parking spaces with a total area of 130 000 square meters, due to the character of the development. However, the existing and planned road network does not ensure efficient transport service. In 2007, Prof. Andrzej Rudnicki and MSc Tomasz Kulpa from Chair of Transportation System at CUT prepared a project analysing the transport network connections and public transport service for KECC [6]. They proposed a solution with new tramlines passing closer to the KECC than Stella- Sawickiego St and also suggested a reduction in the number of parking spaces. However, this is in contrast to the investors plans.

Type of development

On the selected site, there are the following types of buildings: exhibition and conference centre – Krakow Exhibition and Conference Centre; shopping centre; hotel ; education and science area of CUT; housing area (private housing and student hostels); commercial buildings; software companies.

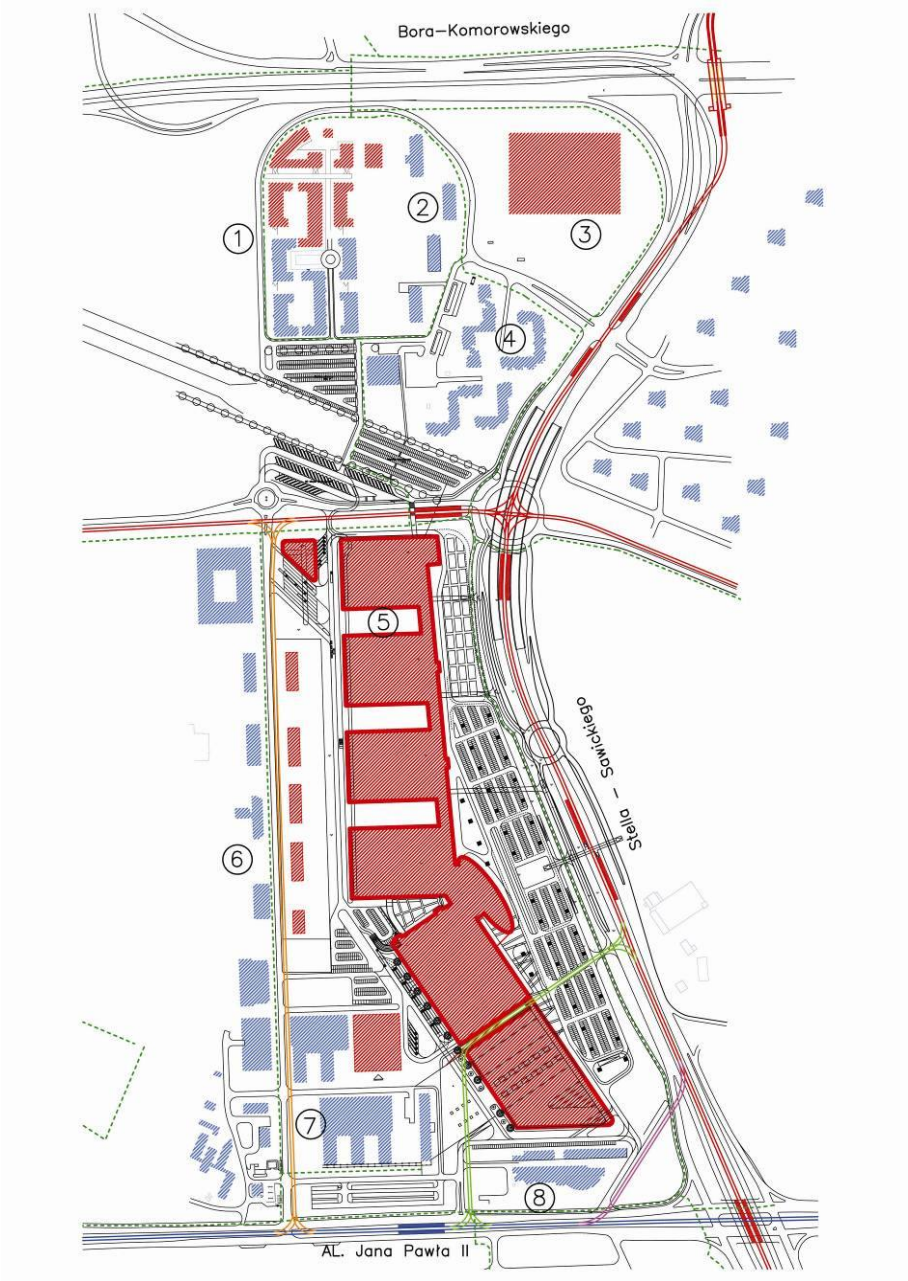


Figure 27: Simulation site with development plan (source: [6] and authors of simulation plan)

Blue: existing buildings and tram lines; Red: planned buildings and tram lines; Green: existing/planned bicycle paths; Orange, green and rose: tram lines variants.
1: Private housing area; **2**: Students hostels; **3**: Shopping/housing area; **4**: Private housing area (also for CUT employees); **5**: Krakow Exhibition and Conference Centre; **6**: Software companies, e.g. COMARCH; **7**: CUT buildings (Faculty of Mechanical Engineering) with planned swimming pool; **8**: Car shop.

Figure 28: Existing and planned area photos and models (source: www.dzielnica14.krakow.pl, www.krakow.naszemiasto.pl)

10.3.3 Technical description of existing and planned buildings

Estimated number of users

- Residents: 2 784;
- Residents in student hostels: 2 100;
- Employees: 800;
- Visitors: Krakow Exhibition Centre – 15 000; Krakow Conference Centre – 12 000; Shopping Centre – 2 000; Hotel – 460.

Number of buildings

3. Housing area: 18;
4. Student hostels: 5;
5. Shopping area: 4;
6. Krakow Exhibition – Conference Centre: 7;
7. Krakow University of Technology: 4;
8. Car shop: 3;
9. Software Companies: 6.

Floors

10. Housing area: 5 – 10 floors (max 25 m);
11. Student hostels: 11 floors;
12. Krakow Exhibition and Conference Centre: 10-12 floors (max 33 m);
13. Krakow University Of Technology: 6 floors (max 15 m);
14. Car shop: 4 floors (max 10 m);
15. Software Companies: 6 floors (max 15 m).

Useful areas (existing and planned)

16. Housing area: 34 000 m²;
17. Student hostels: 5 800 m²;
18. Krakow Exhibition and Conference Centre: 104 000 m²;
19. Krakow University of Technology: 35 000 m²;
20. Car shop: 15 000 m²;

21. Software Companies: 132 600 m².

Parking spaces – for cars (for bicycles there is no data available)

22. Housing area: 52 000 m²; 2000 parking spaces;
23. Student hostels: 3750 m²; 150 parking spaces;
24. Krakow Exhibition and Conference Centre (KECC): max 129 000 m²; 5000 parking spaces;
25. Krakow University Of Technology: 6 250 m²; 250 parking spaces;
26. Car shop: 14 000 m²; 560 parking spaces;
27. Software Companies: 132 600 m²; 5300 parking spaces.

The number of parking places in KECC is the priority issue for the predicted increase of traffic volume. The numbers presented in the table below shown number of parking spaces, which are needed for these kinds of uses. The number of parking spaces was estimated based on 4 criteria (see table below). Based on the Spatial Development Policy, option I allotted the area to zone D (Krakow is divided for zones A, B, C and D depending on private transport access). Option II linked the area to the urban zone (Krakow is also divided for 3 zones depending on public transport access to the area – down-town, urban and suburban zones).

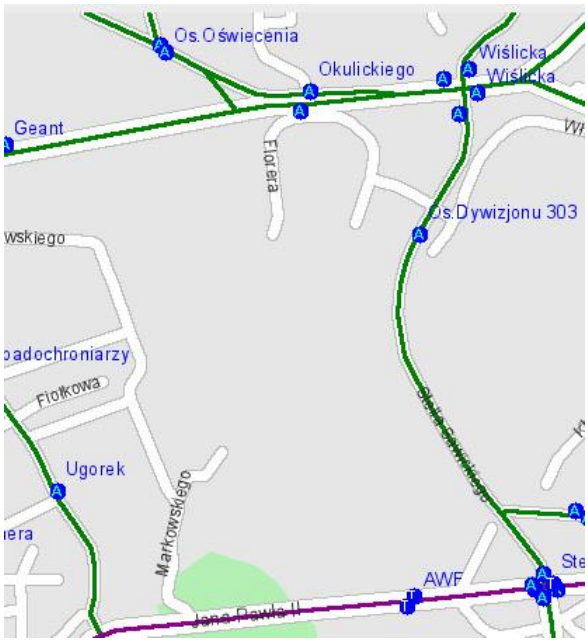
Table 3: Criterions for calculating minimum and maximum numbers of required parking spaces

Criteria	Number of parking spaces for private cars in KECC	
	MIN	**MAX**
According to German practice	3010	4820
According to the LSDP for Czyzyny Dabie	3420	
According to the Spatial Development Policy for Krakow	1430 - II option (4050 - I option)	
Planners' proposals [6]	2800	

10.3.4 Accessibility of the area

PT – existing and planned distance to the PT stops, frequency

Existing accessibility to the area is possible by tram and bus. However, a tram service is only available on the south side (there are 6 lines to the east and west side of the city). Bus lines are located on the north (13 lines) and east side (3 lines) of the area. Existing distance to the bus stops are approximately 200 m, to the tram stop approximately 450 m. Bus and tram frequencies are dependent on the line, but approximately every 10 – 15 minutes there is a bus or tram available.



Green lines – bus
Violet lines - tram

Figure 29: Planned public transport network (source: www.mpk.krakow.pl)

The planned PT network in analysis area will be denser because of new tramlines passing by the site (on the east/west side and in the middle of the area leading from the east to the west). However, a new tramline along Stella-Sawickiego St will not be able to service all users of Krakow Exhibition and Conference Centre (KECC) at a high level of convenience. Therefore, a traffic simulation model of the site includes variants of new tramlines, including on a parallel road to the west from Stella St. It will also include proposals for new bus lines on the new roads on the area (depending on the tramlines).

Bicycle access - existing and planned

Existing bicycles paths are located along Stella-Sawickiego St (leading north-south). The LSDP for Czyżyny-Dąbie also plans new bike paths along John Paul II Avenue, some parts of Bora-Komorowskiego and on the new road in the middle of the area (on east-west direction) and along the local streets inside the housing area. However, planned network paths seem to be insufficient, regarding students and future KECC user's demands. There are no bicycle parking facilities planned at all. In the planning simulation workshop, new bicycle paths and parking spaces for bicycles were discussed.

Car access - existing and planned

Car access is possible by existing and planned roads. Existing roads provide very good connections to the city centre and all other directions and destinations in Krakow. However, the local road network is insufficient for good connections. Therefore, LSDP and traffic simulation model were used to predict any need for new roads.

10.3.5 Projection of generated traffic

For the projection of trips per day generated by the new development there is no defined procedure in Poland. However, it is possible to create a mixed approach, based on mobility factors, share of peak hour in daily traffic

(both values refers to different travel purposes) obtained in report of Comprehensive Travel Study and turnover indicators defined during a parking survey in the city. This method is a new procedure, developed by CUT for the planning simulation workshop.

Traffic conditions in the area of new investment influence was a crucial issue for the whole simulation process. It was necessary to define traffic volumes on the surrounding streets to show what results can be expected after implementation of new investments (new PT lines). For that purpose a micro–simulation model of Krakow was used (Visum software). The city has no official model, but the team at CUT has already created such model which was successfully used in the scientific and consultancy activities of the University.

The model is based on results of Comprehensive Travel Study (CTS) [5] and embedded in a traditional four step approach:

4. Trip generation: according to obtained results of CTS, it was possible to define relationship between generated trips and spatial development (described as number of inhabitants, working places etc.) for different purposes of the trip. The main results of this stage were linear regression functions which were used to calculate number of trips generated in assumed traffic zones.

5. Trip distribution: the result of this stage is the O-D matrix (origin – destination) showing the spatial distribution of generated trips in the city. There was a gravity model used defined by logit model, calibrated for the city in the frame of CTS.

6. Modal split: according to results of mobility survey, it was possible to define a modal split model for Krakow. The model has logit character, but the fit with results was not adequate. The key variable was the quotient of travel times for public and private transport, but the results relevance to the survey were rather low (R2=0.34). Nevertheless for further calculations the author's model of modal split was used, based on the quotient of generalized cost of the private and public transport trips. In this case, the coefficient is much higher R2=0.63.

7. Assignment: a street network model of Krakow was defined (in Visum software), and after applying an assignment procedure (Stochastic assignment) it was possible to define traffic volume.

The procedure described was treated as an iterative process, repeated several times to obtain better values of relevance (calibration process was based on comparison traffic counts and modelled traffic volumes on selected links in the network – 142 count locations in the city). Moreover a calibration procedure in Visum (TFlowFuzzy) was used, which in general affects both trips generation and OD matrix values. After the calibration process, a coefficient of R2=0,72 was obtained, which was treated as acceptable for further work.

A prognosis model was calculated as well, which was defined in two parallel approaches:

8. Forecast of street network development – accepted in Spatial Development Policy [8]: streets which will be built by 2025

9. Forecast of trip generation – according to demographic, mobility and spatial development changes it was possible to define a forecast of generated trips. However it was not possible to use a gravity function (as it was described above) due to calibration procedures conducted on OD matrix. Therefore, the Fratar methodology was applied to calculate Prognosis OD matrix values.

The results of conducted micro – simulation for the business as usual scenario is presented in ***Figure 30*** below (for description purposes, only a small part of the model was chosen):

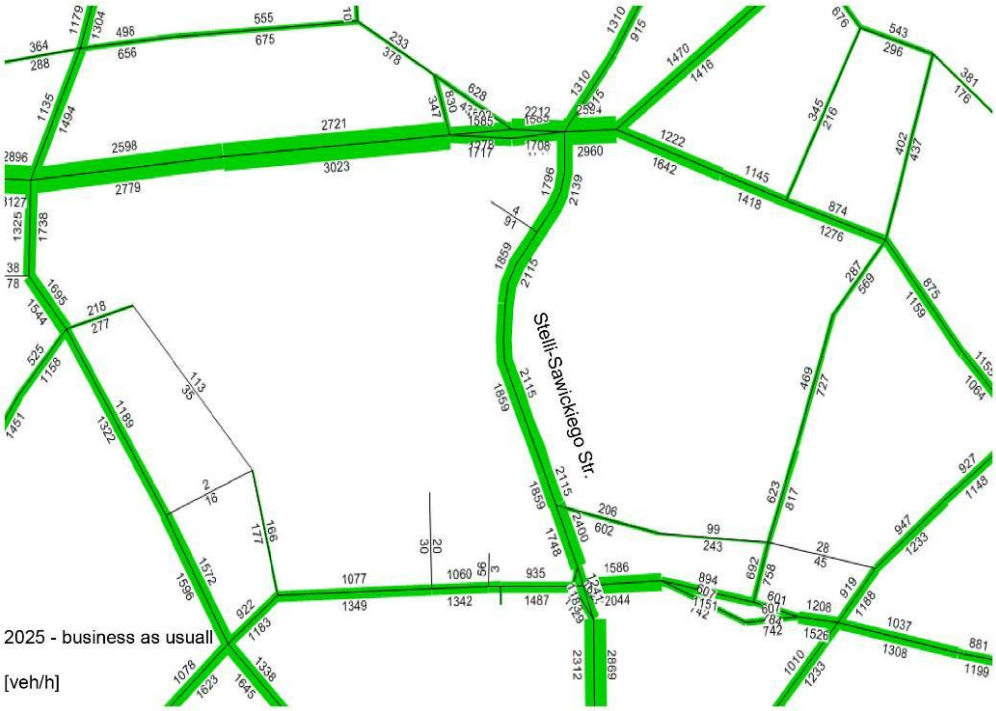


Figure 30: Travel forecast for the Czyzyny Dabie area – in 2025 – without KECC (source: CUT/authors procedure)

For the planning simulation workshop, it was necessary to show the impact on traffic volumes that the new investment will have. The analysis was focused on prognosis horizon 2025 which was taking into consideration a functioning KECC. The following describes the steps conducted:

4. Assuming four calculation options, differing with number of parking spaces: Option 1 – no investment ("business as usual scenario"), option 2 – 2 800 parking spaces, option 3 – 4 860 parking spaces and option 4 – 5 890 parking spaces.

5. For investment options, there it was needed to assign parking location to proper traffic zone (in the simulation model, the investment influence area has covered 5 traffic zones). The main idea of analysis is to increase number of trips generated by chosen traffic zones with number of vehicles entering/exiting planned parking area. Rough estimated factors were assumed, describing the relationship between parking size and the share of different functions of KECC (housing, exhibition, shopping etc.). Chosen factors have defined number of vehicles which could be generated / attracted by parking space.

6. The next step was to change the number of trips generated by selected traffic zones in the prognosis OD matrix. It was assumed, that number of additional vehicles will decrease origin and destination trips and using Fratar procedure, change OD matrix values. In the result, all OD matrix values for selected zones will be changed in proportional way, which seems to be acceptable for this analysis.

7. For the assignment procedure, the network was also changed, taking into consideration connections of KECC to existing road network. After assignment of the changed OD matrix it was possible to define chosen parameters of the network: average speed and ridership (calculated in vehicle-km and vehicle-h). To emphasize local influences of KECC on the street network there were two areas of

influence defined: the whole network, and the close surroundings of the investment – the parameters were defined for both areas.

The traffic simulations were conducted for all calculation options, but within this document only results for Option 4are presented.

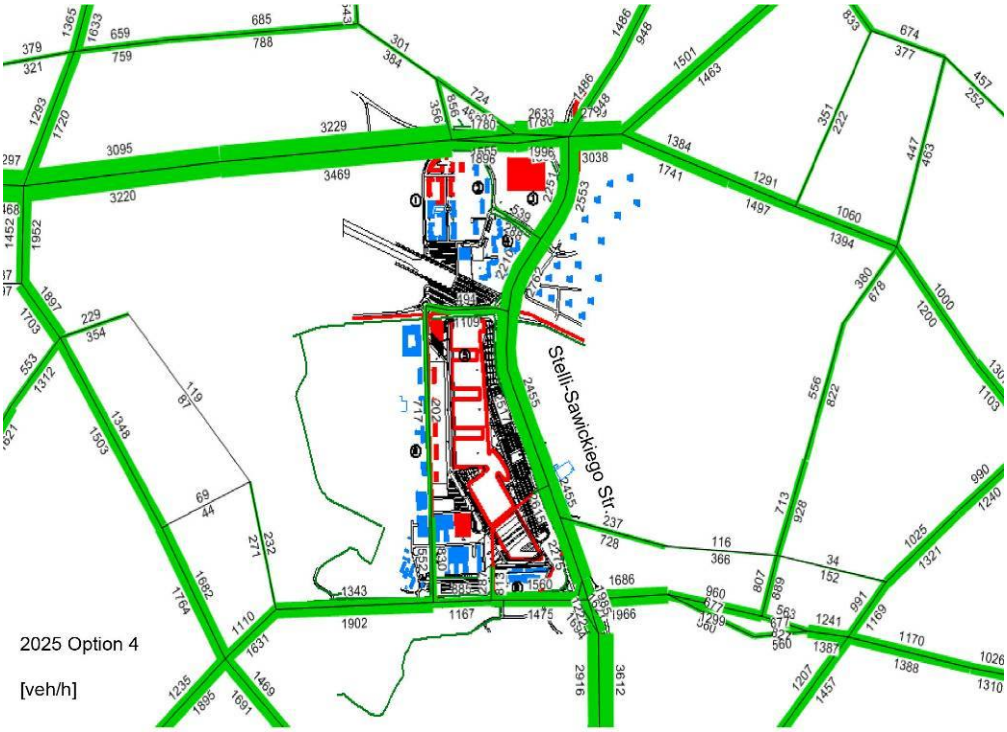


Figure 31: Travel forecast for the Czyzyny Dabie area – in 2025 – with KECC (source: CUT/authors procedure)

Below (Figure 32) the chosen parameters are presented, calculated for all options.

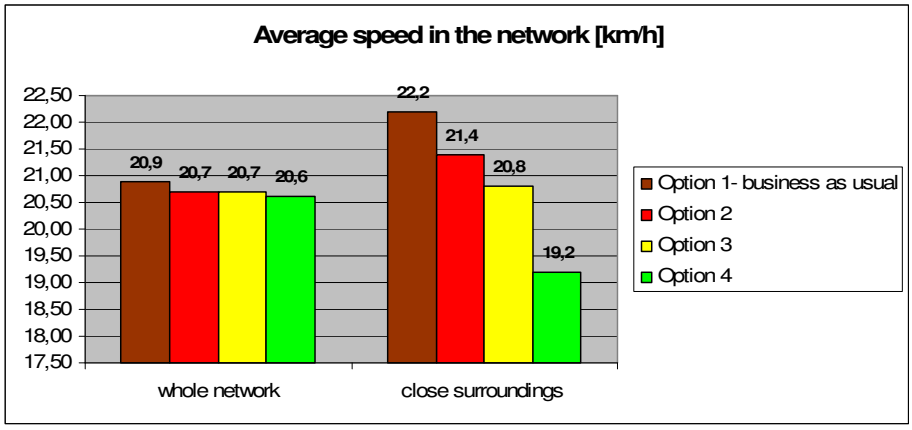


Figure 32: Average speed in the road network (source: CUT/authors procedure)

The first parameter corresponds to average speed in the network. In whole network, as was expected, the influence of new investment is very small – less than 1 %, but in the chosen area it is possible to see the impact of the investment. In the worst case (for Option 4 with almost 6 000 parking spaces) the average speed is decreased by 15,6 % in relation to the 'business as usual' option 1.

In the case of vehicles per hour the most important values refer to the total amount of travel time for all vehicles. The changes for the whole city are very small, so for the presentation at the planning simulation workshop the results for a smaller area were chosen (the same area as mentioned above).

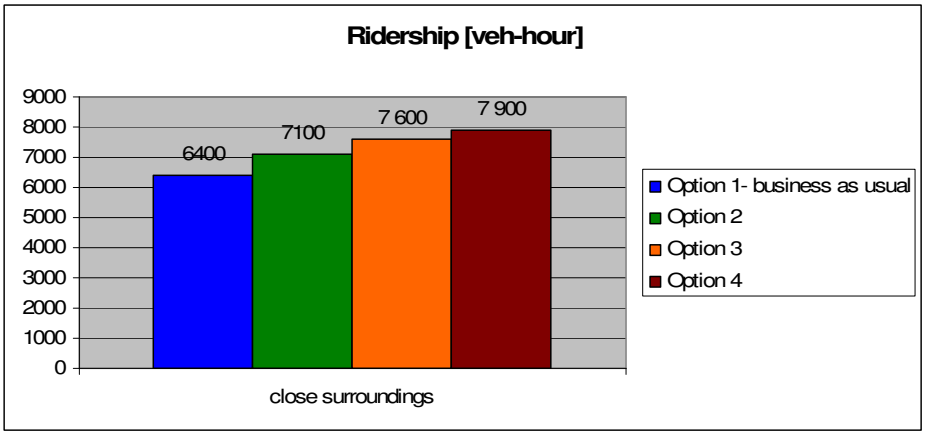


Figure 33: Ridership for KECC in 2015 (source: CUT/authors procedure)

In this case, values of ridership have grown more rapidly, and total time for all vehicles travelled in the area is increased by over 23 % for the Option 4. The respective values for other options are smaller.

It is necessary to emphasise that the proposed approach was a rough estimation and was created only for the planning simulation workshop, in order to show the expected traffic growth in the surrounding streets. In the process of calculations, the impact of planned public transport investments connected with KECC was skipped. In fact, development of public transport service will have an impact on modal split and could change (decrease) the number of vehicles generated by the area analyzed. However, the overall impact of public transport development was taken into consideration, because the prognosis model of the city already includes the defined planned investments in the development of new tram lines.

10.4 Simulation description

10.4.1 Scope of the planning simulation

The simulation concentrated on the project for KECC, which is still in the preparation phase. Project decisions concerning transport services (both by public and private transport) are still in the planning phase. Therefore it is a good time to present to participants the possibilities of proposed changes in transport service connected with reducing the number of parking spaces. Part of the site (north side) will mostly be developed by few private developers, but it is worth emphasising that he must consult with CUT on his ideas and actions. On the west side, the software companies are still developing, but due to lack of possibility of implementing public transport, the only means to travel is private car (the distance to the nearest tram or bus stop is rather high and leads through undeveloped area). This is main reason that the investors want “to produce” parking spaces, without taking into consideration their impact on traffic. In the current situation, where the concept of the KCEC is under development, the responsible administrative units don’t demand the travel forecast from the investors. Without the travel forecast they can’t say anything about the impacts of the development on the road network. Therefore, the units, which are responsible for granting a building permission, can not take into account and cannot react to the problem of congestion. The discussion will focus on those aspects.

10.4.2 Content of the planning simulation workshop

The main part of the planning simulation will concentrate on the building permission process and integrating MM and LUP. In Poland, developers and city administration units concentrate only on the number of parking spaces, but not on the public transport service and accessibility to the bus/tram stops. The planning simulation took into consideration the new possibilities to use MM in building permission process for reduce the estimated need for parking spaces.

CUT took part in CIVITAS CARVEL project with measures, which are also connected to MAX. Caravel created a Mobility Plan for CUT with priorities for PT, bike and alternative car use forms. One suggestion in the planning simulation was to prepare a Mobility Plan for KECC and CUT, as well. The discussion focused on these aspects.

The simulation is was a one day discussion, approximately from 10.00 a.m. to 4.00 p.m. in 2 sessions.

The planning simulation showed the existing conflicts and different interests of private and public units in relation to Mobility Management. After an introduction about MM and the site, the morning session concentrated on the discussion with the developers about their views and opinions. In the afternoon suggestions about changes in the legal regulations were discussed, here the legal experts and the city's representatives were in the focus of the discussion.

10.4.3 Relevant MM measures to be integrated at the simulation site

Integrated MM measures

- travel plan for employees;
- travel plan for students;
- car pooling scheme (at CUT there is a car pooling project (part of the CIVITAS CARAVEL project) for students and employees, but simulation carpooling scheme will include also employees of KECC)
- integration of different mobility management plans;
- Cooperation in mobility management with other institutions.

Public transport

- improved infrastructure for PT;
- development of a new bus/train line and/or connection between them;
- real-time information at the PT stations.
- integrated ticket for public transport and entrance for KECC

Cycling and walking

- improved cycling and walking infrastructure;

- new cycle parking places;
- linkage of cycling and walking paths to the local network;
- Installation of showers and storage facilities for non-motorised users.

Parking

- car parking restrictions;
- parking charges;
- reserved parking for car pooling;

Information

- pre-trip information package;
- personal travel advice (for CUT it is available from the CIVITAS CARAVEL project) with trip planner (PT, cycling, walking, car pooling…) on universities website;

Promotion

- promotional events and exhibitions;
- information and advertisement campaigns;
- Distribution of information leaflets, brochures, cycle maps…;
- campaigns highlighting the health benefit gained from non-motorised means of transport;
- Regular marketing of travel plans and improvements around the University to keep the issue in the forefront of people's minds.

10.4.4 Participants of the discussion

In the Czyżyny-Dąbie area different public and private parties are involved in the planning process. They compete to get building permission and each one has own interests and views about the area, about transport issues and parking spaces. The CUT (MAX) team invited administrative units, which are involved in building permission process, land use planning process, and transport network services. The following participants took part in the simulation: representatives from LSDP planners and KECC Conception planners, Public Transport Operator, researchers and students from CUT, authorities, local people, .

Architecture and Urban Planning Department – AUPD

That unit is responsible for granting building permission, building and land use conditions, architecture-urban issues, and establishing public investment locations. However, concerning the building permission, they have no possibilities to correct or to suggest changes to the transport services in favour of public transport. They must grant the building permission only based on the land use law. The investor needs only to ensure road access to the investment to the public road network. There is no legal obligation, to ensure access as well by public transport or bicycle. Based on the plans prepared by the investor for the development, AUPD decides either to

grant (YES) or to reject (NO) a building permission. However, opinions of the AUPD could be very helpful for creating “new ideas” for integrating MM and LUP.

Urban Infrastructure Office - UIO

The unit is responsible for transport system and infrastructure planning through policies and for creating direction for strategic development, preparing of Long-Term Investment Plans and Development Plans. The role of that unit will be helpful in supporting sustainable transport for analysis area. The UIO opinion (state) could have a main role for creating a new form of transport and infrastructure management.

Urban Planning Office – UPO

This unit is responsible for urban and land use planning, preparing of Master Plan, Local Urban Development Plans (LUDP). In the UPO, there is a unit which is responsible for transport plans (roads connections, public transport and bicycle lines) in the LUDP. That unit works in collaboration with the land use planners. However, not all the LUDP are prepared by the UPO. Most of them are prepared in private planning offices where it is quite difficult to check all the transport solutions. Obviously, the UPO verifies solutions that are proposed by private offices, but sometimes there are no possibilities to change most of them. In the LUDP, there are two main problems for integrating MM and LUP – the law (lack of necessities directives) and developers or private people business. This unit will be helpful with their experiences for creating transport connections or service in land use planning.

City Strategy and Development Department - CSDD

This unit is responsible for planning strategy and investment – financial planning, preparing of analysis and prediction for city development and supporting for development enterprises. KECC is one of the main strategic investments in Krakow. That unit could show the role of KECC in the city and need for good public transport service for that area.

Road and Transport Administration – RTA

The unit administers national and regional roads, traffic, public transport and parking services; it is also a main investor for public transport investments for Krakow Commune. The unit has the power to decide about investment in the road network and public transport network . Unit has a main control to ensure public transport service for chosen area for simulation. Bus lines or bicycle network is depending on that unit.

Krakow Municipal Administration – CMA

The unit administers commune roads, urban greenery and environmental services; it is also an investor for transport infrastructure and sport and leisure investments with its administrations.

Council Quarter of Czyżyny Area

That unit is composed of Czyżyny quarter inhabitants; they take care of public transport and bike service in their neighbourhood. They could “fight” with developers or public units for better public transport connections or oppose investments that might generate too many cars.

„Akopol” Developer

It is a main investor of the housing area connected to CUT (a few employees of CUT have a participation in “Akopol” investments).

Krakow University of Technology

The University is a main investor of KECC area. The Land, on which most of the buildings are/will be built, belongs to CUT. University will get money for KECC from the European Union, state budget and from private investors.

CUT Students – Students` Hotels Council

Those students represent all students living in student hostels of CUT. They could support the proposition for enhancing public transport and bike connections between CUT on Warszawska St. and students hostels.

Bicycle Federation

That federation is composed of public units of City Department, but also non-government units – Polish Ecological Federation, Green Federation, Environment Partnership Foundation and Polish Tourist Country Lovers' Society in Krakow. They try to create a coherent bicycle network for Krakow.

10.4.5 Programme of the simulation

Welcome and introduction of the participants

Input (CUT):

- Main information about MAX project - Successful Travel Awareness and Mobility Management and what the planning simulation means.
- What is Mobility Management: what does it aim for, which are the measures, what are the experiences of Dortmund and Switzerland?
- State of the mobility concept for chosen area – especially for KECC and CUT with MM measures to implement (what measures could be implemented at the University site and at the KECC site).

First round of discussion (CUT):

- What are the main problems in transport service for the selected area and how to solve them? Is it possible to implement Mobility Management to traditional ways to reduce the required amount of parking spaces and to deal with the company's mobility (and to minimise the effort for reducing the parking spaces)?
- How to implement sustainable transport for KECC – the main assumptions for KECC with public transport and bicycle service propositions with connection to building permission process (the procedure and instruments which are needed for including MM in the building permission process) ?
- Is it possible to demand from developers/investors to prepare sustainable mobility plan with propositions for public transport and bicycle service?

Open questions to participants:

- Is this a feasible approach for KECC and CUT area?
- What developers and companies can gain? What are positive effects?
- What problems and barriers are anticipated /are seen (by whom)?

- What kind of support would the developers and companies need (technical advice, economical assistance…)?
- What kind of support gives the public transport operator? Infrastructure, services, tickets and rates (tariffs), car pooling

Lunch break

Second round of discussion:

1. What kind of minimum standards for Mobility Management should be fulfilled and demonstrated to the city in order to justify the reduction of parking spaces in a legally profound way (within construction law)?
2. How to change the sustainable travel awareness among stakeholders for creating transport service efficient

Résumé / Conclusions

End of planning simulation workshop

10.4.6 List of participants

Institution	Unit/Responsibility	Post	Name
Architecture and Urban Planning Department	Building Permission Department	Manager	Beata Danielowska
Urban Infrastructure Office	-	Director	Józefa Kęsek
Urban Infrastructure Office	-	Expert Major	Włodzimierz Zaleski
Urban Planning Office	Urban Section	Expert Major	Kazimierz Goras
City Strategy and Development Department	Planning Strategy and Investment Offers Department	Manager	Marta Żak
Road and Transport Administration	Development and Mobility Control Section	Expert Major	Roman Krzyżek
Road and Transport Administration	Public Tranport Management	Manager	Izabella Bruchal
Krakow Municipal Administration	Transport and Bicycle Paths Section	Vice Director	Andrzej Olewicz
		Expert Major	Henryk Kamski

Council Quarter of Czyżyny Area	-	Chairman	Aleksy Gałka
Akopol Developer	Investment Manager	-	Barbara Kryszałowicz
CUT	Faculty of Architecture/Main KECC designer	Chair Manager	Wacław Celadyn
Opole University	Transport Psychologist	-	Tadeusz Rotter
Bicycle Federation	-	-	Marcin Hyła
Public Transport Operator - MPK SA	-	Inspector	Jarosław Prasoł
City Council	-	Member of City Council	Paweł Bystrowski
Residents' association	-	Chairman	Michał Zubel
Investor - Fair in Krakow	-	Chairman	Paweł Nikilski
CUT	Civitas Caravel Members	-	Katarzyna Nosal Łukasz Franek
CUT	KECC transport solutions designer	-	Tomasz Kulpa
CUT	previous tramline project designer in KECC	-	Marian Kurowski
CUT	MAX team	MAX team manager	Andrzej Rudnicki
		WPD simulation leader	Aleksandra Faron
		WP5 leader	Andrzej Szarata
		financier	Luiza Połomska-Joniec

People marked in were present on simulation meeting.

10.5 Simulation results

10.5.1 Description of discussed planning and MM instruments & measures

The planning simulation meeting has shown that the existing planning documents don't include possibilities to implement MM measures directly. Even if administrative units want to establish the MM measures approach they can't because there is a lack of respective policies and mobility management has no legal status in those documents. Existing laws permit only to demand from the developer that the must ensure an access to the public road by car, but public transport and bicycle access is not taken into account at all. However, some documents could help integrating some MM measures and sustainable transport in urban planning. The Spatial Development Policy is the document where maximum parking standards are established. Maximum parking standards permit to control number of parking spaces in those areas where increasing number of vehicles could be dangerous for traffic congestion, environment, inhabitants' health and safety, and antique buildings. In Krakow, the numbers of parking spaces for new investments are limited, depending on the 4 city parking zones. In that document, there are also guidelines how to establish minimum parking standards – however, these are only recommendations. There is also a notation which takes into account possibilities to implement a Park & Ride system. Public transport is also a quite important part of transport development. There are also notations for ensuring transport possibilities for non-motorized users – pedestrians and cyclist. Unfortunately, Spatial

Development Strategy is a legislative act, but its clauses are not binding for land use planning – it only guides the directions for urban and transport development. This is the reason why it cannot be used as the base for real and practical implementation of MM measures in land use planning.

However, the Local Spatial Development Plans are based on the Spatial Development Policy. LSDP has legal form – it means that those planners who make plans in areas with an LSDP, must include all assumptions for that site. So, it could be a chance to including MM measures in land use planning in legal form. The Spatial Development Policy has to set sustainable transport assumptions in more detailed form. It the document where a regulation could be integrated concerning obligations for preparing travel plans for developments which generate a lot of car traffic, including sustainable transport in new development areas, ensuring public transport priorities on the junctions, etc. The second document, which could be helping in integrating MM and LUP, is the Environmental Protection Act. It regulates the environmental protection demands for new investments – those investments which could have crucial impact on the environment need to produce a document concerning "evaluation of investment impact on environmental". The Environmental Protection Act does not take sustainable transport issues into account directly. Environmental friendly transport clauses in the law have a rather weak character and do not include sustainable transport issues in a comprehensive way. However, the administrative units could try to interpret some of the regulations in a way that allows them to ask for sustainable transport development as one aspect of environmental protection. Nevertheless, this approach could be difficult because it could cause oppositions from the developers, but this procedure seems to offer the only possibility to require sustainable transport for reasons of environmental protection without changes of existing laws.

There could be another possibility to establish and to implement MM measures. The Polish Parliament is currently preparing the new "Public Transport Act". In that document public transport standards will be established, which include MM measures connected with public transport in that issue.

Existing law do not hinder, but also does not directly allow implementing MM measures. However, in some of the existing laws there are some sections that could be used to implement sustainable transport in new investment. Road and Transport Administration or Krakow Municipality Administration could obligate the investor to implement some of MM measures – in environmental protection intention.

The planning simulation discussion has shown, that an integration MM and LUP could be possible by negotiations. However, it is not regulated by law and for that reason, it is not obligatory. But the approach is sometimes already realised in some development, e.g. in Krakow - Bonarka. Within that development (mainly commercial centre and housing area), the investor wants to build large commercial and office area close to an existing railway line. Infrastructure Office and Road and Transport Administration proposed to reactive the railway stop near the buildings to ensure a better access to the area for customers and employees. However, the rail operator opposed the idea in many ways (it is connected with financial participation) – e.g. he argued that rail area is closed for any investment. In fact, the national rail operator – PKP is a very difficult partner in negotiations and is not interested in private investments on his area. At the moment it is impossible to legally oblige the developer/the railway operator to realise or to participate in the re-activation and development of that railway stop. There is also an important issue, which affects negotiations about the implementation of MM: Currently there is no common procedure in Poland, which allows sharing the infrastructure investments costs between municipalities and the developers or owners of development areas. In the example mentioned above, it is very difficult to oblige the investor to cover all/ or arts of the costs. Due to lack of an official procedure, the investor will always have the chance to undermine the argumentation for the need of new infrastructure investments (even if they are strictly connected with planned investment site). The common explanation is, that a new tram or bus line or a rebuilt junction will be used not only by potential customers, but will also serve the public /all city inhabitants.

In the planning and or building permission process, implementation of MM measures is currently only possible by negotiations. Obligations for that approach are legally not possible - it is strictly connected with financing of the measures by the investors, and normally they are only interested to fulfil the basic obligations which are

defined in the existing laws and regulation and not to go beyond on their own accords. It is possible to recommend the implementation of new bicycle paths, bicycle parking facilities or a better access to the public transport stops; which are necessary preconditions for MM measures, but the discussion showed that it would be very hard to realize those measures. Sometimes the negotiations work and come to an agreement between the city and the developer, but it is mainly depending on the investor/developer attitude.

Due to a lack of legal regulations on country level as well as on local level, there are currently no possibilities to demand from the investors or developers to implement MM measures. It is only possible by negotiations. Nevertheless, it is doubtful that it would be sufficient to only suggest these negotiations, due to expected resistance on the side of the f investors, but also sometimes on the side of decision makers (and the city is in a very weak position without supporting laws and regulations or policies). Therefore, it is necessary to change legal regulations, in particular to support the development for sustainable transport. CUT therefore suggest including the following aspects into the Spatial Development Policy:

13. to develop maximum and minimum parking standards for each quarter of the city (depending on the distance and frequency of public transport service)– it will help to regulate the access to the area by car, but also help to ensure accessibility of areas which are situated far away from public transport lines;

14. to allow / require a variety of uses of big parking places at large investments (where full parking capacity is only seasonal used) for occasional Park & Ride – e. g. during big events;

15. the document should also contain the obligation to prepare a travel plans for investments which have a significant impact on the traffic volume on streets (e.g. if the number of cars generated by investment cause increasing traffic volume on certain amount [%] - the investment should have travel plan);

16. the development and implementation of a common procedure is needed, which allows to share (define proportion) the additional infrastructural investment costs between investor and the city;

Based on the Spatial Development Plan, planners prepared Local Spatial Development Plan for particular quarter and area – the investor should fulfil all notations for that side.

On the country level, Environmental Protection Act and Spatial Development Act should contain sections that require MM measures in new/redevelop investments as a part of travel plans. It is a challenge because it will need changes in law on the country level. It is also challenge because it seems that any changes in the Spatial Development Act are made in close collaboration with investors and developers business.

Not only legal barriers stand in the way of implementing MM measures. There are also quite big oppositions/rejections from investors, developers and some decision makers. Political awareness of MM is rather low; and some of City Council Members do not perceive the necessities to decrease number of cars on the streets. They prefer rather to open some streets for traffic than for to close them. That understanding is probably the result of a cultural aspect – due to better economic situation among inhabitants, it is fashionable to use cars in many daily trips and in many cases travel by car is faster than by public transport. However, citizens perceive that city develop the public transport priorities, e.g. bus lanes, and the congestion on the road in the city centre is very high. For those users, Park & Ride system would be very useful.

Low awareness for the benefits of sustainable transport among decision makers is the most important barrier for the implementation of MM measures. Even if administrative units want to implement some sustainable transport solutions, some of the City Council Members oppose for that – any obligations and demands for inhabitants, investors and transport users are unpopular (and are perceived as a risk for future elections). Financial problems are also barriers for the implementation of sustainable transport solutions in transport network. In city budget, the annual amount of money which is dedicated to sustainable transport is not sufficient to deliver most of the planned sustainable transport solutions. In the transport network, there are huge deficits, so cities try to improve roads conditions and public transport service in existing form, and then they can think about new solutions for

road infrastructure. The most important problem is the budget distribution in transport sector in insufficient level – especially for bicycle network because normally there is only one overall transport budget and modes like walking and cycling are not represented by their own budget and are underfunded. It is connected with lacking awareness for sustainable transport among City Council Members.

10.5.2 Description of acceptance for Mobility Management

The participants agreed, that the concept of MM (as a "hard" planning measure – change and develop tram lines) is very good approach for improving transport connections and services .For CUT, the travel plan was done as a part of the CIVITAS CARAVEL project. The participants of the simulation meeting from the city reacted very well for that plan. They participate in implementation of some aspects of that – e.g. in next year they will develop the bicycle lanes between the CUT campus, and probably they will change the bus line which connect students hostels with main campus in the city centre to improve it. Workshop participants accepted all MM measures that were proposed and presented at the simulation meeting. However, one of the main scopes of simulation meeting was directed to improvements of public transport connections by relocating the planned new tram lines so that they would cross the Krakow Exhibition and Conference Centre area. There was also a discussion about the number of parking spaces – the administrative units mainly pad attention on possibilities how to use that parking spaces in other way – it was suggested to use them as an occasional Park & Ride location in days, when CCEC is not open for visitors and customers. The new tram line could serve the connection between Park & Ride lot and the City Centre. For CCEC planners, MM measures are a very good idea to implement. Especially, the supporting measure, to relocate the new tramlines and locate them between the KECC buildings (second variant – green line Figure 27) was approved. All participants think that the third variant is not needed (orange line –Figure 27). The developer, who was present during first round of discussion, did not take care about any MM measures. In his opinion, the most important issue is to ensure freight transport access. There was also present Bicycle Organization Member – however he didn't engage in discussion. Public Transport Operator was very interested in new tram line concept in that area. He agreed that it is needed to include public transport network in urban planning in much concrete and detailed way. However, the new concept of carpooling system and bicycle facilities weren't discussed by the participants. Only the travel plan was perceived as a good idea, but with legislative barriers.

Unfortunately, the discussion didn't seem to show participants real attitudes towards MM. They mainly agree to the concept, but not in very specific or directed way. They think about such new propositions as a good idea, but there is still a long way to go, in order to get real results and it will not be easy especially in regards to financial and legal aspects. MM measures in their opinion could change the planning process but only if the lower (local) level documents and the policies allow implementation of those solutions. One gets the impression that all participants understand the need for MM implementations and accept them in general, but they also feel, that due to existing preconditions and external circumstances it will be very difficult to implement MM measures in real procedures and planning / building permission processes.

10.5.3 Description of other results

Discussion has shown that a meeting of all administrative units, public transport operators, inhabitants and investors are needed and beneficial for all of them. Each participant could discuss with each other and understand many of the previous decisions and of the opinions of other parties. During the meeting many issues were discussed (not always connected with scope of the simulation) and this shows that it is a good idea to organize that kind of meeting for strategic investments in city, but it is recommended to limit the number of participants to a smaller group.

10.5.4 Description of simulation as method

In our opinion, the simulation concept is very good idea to discus transport and urban planning problems. It could be a very good approach to gather in one day and one place all stakeholders who are responsible and interested in that issue (for a particular project). Only intensive discussions and changing of ideas and opinions could solve many transport and planning urban problems, but first of all the laws must be changed. If not, most of the new solutions might remain unsolved due to legislative reasons. In a planning simulation meeting, there shouldn't be assembled more then 10 people to represent the main stakeholders. Bigger groups could be a barrier for an effective discussion. In Polish reality, that approach is a new one in planning process. In LSDP enacted process, a similar kind of meeting exists but rather in form of presenting plans and information and not to discuss possible new solution which might emerge from the planned development. During the planning process, inhabitants and developers can meet for one day with planners and administrative units for discussing the proposed solutions. However, usually, such a 'traditional' meeting is used for protests against new transport network proposals.

It is very important to inform and instruct all participants about the scope of the meeting. In Poland, the stakeholders could not present their opinions about their willingness, apprehensions and requests in an open and straight contact. Because of that, there is the threat that the simulation meeting can end up in an ineffective discussion. Sometimes, this could be barrier to simulations' success.

There is also another problem for Polish participants of simulation meeting – the name of that meeting – "Simulation meeting". During the meeting, approach of the simulation was presented, but for participants the "simulation" was understood. Maybe it will be better to change name of that approach on "Brainstorming meeting"? In Polish, "simulation" means something else – it is rather used in computer calculation.

What was wrong? – Participants present only their opinions and discussed only the general transport problem in Krakow. They barely focused on the main discussion points prepared for the simulation meeting. It was very hard to reintroduce them to the MM measures issues.

10.6 References

[1] "Local Spatial Development Plan for Czyżyny – Dąbie area" (19 December 2007); City Council of Krakow Resolution Nr XXXI/398/07

[2] "Transport Policy for Krakow"(2007), City Council of Krakow Resolution Nr XVIII/225/07

[3] "Integrated Public Transport Development Plan for Krakow" (2004); Rudnicki, A. with team; Krakow

[4] "Transport Policy for State for 2006-2025 years" (2005); Poland

[5] "Comprehensive Transport Research for Krakow Commune" (2003); Community/Social Research Office, Sopot

[6] "Proposal and verification of transport solution for Krakow Exhibition and Conference Centre" (2007); Rudnicki, A.; Kulpa, T.; Krakow

[7] "Krakow Development Strategy" (2005) City Council of Krakow Resolution Nr LXXV/742/05

[8] "Spatial Development Policy for Krakow" (2003) City Council of Krakow Resolution Nr XII/87/03

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11 Annex IV: Country report Spain

11.1 Preconditions

11.1.1 State of Land Use Planning and transport integration

In Spain there are basically three levels of competence in LUP and transport planning

- The national law on LUP sets the framework of how the regional laws have to be developed.
- The regional law has legislative and administrative competence in approving the local LUP. They develop town planning plans for the municipalities, which provide a more detailed framework than the national law, and revise and approve finally the municipal LUP. The minimum parking standard is also set on a regional level.
- At a local level the municipalities have the competence in developing a General Urban Plan (Plan General de Ordenación Urbana-PGOU) following the guidelines developed in the town planning plans, where the present and future use of land for the entire municipality is determined. It also defines the criteria and norms of how to develop the area – intensity of buildings, heights, uses, etc.

The Partial Plan (detailed plan of the area) here referred to as a Detailed Site Development Plan –DSDP- is a planning instrument that has to be developed for "new sites" defining the structure of the new site, street organisation, infrastructures needs, structure of lots, etc. It also defines the measures of streets and footpaths. The DSDP of Los Molinos was written by a team consisting of the architect Mónica de Blas, Euroestudios, and Rueda y Vega asociados on request by the Urban Consorcium Los Molinos-Buenavista founded and represented by the Autonomous Region of Madrid and the municipality of Getafe on the 27 of June 2004. The plan was finally approved in December 2005 by the municipality of Getafe and the Autonomous Region of Madrid.

According to the Land Use Law of the Autonomous Region of Madrid it's specified that a DSDP has to be developed for new developments. For the DSDP to be approved, specific technical studies have to be added, among them a traffic assessment study. Regarding the traffic assessment study it doesn't say expressively that it is obligatory to develop it, but specific studies must include the "right connection, extension and reinforcements of every infrastructure, equipment and public municipal and supra-municipal services, that will be used by the future population (supposing they will be permanent residents), and as a minimum the integration of networks of education, welfare, sanitary, sports, culture, spare-time, daily commerce, security service, firemen and the connection to the infrastructure and road service... ...urban and regional public transport on road and rail" (Art. 48 2a). Point D in the same paragraph states that a specific study of the connection and autonomy of the public transport system has to be done, guaranteeing there will be no congestion or capacity overloading with the existing traffic or for different future scenarios.

After the DSDP is approved an Urbanisation Plan is developed defining the urbanisation of infrastructures (just roads and footpaths) for the area. When this is finalised the constructor can apply for a "building licence".

The present General Urban Plan of Getafe was approved in 2004 by the Autonomous Region of Madrid and it describes the site chosen for the simulation, Los Molinos, as a "new urbanised area" zoned for building development with the obligation of realising a DSDP for its development. The DSDP for Los Molinos was approved in 2005.

As well as for LUP there is a national law for transport planning, being the framework for all Autonomous Regions. In this case the regions have a narrowly restricted competence to infrastructure and services which involves more than one municipality. The region can develop planning instruments on a metropolitan and urban

level too, but it is not mandatory. In the case of the Autonomous Region of Madrid they demand the realisation of a specific study of the accessibility and transport efficiency integrated in the DSDP – the Traffic Assessment Plan.

In the last three years, a new transport plan has been developed at national level, PEIT – Plan Estratégico de Infraestructuras y Transporte (national infrastructure plan for transport). This plan contemplates innovative tools in urban transport planning, intermodality, sustainable transport and mobility management. The plan has been developed through sector programmes (national intermodal strategy, cycling and pedestrian strategy, sustainable urban mobility plans, etc.). Sadly these plans have not been approved yet, being only a general reference for Autonomous Regions and municipalities as well as a guide for state investment.

In 2005 the Spanish Government approved an Action Plan 2005-2007 for the Estrategia de Ahorro y Eficiencia Energética en España 2004-2012, E4 (Energy Saving and Efficiency Strategy in Spain). The Action Plan tries to resolve and specify the low definition of concrete actions, deadlines, responsibility of the public bodies involved and the identification of financing for each case mentioned in the E4. One of the sectors considered in the Action Plan is the transport sector. In this, Planes de Movilidad Urbana Sostenible, PMUS (Sustainable Urban Transport Plans, SUTP) are mentioned as a specific measure in order to reduce energy consumption, together with transport plans for workplaces, increased use of train for interurban trips, renovation of the car fleet, etc.

In order to develop the SUTP, the Instituto para la Diversificación y Ahorro de la Energía, IDAE (National Energy Institute) launched a programme to finance pilot projects in all Autonomous Regions. Getafe was selected as a pilot city in the Madrid Region.

In July 2007 the Action Plan for 2008-2012 was approved, being a continuation of the previous action plan in time with new goals and financial programmes established. Among these are the continuing financial aid to elaborate the SUTP, and the elaboration and follow-up of the pilot experiences and measures proposed within them.

11.1.2 State of local (and if relevant regional and national) transport plans

The most important local transport policy in favour of MM-measures is the SUTP of Getafe developed in 2007. It focuses on a general reduction of car trips –especially short trips-, an increase of the use of public transport for medium and long trips, an increase of the use of bicycles for short and medium trips and walking within the municipal borders. The measures contemplated include both physical and promotional ones, all according to the needs of each sector. The SUTP has detected weaknesses and opportunities in the mobility of Getafe and based on that proposed programmes to reach more sustainable mobility. Some of the proposals made are:

- Improve the public space for citizens; develop a walking and biking network throughout the city, implement priority for pedestrian and residents in the city centre and 30-zones in residential areas, improve the intermodality between bicycles and public transport, develop promoting campaigns for non motorised transport modes, etc.
- Promotion of public transport; restructure of the public transport network, introduce shuttle lines to industrial areas and to the capital Madrid, increase safety and accessibility for all users, etc.
- Parking; reduce the number of car parking spaces, implement parking areas subject to a fee, establish parking programmes for residential, industrial, leisure and commercial areas, etc.
- Improve the distribution of freight goods; develop programmes for distribution at night, establish vigilance for loading and unloading spaces, implement green vehicles in pedestrian zones, etc.

- Improve mobility to educative centres, industrial areas, sanitary centres, universities, commercial centres and sports centres.
- Integrate mobility measures in the planning for new developments.
- Introduce and administer carpools and car sharing, tele-working, and a mobility office.

The fact that the initiative comes from Getafe is an advantage and means there is actually a chance that they will implement some of the proposals. At present the municipality has initiated some of the programmes proposed with the help from the financial programmes from IDAE, some examples are; pilot project of walking school buses to three schools, establishment of a mobility office, development of mobility plans to the university and the hospital, development of lines of shuttle buses from the city centre to several industrial and economical areas.

Against the implementation of mobility management is the fact that the SUTP doesn't have any legal framework yet, it is merely a guideline for the municipality -as well as it is voluntary to develop it and to realise the follow-up.

At present the traffic analysis in the DSDP analyses only the development of the road network in the new area and that there are enough parking spaces planned. But a broad opinion thinks that the analysis should be extended to include the public transport and pedestrian and cycling network too. Based on the traffic analysis it is defined how the area should be connected to the existing road network and what kind of streets and characteristics should be used inside the area.

11.1.3 Local transport data

Getafe is a municipality situated just south of the capital of Madrid (approximately 15 km from the city centre of Madrid) with 165.000 inhabitants. It belongs to the metropolitan area of Madrid and to the so-called South Metropolitan area, the area with most inhabitants in the region apart from the capital (1.180.000). The municipality has a powerful industrial and business sector with several economical areas surrounding the city centre and the residential areas. It is also the location of the University Carlos III and a University Hospital.

Getafe has a strategic situation when it comes to regional infrastructure; crossed by several motorways, train lines, underground and urban and interurban bus lines. It is situated between the regional ring roads M-45 and M-50 in the north and the south respectively and is crossed from north to south by the motorways A-42 to Toledo, and A-4 to Andalucía. The A-42 divides the urbanised area in two parts.

Apart from road infrastructure, Getafe has also two regional train lines, C-3 Atocha-Parla and C-4 Atocha-Aranjuez, crossing the municipality from north to south. The underground line, L12 MetroSur, is a circular line that serves the five largest cities in the South Metropolitan area and has connection in one station with the rest of the metro network and with the regional train network at several places; in the case of Getafe in Getafe Central and El Casar. The interurban bus network consists of 21 lines connecting Getafe with bordering municipalities and with Madrid. The urban lines are five and the shuttle bus consists of two lines.

The high urban density and short distances are favouring movements by bicycle or walking as well as the flat topography. Within each district the distance to public equipment like sports centres, shops or health care centres is close.

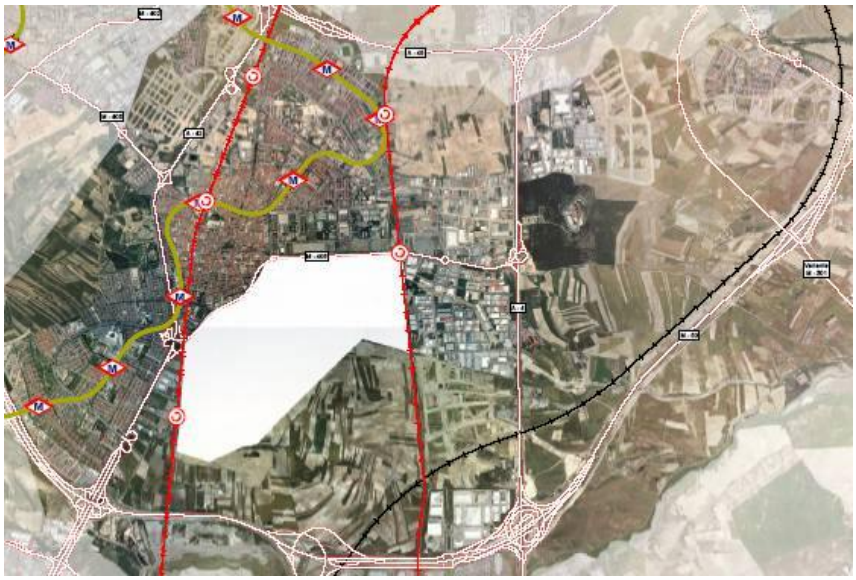


Figure 34: Principal infrastructure in Getafe (source: SUTP Getafe)

According to the Encuesta Domiciliaria de Movilidad de Madrid 2004 (Mobility Survey of the Region of Madrid) the municipality of Getafe generates/attracts 520.571 trips per day. The external trips stand for almost 50 % of the movements, with Madrid as the most frequent origin/destination (26 % of the total). Comparing with 1996, the total number of trips has grown from 385.592, an increase of 134.979. Most trips, 89 %, are done in one step, with just one mode.

The number of trips per person and day is 3,01 and the motorisation index is 440 cars per 1000 inhabitants, much lower than the average of the region with 513. The modal split in 1996 and 2004 was the following:

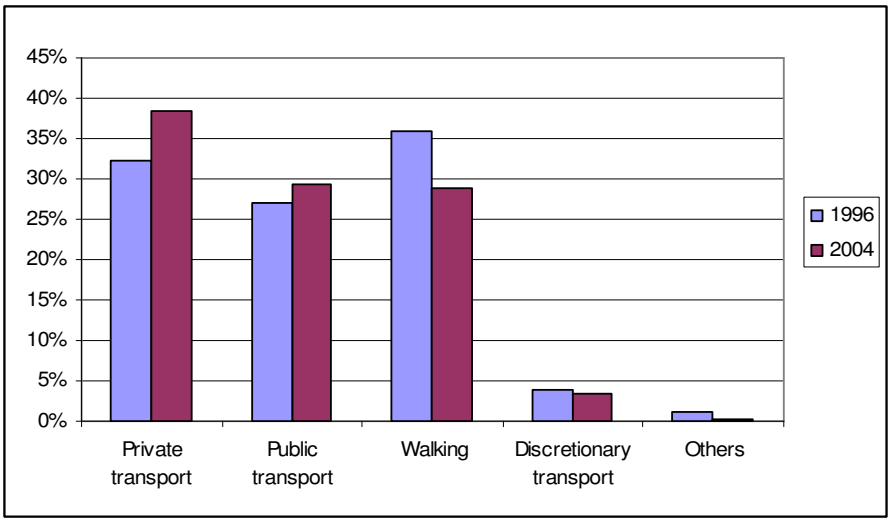


Figure 35: Comparison in modal split in Getafe between 1996 and 2004 (source: SUTP Getafe)

Private motorised transport modes (e.g. cars, motorcycles) stand for the largest increase in these eight years and walking the highest decrease, passing from the principal mode of transport to a third place. Public transport has also gained users, almost reaching 30 %. The underground is the most used type of public transport with 41 %, followed by bus, 36 %, and train, 23 %. Comparing to 1996 the underground has increased from 14 % to 41 % while the bus has declined from 64 % to 36 %. The simple explanation is that MetroSur opened in 2003,

connecting the surrounding cities that before only had access by bus. The use of bus is also decreasing partly due to the poor local bus network.

The principal motives for the trips are work and education, 62 % of the total number of trips, 41 % and 21 % respectively. Most trips to work are external trips (80 %) and the principal mode of transport is the private car (56 %). The characteristics for trips to education (including school and higher education) are more equally spread between external and internal trips and with walking and public transport as principal modes.

If analysing the internal and external trips alone, 60 % of the internal trips are made by foot, and 63 % of the external ones are made by private car. The poor urban bus network is reflected in the low use of bus for internal trips, less than the use of car.

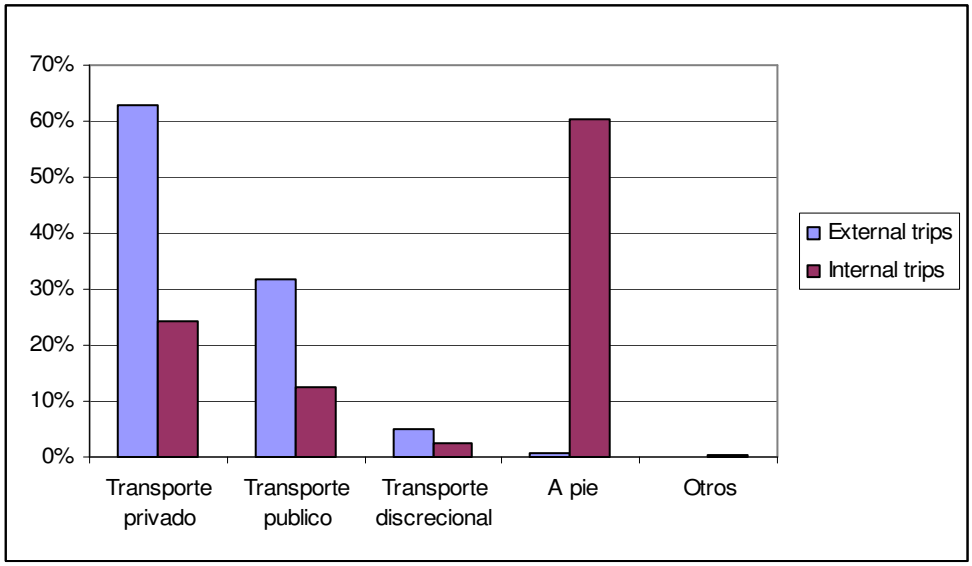


Figure 36: Comparison between external and internal trips in Getafe 2004 (source: SUTP Getafe)

Despite the large supply of regional train, underground and bus the use of the private motorised vehicle hasn't stopped increasing in regional and local mobility. It's a fact that the central districts in Getafe have a more moderate use of the private car; where the public transport, especially the regional train, obtains a higher share than the average in the municipality. The districts further away from the city centre have a higher use of the private motorised vehicle as well as some industrial areas that have a poor accessibility by public transport.

T o summarise, the trend in Getafe is increasing private car use and to a lesser extent increased use of public transport and a decrease in trips by foot. This is the case for all trip motives and for internal as well as external trips.

11.1.4 Legal situation

The principal tools to integrate MM into LUP are through the General Urban Plan and DSDPs, two legal planning instruments that determine the planning and construction in an area. It is in these plans that criteria have to be introduced to achieve planning in favour of low energy consumption. There are basically three fields in which it's possible to influence the planning; planning objectives, regulations, and physical urban planning. Other tools that could be used are specifications in tenders, pacts and agreements with the developer and the constructor.

In regional law, **Ley 9/2001 del 17 de Julio del Suelo de la Comunidad de Madrid**, (Law of Land Use in the Region of Madrid) land development is regulated on a regional level. In article 36 the public infrastructure networks are regulated and standards for surface of parks, public services, and parking are established. The following standards for a 100 m^2 constructed surface have to be fulfilled:

- 20 m² of parks and green areas.
- 30 m² of equipment and public services.
- 20m² of general infrastructure.
- Minimum1,5 parking spaces inside the built plot. Exceptions from this standard can be allowed:
  - For congestion or density reasons in urban centres, the general planning instrument establish maximum limits to private or public parking spaces for commerce, events and offices;
  - Due to accessibility conditions or the dimensions of existing blocks, the municipal regulations exempt the obligation of a space in the garage in the plot. In this case the required standards for parking must be covered at another place.

These standards are verified in the **General Urban Plan and the Partial Plan** and the number of planned parking spaces has been followed for Los Molinos. In article 243 in the General Urban Plan, it is established that the project won't be approved unless the stipulated parking demand is fulfilled; if not the project has to be modified. However there are no regulations for how many on-street parking spaces there has to be in a residential area (for other uses there are norms). This could be a possibility to integrate MM to reduce the total amount of parking. In Article 228 in the General Urban Plan measures to improve the urban street, there are vague suggestions for bicycle itineraries and bicycle parking, planting trees in between parking spaces, bus stops, illumination and signposts. The General Urban Plan also has a section on how to mitigate the negative effects of urban traffic and what measures are adequate to reach a more sustainable environment, but there are no concrete measures to follow.

There seems to be a broad acceptance at a municipal level to develop the SUTP and implement the proposed measures, however the measures have to be maintained within the norms described previously, if not, they might not be approved by the Autonomous Region. Another future plan is the PEIT, that when it has been approved could open doors to implement MM measures in LUP.

Besides the above mentioned regulations and planning instruments, the following three laws can have importance for the general building permission and development of a new site.

According to the **Ley 3/1991, de 7 de marzo, de Carreteras de la Comunidad de Madrid** (Law of the road network in the Autonomous Region of Madrid), the General Urban Plan must include planning instruments that guarantees the connection to the interurban road network in Madrid. The law can also establish limitations and prohibitions in areas for public use and protection for new roads. Therefore it is of utmost importance that the regional law is integrated in the General Urban Plan.

The **Ley 25/1998, de 29 de Julio, de Carreteras del Estado** (Law of national road network), regulates the access to the motorway A-4. The final instance to approve an access not planned or predicted is the Ministry of Public Works.

According to the **Ley 2/2002, de 19 de junio, de Evaluación Ambiental de la Comunidad de Madrid** (Law of environmental evaluation of the Autonomous Region of Madrid), any urban or rural land use planning has to undergo an environmental analysis. However the legislation is very vague and in many cases the evaluation isn't done in a rigorous way.

11.2 Description of the simulation site

11.2.1 Location of the simulation site

Los Molinos is an area situated in the north of the municipality in between the consolidated residential area of Getafe Norte (El Casar) and the industrial areas of Los Ángeles and Los Olivos. The area is heavily affected by the "barrier effect"; to the north it is limited to the municipality of Madrid and the M-45, to the west the regional train line C-3, to the east the motorway A-4 and the industrial area Los Olivos and to the south the industrial area Los Ángeles. This is an important aspect that has to be solved in order to create a sustainable mobility and a residential district integrated into the rest of Getafe.

The size of the area is 1,5 km east-west and 1 km north-south and the distance to the centre of Getafe is approximately 2,5-4 km.

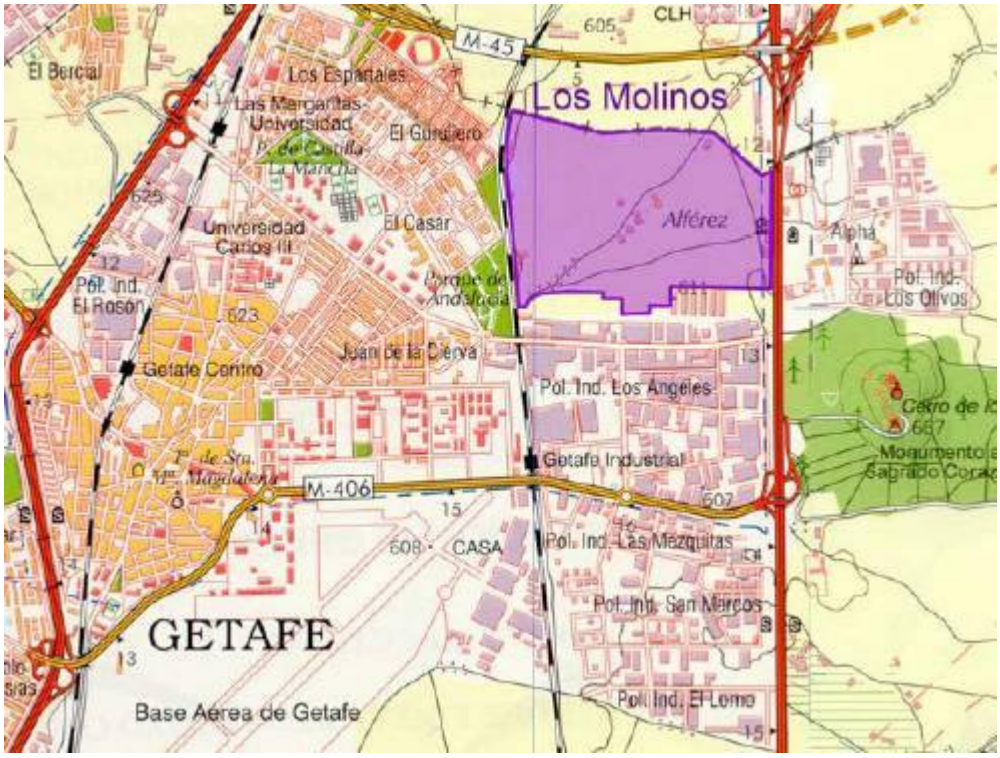


Figure 37: Map of Los Molinos and Getafe City Centre (source: DSDP Los Molinos)

11.2.2 Type of utilisation and development

In the General Urban Plan the area of Los Molinos is described as a "zoned urbanised area" (Suelo Urbanizable Sectorizado) for residential building. According to the planning scheme the largest part will be dedicated to residential use, surrounded by retail land use, public services and equipments and green spaces.

The basic criteria for the area are established in the DSDP chapter 4:

- Generate a well-balanced space for the future residential growth in Getafe.

- Improve the accessibility east-west over the railway tracks and the motorway A-4.
- Use a similar design as the present residential areas in the north of Getafe.
- Design park roads connecting to existing roads north-south and east-west.
- Locate the retail uses close to the motorway A-4.
- Equipments in the south limiting to the planned equipments in the industrial area Los Ángeles, and green areas limiting to the northern border.
- Modify the design of the traditional rural road into the network of pedestrian itineraries.
- The first line of buildings are aligned with the constructions in Los Ángeles

The total surface of the area is 1.257.231 m^2 where 610.637 m^2 are to be constructed, 581.532 m^2 will be for residential use and 29.105 m^2 for commercial use.

The structure of the new area will be developed around a central park of 5 ha, Salón Central de Getafe, with the buildings placed south and north of this green area. In the bottom floors of the multi-family buildings facing the park there will be non-residential activities.

The commercial activities are concentrated to an area close to the metro and train station of El Casar in front of the Park&Ride. The commercial activities are quite small due to the proximity of an existing commercial centre in Getafe Norte. Close to the A-4 an area with a mixture of activities is planned. The total surface of free public spaces is 324.660 m^2, divided into urban parks close to the residential buildings, green areas located principally in the perimeter of the area, and other public spaces.

Table 4: Surface dedicated to equipments (source: SUTP Getafe)

EQUIPMENT	SURFACE M²
Educational	94.316
Sanitary	3.500
Social Services	29.884
Cultural	5.950
Sports	20.000
Urban Services	29.629
Total	183.279

11.2.3 Technical description of buildings

Number of buildings

In the most northern part two areas of one-family houses are planned, called Eastern and Western Colony. The rest of the buildings will be multi-family housing, some of them reserved for young people within the “Youth Housing Plan” (Plan de Vivienda Joven) launched by the Region of Madrid.

The number of houses that will be developed is 6.271, distributed between 20 % of free housing and 80 % of public protected housing (cheaper). Of the “free housing”, there will be 314 one-family buildings with a maximum of two floors and 941 multi-family buildings of a maximum of six floors if there is commerce in the

ground floor and five if there isn't. The public protected housings are also multi-family buildings with a maximum of six floors. 582 apartments will be smaller than 110 m^2 and the rest (4.434) of any type of the apartments established in the regional norms for public protected housing.

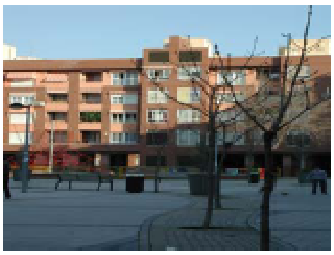
		
Multi-family houses	**One-family houses**	**Typical road with free spaces**

Figure 38: Typical buildings and roads planned in Los Molinos (source: DSDP Los Molinos)

Parking spaces

The different policies determined by the DSDP establish a standard of 1,5 spaces per 100 m^2 of constructed surface as their norms (chapter 5.5 Condiciones comunes a todas las ordenanzas), this ratio guarantees the minimum legal coverage established by the Autonomous Region of Madrid. In total, this means that 9.159 parking spaces have to be built in the interior of the buildings. Apart from that, 2.016 parking spaces are planned on the principal and secondary streets, to a total of 11.175 spaces. This gives a medium of 1,83 spaces per 100 m^2 constructed area or, 0,63 spaces per resident, or 1,78 spaces per housing. For commercial use (small commerce) the General Urban Plan determines 1 space for each 100 m^2, or 1 space per 50 m^2 if the commerce is for food and larger than 400 m^2.

Close to the railway station El Casar a Park&Ride is planned with a surface of 29.197 m^2, approximately 1.450 spaces.

No parking spaces are stipulated for bicycles in any of the regional or municipal regulations, but the SUTP propose to add to the General Urban Plan a policy regulating the number of bicycle parking spaces in new developments, residential or not, to a minimum of 1,5 m^2 per housing with direct access from the exterior of the building.

11.2.4 Estimated number of users and projection of trips

There are two sets of traffic analysis data for this area: from the Traffic Assessment Plan in the DSDP and an estimated calculation made in the SUTP.

In the SUTP the estimated number of users and the projection of trips has been calculated with ratios from the residential area Getafe Norte (which has a similar structure to that of Los Molinos), to get a more credible estimation. In this case the average number of persons living in an apartment or individual house is set to 2,8, meaning that the estimated number of residents will be 17.573. The total number of trips per day has been calculated only including persons older than 4 years, being 14.761 residents. On the other hand the ratio of trips generated per person and day in the area has been calculated to 2,05 and the number of trips attracted to the area has been calculated according to the number of employees estimated. In total 39.706 trips per day have been

estimated in Los Molinos; 34.249 originating in the area (86 % of the total amount of trips), 1.090 with the area as destination and 4.368 being internal trips. This is a low estimation; probably it's more accurate to estimate 50.000 trips per day.

Table 5: Estimated number of residents and projection of trips in Los Molinos (source: SUTP Getafe)

Total population	Population >4 years	Generated trips	Attracted trips	Internal trips	Total trips
17.573	14.761	34.249	1.090	4.368	39.706

The modal split according to the present behaviour model in Getafe Norte would be:

Table 6: Estimated modal split in Los Molinos (source: SUTP Getafe)

	Total trips		Mechanised trips		
Total trips	Non-mechanised trips	Mechanised trips	Private modes	Public modes	Others
39.706	9.899	29.808	17.109	11.028	1.671
100%	25%	75%	57%	37%	6%

None mechanised: pedestrian; mechanised: car, bus, train, bicycle, etc; private modes: car, bicycle; public modes: bus, train.

In the Partial Plan it's mandatory to include **traffic analysis**. According to this the following conclusions have been drawn:

- Los Molinos will generate approximately 21.785 trips in private vehicles and 27.676 trips in public transport in an average working day. This corresponds to 3.057 private vehicle and 3.598 trips in public transport with origin in the area at rush hour in the morning.
- The roads are at capacity limit with this number of trips.

The proposal to solve the deficit is to make a direct connection with the M-45 in the north to decongest the access to the A-4. Regarding public transport it's proposed that the existing interurban line 442 is to be extended, which with its present service and frequency would cover 25% of the demand of trips per day to Madrid. The urban line number 3 could be extended to cover the demand to the centre of Getafe of around 6.000 trips per day.

The Partial Plan doesn't count pedestrian trips and it has estimated that the number of private and public trips will be more or less 50 % each, this is not reasonable if Los Molinos is compared to Getafe Norte. However the projection of the total number of trips is more realistic. The differences in the total number of trips calculated in the two scenarios are, above all, the change in the growth of population and the number of persons living in each household.

Accessibility of the area

The access points to the area will be constructed following the existing road structure for El Casar, Los Olivos and Los Ángeles. However the internal network should be structured so that no through way traffic will enter.

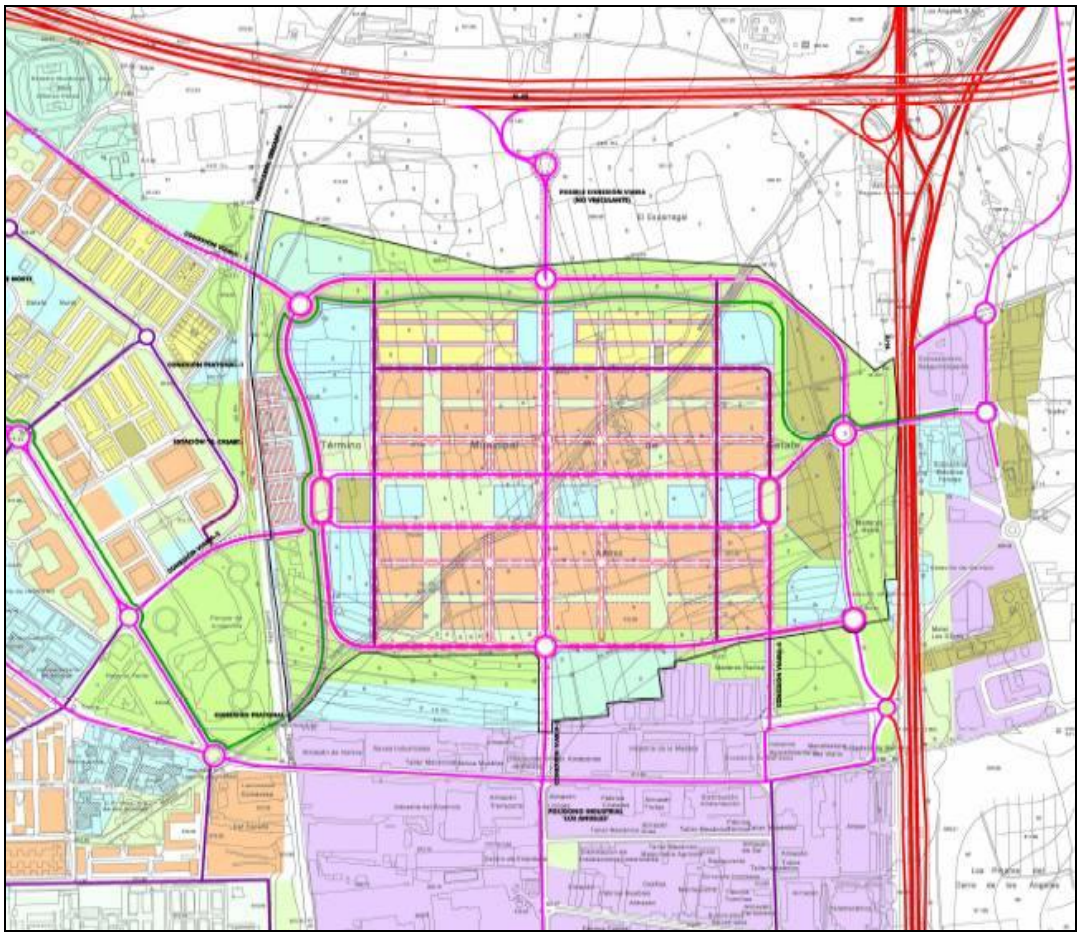


Figure 39: Planned road networks of Los Molinos (source: DSDP Los Molinos)

Public Transport

There is a metro and regional train station situated in El Casar at a distance of 600 m from the centre of Los Molinos. The metro line passing Getafe is number 12, also called MetroSur, a circular line covering the cities south of Madrid. It has connection with the rest of the metro network in one station and with the regional train network at several stations. In Getafe there is a connection in El Casar with line C-3 Atocha (Madrid)-Aranjuez and in Getafe Central with line C-4 Atocha-Parla. There is also an interurban bus passing south of the area, number 447, between –Legazpi (Madrid) and the hospital in Getafe and one of the shuttle buses stop in the southwest corner of Los Molinos on its way to Los Olivos from Getafe Central.

Table 7: Existing public transport passing close to Los Molinos (source: SUTP Getafe)

Transport mode	Origin-destination	Service (working days)	Average frequency
Metro	L-12, MetroSur	6:05-2:00	7,5 min
Regional train	C-3, Atocha (Madrid)-Aranjuez	5:50-23:55	20 min
Interurban bus	L447, Legazpi (Madrid)-Hospital of Getafe	6:47-22:45	26 min
Shuttle bus	Pi1, Getafe Central-Los Ángeles-Los Olivos	6:00-21:20	34 min

Pedestrian and Bicycle access

The Partial Plan considers two pedestrian tunnels passing the railway tracks of line C-3, one leading to the metro and train station El Casar and the other one following the traditional rural road passing Los Molinos connecting with the residential areas on the other side of the railway tracks.

Car access

The road network within the area is organised around a ring-road around the residential area from where the traffic is distributed. The connection to the centre of Getafe over the railway track is planned through two bridges and with the industrial area Los Olivos over the A-4 with another bridge. The internal network is organised around one principal street and several secondary streets with 20 m section where all types of transport modes are allowed. There are also coexisting streets planned where the priority is for non motorised users and pedestrian streets where only bicycles and freight transport are allowed.

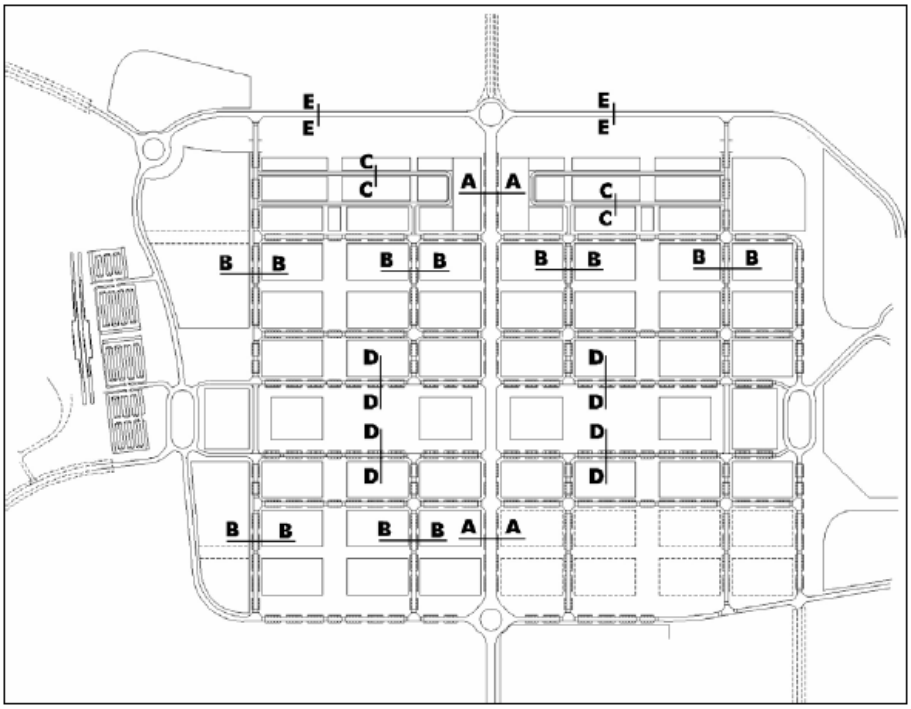


Figure 40: Internal road network in Los Molinos (source: DSDP Los Molinos)

The internal road network consists of five types of street with the following characteristics:

A-Principal road from north to south. It has a section of 34 m with one traffic lane per direction, one parking lane at each side parallel to the curb, one pavement of 9 m at each side with an integrated bicycle lane, and a median strip of 3 m.

B-Secondary road from north to south. With 20 m section it has one traffic lane per direction, one parking lane parallel to the curb at each direction and one pavement per direction of 3,5 m;

C-Interior road in the Colonies area. This is a residential road of 10 m with all modes in coexistence, 5 m are reserved for motorised vehicles and the rest for pedestrians.

D-Side roads to the park Salón Central. One-way roads with a section of 20 m, with parking lanes at both sides; one parallel to the curb and the other one with the front/end to the curb. The rest of the section is dedicated to pavements.

E-Ring road. It's a road circulating the district consisting of a section of 20 m, two traffic lanes in each direction, and pavements 6 m wide – one with a bicycle lane (1,5 m). In the south section a parking lane parallel to the curb is integrated.)

11.3 Simulation description

11.3.1 Scope of the simulation

The sector is adjusted to the guidelines given in the General Urban Plan for Getafe, as well as the urban legislation for the Autonomous Region of Madrid (Ley 9/2001 del Suelo de la CAM). The regulation of these planning instruments agrees on a series of standards without much relation to mobility, e.g. the percentage of area for equipments, resources, general infrastructure systems, etc. without taking into consideration which is the best location in comparison to each other. The same thing occurs with the residential parking standards, fixed parameters repeated over and over in the new urban developments at any site in the territory. Some of these standards are mandatory and cannot be modified.

At this stage the chosen site is being urbanised, the call for bidding for the 2nd phase of urbanisation was closed on the 22nd of May. This means that nothing can be changed in the DSDP and that the contracts with developers and constructors for a large part of the area are already made.

As the preconditions for introducing MM aren't very good, the aim of the simulation is to go back to the stage before the DSDP is written to see what MM measures could be introduced in this phase of the planning process. We think it will be more interesting to see what changes could be made in this stage than to introduce measures on a later basis (i.e. when the contracts are already closed). The discussion will focus on in what stage you can propose the measures, who should be responsible for them and what legal aspects play a role.

A second aim will be to see if the constructor could have a more important role in introducing MM measures and how this could be done. This is something totally new in Spain so the subject has to be introduced very carefully in order not to be rejected.

We hope to get a clearer picture on what thoughts and motivations existed when writing the DSDP and what opportunities and problems each of the participants see in the subjects we raise. Legal aspects on a regional level will be hard to address since we don't have any people participating on that level, however the questions will be raised and discussed.

11.3.2 Content of the simulation

The simulation will start with presenting the present DSDP so that all participants get the same knowledge of the area. A future scenario if nothing is done based on the existing plan will be presented, a prediction of future traffic, motorisation index and mobility share among the residents. After that a future scenario with the integration of MM measures (GDM-scenario) will be proposed and the participants will discuss around the possible integration of each measure. The simulation will concentrate on which type of MM to introduce, how this could be done and which could have the best effect.

Transport aspects are not taken into consideration in the DSDP apart for minimum parking standards and the basic road infrastructure. Is it possible to change the initial preconditions for planning at this level? The following subjects will be investigated within the first scope, the initial phase of the DSDP.

- **Mobility Office.** A mobility office will be introduced as the framework for all MM-measures proposed in the simulation (and future measures as well) and as the responsible organisation for planning and mobility questions in the district. Examples of measures that can be included in the tasks are promotion of sustainable modes of transport and alternative ways to travel, management of tele-working office and car pool, responsibility for planning of infrastructure improvements in the area, etc.

- **The interchange at El Casar.** Improve the intermodality of non-motorised transport and modes of public transport. The presence of a railway station where the metro and regional train network converges allows opening Los Molinos to local connections as well as metropolitan and regional. But to make this intermodal centre possible the surroundings and the accessibility to the station should be treated differently; prioritising pedestrian, cycling and PT access. The attractiveness to reach the station by car should be reduced as well as the available parking spaces. These measures will allow reallocating the parking area to other uses. The station should count on bicycle parking, safe and protected against vandalism and weather.

- **New public transport services in the DSDP.** Despite the short and medium distances to many locations in Getafe, there is a necessity to increase the supply of bus lines in the area. Therefore a new bus line is proposed that covers the industrial area of Los Olivos (on the other side of the A-4), passes Los Molinos and connects with the station El Casar and converts it to a real intermodal centre. Why aren't these modes and aspects integrated today? Would it be possible to make them mandatory in order to get the DSDP approved?

- **Walking and cycling network in the DSDP.** The longest distances (to Getafe Centre) don't exceed 3 km and a large part of the urban development and equipments are located at only 500 m. For this reason a safe and comfortable network of pedestrian and cycling itineraries should be created inside the district. It's important to create itineraries connecting PT-nodes, equipments and commerce and also to the rest of the municipal network. Taking advantage of the fact that Los Molinos is characterised by flat terrain and short distances; it offers a great opportunity to promote non-motorised modes. How could this be integrated into the planning and at what stage should it be done? Bicycle parking has to be constructed in the area as well as in the interchange. Could a standard for bicycle parking be done for residential buildings? Are there any barriers that impede the construction of parking?

- **Traffic calming.** The speed limit in the area should be set to 15 km/h for residential/coexisting streets and 30 km/h for the rest of the road network, with the exception of the ring-road. On the principal north-south road the motorised traffic should have priority except when passing the Salón Central where pedestrians and cyclists cross. Increase the traffic calming to the entire road network. The possible passing through traffic should be dissuaded to the ring-road (there is a risk of motorised trips between the industrial area Los Olivos and the station El Casar, passing through Los Molinos). Furthermore it's important to make difficult short trips with a private vehicle. Among others there is the

risk of possible trips in a car from the uni-familiar housing area (the Colonies) to the Park&Ride at the station.

- **Change the road sections and the use of them.** Propose new street sections and uses of the area that will be released. Wide road sections incite higher speeds and double parked vehicles. If some of the section are meant for parking, this invites more motorised traffic and increased use of vehicles. Therefore the suggestion is to reduce the lanes of the street and reduce the parking spaces. The liberated space will be used to increase the pavement widths and green spaces. Is there any barrier to change the uses? Discussion around how this can be changed and what will be the new use of the free space.

- **Parking management**

  - **Maximum parking standards.** As highlighted the regional law stipulates 1,5 parking spaces per 100 m^2 constructed surface, which impedes the possibility of introducing alternative actions to decrease the use of the private car. With an over availability of parking spaces, the residents are incited to buy a second or third car per family. Would it be possible to reduce the parking and change from minimum to maximum parking standards? What barriers and opportunities lie behind this? Discussion around legal aspects and at what level the decision must be taken. Would it be possible to change the parking spaces in buildings from residential to commercial/other uses? Must the parking space be connected to a dwelling and can a buyer not buy the parking space? Is there anything that impedes the spaces being constructed in another building?

  - **Reduction of parking spaces on public streets.** For example the Salón Central will accumulate a large number of parked cars in its two side roads as two lines of parking are planned on both directions (in total 576 spaces). This will produce a continuous flow of cars entering and leaving the area, disturbing the quiet atmosphere the park intends to create, as well as the negative visual impact it has. Why is so much space dedicated to on street parking? Is it legally possible to reduce the number of spaces? Discuss the possibility to move parking spaces to areas situated away from the residential buildings.

  - **Reduction of the Park&Ride area at El Casar**. At present 29.197 m^2 are held in reserve for parking associated to the railway and metro station, being around 1.450 car parking spaces. This will be a disturbing element added to the interchange area, working against the purpose to transform the area into an attractive central point for pedestrians, cyclists and PT-users. The possibility to reduce the area by 50 % will be discussed. Introduction of parking management where car sharing cars and public transport users park for free.

- **Car free housing.** One block in the public protected housing for young residents will be chosen as a model. Could car free housing work in Spain? What are the main barriers? The car free housing should be followed by planning where schools, supermarkets, public transport stops and other public services are situated within walking distance.

- **Tele working.** A centre with all equipment a person could need to perform his/her work will be constructed in the district. In this way the residents don't have to travel to work every day but can stay in the area. Is this something that could have a future in Spain? Who should be responsible for the establishment and management?

- **Car sharing.** A scheme for car sharing will be created for the residents. Would this have any future? Which trips could have the most effect? Who should be responsible for the integration? Another measure could be to implement a car pool for the residents, cars that are shared between everyone and

that can “rented” if needed. Would this work in a small district like Los Molinos? What barriers are the most important?

In relation to the constructors role the following discussions will be raised:

- **The role of the constructor.** Is it possible to oblige the constructor to introduce MM? What kinds of MM could you force them to introduce (information, promotion, organisation, education, telecommunication, parking management, etc.)? Who could oblige them (city administration) and how could it be done (contract)? Until which point should the constructor be responsible for the implementation? What happens when the building/land is sold? Should the obligations be transferred to the new owners? Would any administrations, PT-entities, etc. be interested in supporting the constructor? Introduce the participants to the British case that it’s possible to oblige the constructor to pay and construct public services, that the tendering of a project is based on this.
- **Introduce the participants into the MM pay-off principle:** Suggest fixed prices for the construction of a parking spaces and what MM-measure this could correspond to. Would this be possible under Spanish conditions? Would anyone be interested in this? Which measures could be interesting for this kind of pay-off?

Open questions for the simulation are the following:

- Are these reasonable questions for Spanish conditions?
- What can the developers, constructors, municipality, residents, etc. gain with MM integrated into planning?
- What are the main administrative, cultural, political barriers and opportunities?
- Would it be possible to demand minimum MM standards within the general municipal planning?
- How can these measures change the planning process?
- In what planning stage can the measures be introduced?
- What impacts can the measures have on the market?
- What are the attitudes of developers and constructors?

11.3.3 List of participants

The following persons were considered important for the simulation and therefore invited. All of them accepted the invitation, but in the final days before the meeting some of them communicated they were unable to participate. After some discussion it was decided not to invite any legal experts since ARPEGIO, the urban planning department and Mónica de Blas all have the right knowledge in these matters.

Table 8: Invited persons to the simulation

Name	Position	Institution/Company	Attended
José Manuel Vazquez	Urban Planning Councillor	City of Getafe	No
Rocío Gonzalez Vazquez	Mobility Councillor	City of Getafe	Yes
Angel Busto	Environmental Councillor	City of Getafe	No
Lorenzo Hernandez	Responsible for the Mobility Division	City of Getafe	Yes
Armando García	Municipal Architect, Urban Planning Division	City of Getafe	Yes
Mercedes Alcalde	Architect, Urban Planning Division	City of Getafe	Yes
Juana de Pablos	Responsible for the Environmental Division	City of Getafe	Yes
Carlos Medina	Manager	ARPEGIO	No
Carlos Marciel	Civil Engineer	ARPEGIO	No
Aurora Justo	Urban Planning Department	ARPEGIO	Yes
Angel García Uyarra	Urban Planning Department	ARPEGIO	No
Ignacio Sanchez Coy	Real Estate Councillor	City of Getafe/EMSV	No
Jesús Sanz	Manager	EMSV	No
Carlos Cristóbal	Head of the Research Department	Consorcio Regional de Transportes de Madrid (CRTM)	No
Angel Cediel	Technician of the Transport Department	Institute of Energy Diversification and Saving (IDAE)	Yes
Mónica de Blas	Architect, Author of the DSDP of Los Molinos	Mónica de Blas Gutierrez-Arquitecta, S.L.	Yes
Francisco López Luengo	Head of the local Police of Getafe	City of Getafe	Yes, partly
Aurelio Rojo	Responsible for MetroSur	MetroSur	No

Not all persons invited were able to join the simulation, but tried to send a substitute. In the case of the Environmental Councillor that wasn't able to participate, two persons from the environmental department were present; Juana de Pablos and Carlos Diaz also the planning department was represented by two architects despite the absence of the Councillor, Carlos Cristóbal from CRTM sent his colleague Domingo Martín, and the head of the local police that could just attend some hours brought the police officer of traffic Alonso Serrano. Finally there was a good spread among the participants. The only participant we missed was someone from the real estate department or another developer or constructor. Many opinions came from the architects and planners but fewer from the developers' part; a better balance would have been desired. From ETT S.A. Caroline Mattsson was present.

Below follows a description of the administration and the companies:

MODERATOR – Pilar Vega – senior consultant, expert in public participation processes in the transport sector.

CITY OF GETAFE – councillors and responsible civil servants from the urban planning, mobility, environment and police departments were invited to the simulation.

ARPEGIO – land use solicitor and developer. It's a public company forming part of the administration within the Environmental and Planning Department of the Autonomous Region of Madrid. The company works with very different stages of the planning process; from sectorial studies of housing, industry, infrastructure and equipments projects to the promotion of industries and housings and the marketing of all this. The participant had to defend both the solicitors' and the developers' role in the simulation.

EMSV – Empresa Municipal del Suelo y la Vivienda – Municipal Housing Promotors in Getafe. Their work consists of promotion, administration and execution of urban plans and public housing and commercialisation and exploitation of buildings and non-built plots. They also administer the public protected housing and the inclusion of young people to their first home. Sadly they were not able to participate.

CONSORCIO REGIONAL DE TRANSPORTES DE MADRID – regional transport consortium of Madrid. They are responsible for the coordination of services, network and fees in the region of Madrid. Under their responsibility you can find the metro, tramway, public bus companies operating in the municipality of Madrid and private bus companies operating in many other municipalities in the region, for example Getafe.

METROSUR – department in Metro de Madrid running the southern line L12. Metro de Madrid is the public company managing the metro system in the capital and its surroundings.

INTSTITUTO PARA LA DIVERSIFICACIÓN Y AHORRO DE LA ENERGIA (IDAE) – National Energy Institute. It's a public organisation ascribed to the Ministry of Industry, Tourism and Commerce. They coordinate and administer measures and funding of energy saving projects and are the ones who have launched the Sustainable Urban Transport Plans within the Action Plan for energy saving 2005-2012.

EQUIPO REDACTOR DEL DSDP DE LOS MOLINOS –the authors of the DSDP of Los Molinos. The author team consisted of Mónica de Blas, Euroestudios and Rueda y Vega asociados.

11.3.4 Programme of the simulation

Final programme

The simulation was celebrated in a building provided by the town hall of Getafe on the 18 of June between 10.00 and 15.00. The simulation had to be finished at 15.00 as the working day ends at this time for most of the participants.

10:00
Welcome and presentation of the participants

10:10: Introduction to the project MAX: The introduction part was kept as short as possible so that there was time to discuss all the subjects.

Challenges and opportunities in relation to the application of mobility management measures in the Detailed Site Development Plan of Los Molinos

The simulation model in Los Molinos – mobility management strategies, indicators and measures

10:30: The simulation

- "0-scenario" at the DSDP of Los Molinos. Discussion around the present state of the DSDP and its possible effects.
- "Introduction of the MM measures-scenario" at the DSDP of Los Molinos. In this part we will discuss the integration of MM-measures framed into the creation of a Mobility office. The measures that will be discussed are in order: How to take advantage of the public transport interchange in El Casar, the incorporation of new public transport services, a walking and cycling network in Los Molinos, to extend the traffic calming area in Los Molinos, parking management, car free housing, the incorporation of tele-working, and the promotion of car sharing.

14:30: Conclusions for WPD and the integration of mobility management in planning and discussion around the research questions.

Material

During the simulation the participants were provided with maps and drawings of the area, some in the format A4 to be handed out to everybody and some in the format A0/A1/A3 to be put up on the wall.

Maps were provided showing following aspects of the development site:

- showing the site with roads, paths and use of land;
- Section of motorised and no motorised roads;
- Localisation of Los Molinos in a larger perspective, with the public transport supply;
- Connections to the existing infrastructure network;
- The new bus lane.

Input handed out to each participant:

- Programme of the simulation
- List of participants
- Summary of the Regional Land Use Law (See Spanish annex 1)
- Summary of the DSDP (See Spanish annex 2)
- 0-scenario (See Spanish annex 3)
- Future scenario (GDM) (See Spanish annex 3)
- Information about each measure that will be discussed in the simulation (See Spanish annex 3)
- Maps showing the situation of Los Molinos in Getafe, the distribution and situation of uses and a map showing planned buildings and blocks.

Step by step performance

First of all it's suitable to describe the exact steps that were taken during the simulation. Even if the programme was followed in general, the exact content was changed during the simulation.

10 minutes: **Introduction** of the project MAX and in particular WPD and the meaning of the simulation.

60 minutes: **The "0-scenario".** A presentation was made about the DSDP and the future mobility if no MM-measures are introduced based on the mobility habits in a similar housing district in Getafe. After that a discussion started where everybody was invited to comment on the present DSDP of Los Molinos. As a basis maps of Los Molinos and Getafe were used where everybody could draw their suggestions and solutions. The discussion was very participative, especially when the author of the DSDP and the urban planning department had to explain what they had thought when writing the plan. All participants expressed their opinions and made contributions on the present conditions of the DSDP.

20 minutes: A **future scenario** based on the implementation of mobility management in planning was presented and how this affects the future mobility situation. Right after, the purpose of the **mobility office** was explained. It was made understood that the mobility office would be the framework for the integration of mobility management and the changes in the planning situation in favour of the residents and sustainable modes of traffic. This measure was followed by a discussion of how to take advantage of **the interchange El Casar**.

10 minutes: **Coffee break**

20 minutes: **New services in public transport**. The discussion focused on the accessibility to various public services and equipments, and how a new bus line could be integrated and connected with the existing system.

25 minutes: The subject was about **bicycle infrastructure** and its connections to the rest of the municipality, but it soon changed to **bicycle parking** at the interchange and inside residential buildings. Also the possibility to change the distribution of the streets, removing parking and diminishing the width of the traffic lanes to provide bike lanes was discussed. Not much was said about the **pedestrian network** – although during the 0-scenario access was discussed.

20 minutes: Probably the most important measure in terms of achieving a change of habit – **parking management.** Parking in private residential buildings led to the most interesting discussion especially between the architects. Also the Park&Ride at the interchange was discussed as well as the reduction of on-street parking spaces. The subject had been touched before and it was discussed afterwards too, the participants needed some time to think about it.

20 minutes: In **traffic calming** the speed limitation within the boundaries of Los Molinos was treated, as well as different kinds of measures on how to calm the traffic. The subject was very much linked with the reduction of on-street parking spaces and the redistribution of space to non-motorised modes and green areas. Proposals for walking itineraries were also made.

15 minutes: The last three measures; **car free housing**, **car sharing** and **tele-working** were all discussed quite quickly.

1 hour, 50 minutes: When all measures had been discussed the **research questions** were discussed. As a final task the participants were asked to give their opinion about the simulation.

11.4 Simulation results

11.4.1 Discussed planning and MM instruments & measures

0-scenario

The simulation started with a one hour session discussing the 0-scenario, understood as the present DSDP. Through an A0-sheet of the area the present conditions were explained and the participants gave their contributions. Clarifications and corrections were made by the architect and author of the plan, Mónica de Blas.

A summary in Spanish of the 0-scenario can be found in annex 3, here is a short summary of the situation as we see it: The area is planned for 17.573 habitants in 6.276 households; 20 % are free housing and the rest are the so called public protection housing. Only 5 % of the dwellings are one-family housing and the rest are built in blocks.

Figure 41: Overview of the area and the distribution of the buildings (source: DSDP Los Molinos)

The accesses to Los Molinos by car are the following: from the east through the motorway to Andalucía A-4, from the south on the road Carpinteros in the industrial area Los Angeles, from the north through the district Getafe Norte on the street Juan de Borbon. There will also be access from the regional ring road M-45 on the road Teresa de Calcutta also in Getafe Norte.

The longest distance in the area is 2,5 km, diagonally from the southwest to the northeast, a distance possible to cross by walking or cycling. However the proposed road sections are not always adequate for pedestrian use.

The principal street has a width of 34 m and the secondary roads are 20 m wide. Those are very wide sections in order to obtain a calmed traffic situation. Apart from that a total of 12.625 car parking spaces are planned.

Regarding public transport in the interchange in El Casar at one side of the district one underground line and one regional train meet. There is also a proposal that one urban and one interurban bus line stop in the interchange after passing the area. In an attempt to estimate the future traffic for these conditions the modal split is the following: 25 % by foot, 28 % in private car, 42% in public transport and 5 % in shared car.

Before the start of the simulation some barriers had been identified:

- Low accessibility in the borders with other parts of Getafe.
- High motorisation in the future related to the high parking indexes in the area leading to less mobility by foot.
- A risk of freight through traffic from the industrial areas.
- According to the traffic study the entrances to the area are already at their capacity limit.

However there are also some good opportunities with the area and how it's planned:

- In general there are short distances to reach public services.
- Integration in the planning of sustainable mobility like bicycle lanes, traffic calming, coexisting roads and a mix of different activities.
- Existence of the interchange is a good opportunity for modal share.
- The Central Park could be a good opportunity for commercial uses and a point for gathering.

Discussion

The DSDP has already been approved and is in this state in the second phase of construction. Anyway this does not prevent discussion on what can be improved and in what framework and stage MM can be introduced into this specific planning situation.

In this section everybody was talking, asking and making suggestions and interventions. The most active in this discussion was the author of the plan Mónica de Blas, the municipal architect Armando García, the head of mobility Lorenzo Hernandez, the representative from the regional public transport company Domingo Martín and the traffic police Alfonso Serrano.

In summary the most important aspects discussed were the following:

Los Molinos has been planned as yet another 'normal residential' district of Getafe, with the intention to be as integrated as possible to the rest of the municipality and not a ghetto on the outskirts. This means that the accessibility to Getafe has been priority in the planning.

The design of the area: The Salón Central is located in between the blocks of multi-family housing, three blocks on each side, thus the street around the park has been displaced somewhat to the south in order not to create a direct pass from the access to Los Olivos industrial area to the east.

There was a question of why the *schools* have been placed in the corners of the area; far away from the centre and close to the ring road with higher noise and lower air quality. Apparently this is because the housing cannot be placed there due to noise restrictions while schools can since they relate to a higher level.

The *access to the centre of Getafe* has been a true problem to solve, especially the non-motorised ones. These connections have to cross the railway tracks, and also several other infrastructure services that have been placed in the same corridor to have it all concentrated. This makes it difficult to make underground access. Another problem is the lack of land to base a bridge; the gradient would be too steep. The solution is two underground accesses north and south of the interchange and the construction of the interchange as a permeable lobby open on two sides (Getafe Norte and Los Molinos) with the possibility to pass through on ground level. A comparative situation is the permeability to another residential area in Getafe, Sector III, with just two bridges, and both are located in the north part of the district.

The traffic police Alfonso Serrano.

Pilar Vega and Domingo Martín from CRTM.

Figure 42: Spanish planning simulation in Getafe on 18th of June, 2008 (photos: Caroline Mattson)

According to the technician of transport the width of the road section and the radius of the turns are too small so that a bus would not be able to realise a route through Los Molinos comfortably. On the other hand, and against what was just said, they think there will be a problem with the freight through traffic from and to the surrounding industrial areas. To prevent this, traffic calming should be intensified.

A new project not mentioned earlier is the *separate bus lane on the A-4*. It was discussed whether this bus lane could have an entrance and exit to Los Molinos, this would lead to a natural itinerary for an interurban bus to Madrid and to the south of the region. The largest problem is that the A-4 is the responsibility of the national government and it's very difficult to make them change plans. The node also only allows for traffic entering Los Molinos coming from Madrid –there is no exit lane.

The representative from the public transport company, Domingo0 Martín proposed an urban bus line from the interchange passing through Los Molinos and Los Olivos to Perales del Río.

The internal ring road around Los Molinos is thought to make it less 'natural' to chose the north-south axis Pinto-Resina which goes through the residential area. Degrading this last road to interior (though of primary level) it is less logical that it will be used by heavy transports going to and from the industrial areas. The idea is that the ring road will dissuade the heavy transport away from the residential area. The opinion from ETT is that the road sections of both the primary and secondary interior roads are too wide to really handle this problem.

It is likely that the traffic around the interchange El Casar will cause problems due to the high number of parking spaces planned in the Park&Ride and adding the traffic generated by the mall.

According to the traffic police there are large possibilities that there will be capacity problems in the access to the area, especially in the connection with Getafe Norte close to the interchange. This area already presents congestion problems at peak hours and the new residential area will probably increase it. Another access with insufficient capacity is the northeast exit where the traffic from Getafe Norte will converge with the traffic from Los Molinos and the industrial areas.

In general it's thought that the large amount of parking spaces, both private and public, will not calm the traffic but increase it. The problem is that the supply would be too good.

The municipal architect Armando Garcia.

Discussions.

Figure 43: Spanish planning simulation in Getafe on 18th of June, 2008 (photos: Caroline Mattson)

Mobility Management-scenario

As there is no possibility to change the road structure or the situation of educational and sports equipments or public services, the future scenario about integrating MM-measures is based on measures that could realistically be changed. Therefore ETT proposed the construction of a mobility office for the area, a general traffic calming for all interior roads and changes in parking management and better conditions for the sustainable modes of transport.

New proposals from the present DSDP are that the general speed limit is set to 30 km/h on primary and secondary roads and 15 km/h in coexisting roads and a pedestrian and bicycle network is introduced in the entire district. Inside the building plots the parking standard is changed from minimum to maximum parking standards, the total number of on street parking will be reduced including the parking lot at the interchange which will be reduced from 1.450 to 725 spaces. That space will instead be used to improve the public transport access, bicycle parking and as park&ride. The parking spaces on public roads will be relocated to areas away from the housing blocks.

As previously explained, the planned new segregated bus lane on the A-4 might be a new factor that would improve the public transport connections. The interchangeEl Casar will be converted into a more important transport centre of the area when all public transport modes meet there. This will be strengthened by the ETT suggestion to locate the mobility office in the station and when promoting trips by foot and bicycle and distribute them into the area, especially the Salón Central will gain life and attraction, transformed into the new axis of

movement. Hopefully the introduction of maximum parking standards will decrease the number of cars circulating the residential area giving more space to the residents.

The estimated new modal split doesn't show an extraordinary difference, but a little change is predicted: 27 % by foot, 22 % by private car, 7 % by shared car, 42 % by public transport and 2 % by bicycle. This new calculation shows a small shift away from the private car towards small increases in trips made by foot, by shared car and the appearance of the bicycle as a new mode.

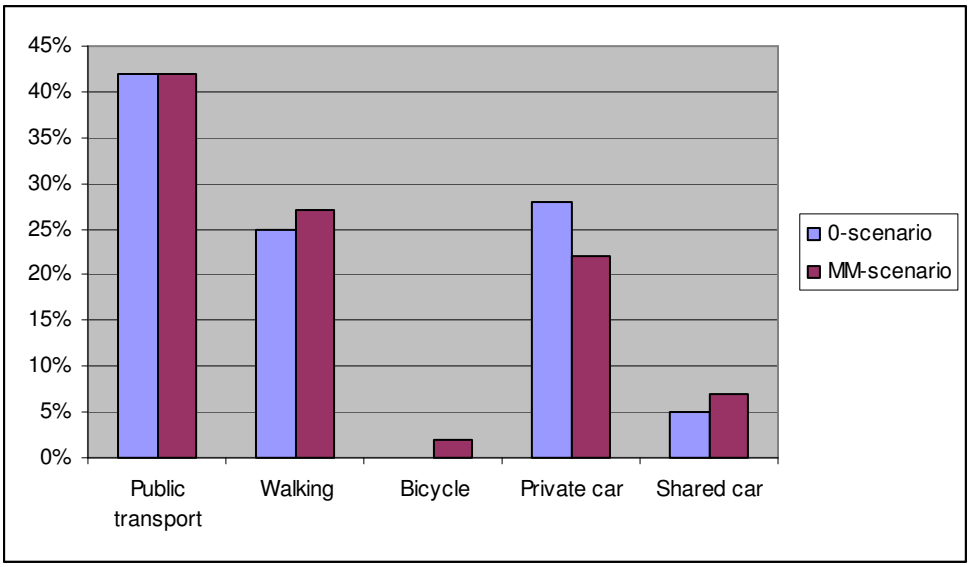


Figure 44: Estimated modal split for the 0-scenario and MM-scenario in Los Molinos (source: own calculation by ETT)

Mobility office

The aim of this measure is to construct a mobility office; both physically and administratively. This office would be responsible in organising and managing mobility aspects and MM-measures in the area, like car sharing, public transport promotion, maintenance of the public space and the pedestrian and bicycle itineraries, information campaigns and follow-up and evaluation of mobility indicators. The advantages expected for the residents is a better quality of life and better opportunities to choose mode of transport and for transport and planning authorities there will be a better distribution among the transport modes.

There is no law or planning instrument hindering a mobility office to be implemented in an area, but neither is there any document promoting its presence. One good option could be to include it in the **Conservation Association** (La entidad de conservación).

When a new residential area is built a Conservation Association is formed among the neighbours in the area. They write a contract with the municipality for a set time of year where they agree to manage and administrate all public spaces within the residential area; cleaning streets and parks, administrate garbage collection, illumination, etc. This means that the neighbours pay for the maintenance. Through this association there would be a possibility to integrate a mobility office, administrated by the inhabitants themselves. The problem is that the individual resident would have to pay more to the Conservation Association. This association is formed when the residents occupy their houses/flats so the mobility office could not be running before this time.

The barriers as we see it is that the mobility office would be a new, additional expense for the neighbours that they might not be willing to accept voluntarily. The neighbours have to be convinced that a mobility office would be necessary and would offer benefits to them. There is also a risk that the residents would already have

established their new local mobility habits before the office would really start working (probably some months from the start-up) . Therefore, the campaigning for alternative modes should start much earlier; if possible, the residents should arrive to their new home already knowing all the information available. Another barrier is that the budget is unknown; a mobility office would be a novelty in Spain and there are no calculations on how much it could cost.

So, legally there are no problems to establish a mobility office, but administratively it's more complicated. If the municipality would administer a "mobility central" they could be in charge of the creation of the office and of the initial campaigns.

Interchange El Casar and new public transport services

The existing interchange El Casar is placed right in between Getafe Norte and Los Molinos (two large residential areas), which offers a perfect situation to create an enhanced centre for sustainable transport. The aim is to improve the conditions for bicycle, pedestrian and public transport modes and the access to the place where they converge. To increase this image we propose that the parking spaces for cars are decreased to half of its current amount and that some of the spaces left are reserved for car sharing cars. The released space should be used for guarded bicycle parking and to improve the accesses for non motorised trips.

The legal framework determining who has the competence to locate and construct the interchange is decided by one national and one regional law.

- **Real Decreto 1211/1990 de 28 de septiembre que aprueba el reglamento de la Ley de Ordenación de Transporte Terrestre** (Order in Council approving the Regulations in the Law of Ground Transport Planning)

- **Ley de Creación del Consorcio Regional de Transporte Público Regular de Madrid del 5/1985** (Law of the Creation of the Regional Consorcium of Public Transport in Madrid)

The responsibility to develop the interchange are divided between:

- The municipality which has the responsibility in terms of land. In order for Renfe (National Railway Company) to make accesses and parking in the interchange, Getafe has to give them a construction and execution licence.

- Consorcio Regional de Transportes has responsibility for the regional public transport planning. They have to give authorisation of new public transport lines and are also in charge of the coordination of the time schedule between trains, underground and buses.

- Renfe has the responsibility for constructing the physical station and the parking.

- And lastly there are private concessionaires who have responsibility for urban and interurban bus line services.

One of the most important **barriers** is to establish a good coordination between all these competences; first between local and national level in the construction phase of the interchange and later between regional public administration and private companies to improve the service during operation.

Regarding the integration of new public transport services the main barrier is that the companies aren't willing to invest in a new route unless they know there will be a high demand of users. Despite this the CRTM has drawn plans on an urban line going from El Casar to Perales del Río via Los Molinos. The first plans include a tramway but this could easily be changed to bus as well. This would probably be a cost-effective line since it passes through the industrial area Los Olivos on the way. Another alternative is to extend an existing bus line and change slightly the present route.

The most logical location for a mobility office would be at the interchange El Casar, this is in order to reach as many people travelling as possible. They could also be a key in the negotiation between the responsibilities to improve the service even more.

According to the participants it is important to make sure that a bus line has the right combination of being fast and stopping at few places but still covering as much population as possible. An example is the problem with Perales del Río which has a bus line no one uses since it takes double the time to make a journey to Getafe than by car.

A discussion was opened about the possibility to put into service public bicycles in El Casar, not for residents but for workers in the industrial areas who arrive by public transport. However, there were different views; the mobility department thought there would be low cost-benefit from this intent, although IDAE told us about good experiences in other cities. IDAE also thought that the bicycle should have a distinctive situation in an intermodal public transport node and in schools, enjoying a higher priority than the car.

Walking and bicycle network in Los Molinos

The reason for the creation of a network for pedestrians and cyclists is that all residents should have the possibility to access any part of the area without using a motorised vehicle. The topography and the distances are very favourable for these movements as it's almost flat and the longest distance to cross from one end to another is 2,5 km. In order to create a district within the municipality of Getafe the connections to the municipal network are as important as the interior one. Besides the bicycle network it is also important to establish secure and easy parking facilities on both sides of a trip: at home and at the destination.

There is no legislation regulating the construction or no construction of these itineraries, but there are some new **strategic reference frameworks** at different levels, although still not legally binding.

- **PEIT – Plan Estratégico de Infraestructura de Transporte** (Strategic Infrastructure and Transport Plan) at national level. This plan is still waiting to be approved as a legally binding framework. Within the strategy guidelines treating non-motorised vehicles has been developed a promotion strategy for healthy modes of transport.
- **Plan CIMA – Plan Regional de Vías Ciclistas y Peatonales de Madrid** (Regional plan of cycling and pedestrian lanes) at regional level. This plan has the aim to develop a combined network of 1.400 km of lanes until 2016 in the entire Region of Madrid, although more of recreational character.
- **PMUS – Plan de Movilidad Urbana Sostenible de Getafe** (Sustainable Urban Mobility Plan) at local level. Proposals have been developed for a local pedestrian and cycling network. The aim is to increase the internal movements by foot up to 60 % and make the bicycle an actor to count on in mobility. The 8 pedestrian and 13 bicycle itineraries connect all residential areas and major transport nodes and attraction centres (e.g. industrial areas, university, hospital, city centre, shopping centres). Other ambitions are to achieve a nice and secure public space for the neighbours, accessible for everyone.
- As for the pedestrian itineraries they should be adapted to the technical requisites established in the 2nd norm of the regional law Reglamento 13/2007 developing **the Ley 8/93 de la Comunidad de Madrid "Itinerario Peatonal Adaptado"** (Adapted Pedestrian Itinerary).
- As said before, there is no legislation that forces the integration of bicycle lanes in a new area and if it's mentioned in any planning document it's often expressed in very vague terms. Despite this the authors of the DSDP have opted for the integration of bike lanes in the road structure.

Concretely one pedestrian itinerary from the SUTP, nr 5, would go through Los Molinos on its way between Caserío de Perales and El Bercial (Getafe Norte) and a similar route for cyclists connects Perales del Río, Los

Molinos, El Bercial and the University Hospital. The SUTP also considers a network of bicycle parking at each transport node and major attraction centre –the DSDP doesn't consider any.

In the **Urban Normatives in the General Urban Plan** guidelines can be established for bike lanes and pavements; both technical characteristics as width, type of lane and type of pavement as requisites of a new area must fulfil in terms of access and connections to public services and a larger network.

The participants agreed that the **main problem** for changing habits towards more trips by foot and bike is cultural, which means that campaigning is a key action. But first of all the planners must start thinking of the bicycle as a daily means of travel and not only for recreation. Angel Cediel from IDAE, said that it's important to create the bicycle culture through the children; they are the entrance for changing behaviour.

As well as integrating guidelines for bike lanes, there is no problem to redistribute the use of the streets to give more space for bicycle or pedestrian infrastructure or green spaces. More than a legislative problem it's a problem to maintain these spaces from being invaded by parked cars. Large resources would have to be set off in order to cope with this problem and if there is little use of those spaces and at the same time problems with parking, the public opinion will be against the redistribution.

There was a discussion about how the everyday cyclist could be integrated into the existing traffic network, mainly within the boundaries of Los Molinos. The architects and developers thought that it would be enough to calm the traffic and make cars and bicycles share space. However from a traffic planning point of view we think that in order to create an initial cycle habit, especially focused on children, it is necessary to separate the users and guarantee a minimum of safety.

BICYCLE PARKING

Bicycle parking became a quite hot discussion subject, this is why it is treated in a separate section from the network. There are **no norms** either in regional or local planning hindering or promoting bicycle parking; neither on-street or inside a block of housing.

First of all there should be a secure guarded bicycle parking at El Casar, easily accessible and with all commodities for changing.

The discussion started with a proposal from IDAE about introducing bicycle parking inside the residential buildings – not any kind of space, but proper parking. Surprisingly the participants were very much in favour of this measure and ARPEGIO told us that when they make the specifications of a tender of a project on public housing, they valuate the inclusion of a bicycle garage on 25 % of the total score of the tender. As a norm they require between 10-25 % of parking spaces per dwelling. In the specifications they put emphasis in that the bicycle garage must be a room intended for only bicycles and no other objects, so that it can't be converted into yet another storage room. They also assess the easiness to access the garage; preferably it should be situated in the basement floor -1.

The accessibility to the garage was thought as one of the most important aspects, because if it is difficult to enter or exit with a bike, the residents will not use it and the storage room or even the bicycle will be forgotten.

Regarding the number of parking spaces per dwelling, all of the participants thought that 1 space per dwelling is too much at this moment, and that 1 place per 4 dwellings is a reasonable number.

Parking management

There are three aspects of the parking management; parking in residential blocks, parking on the street and the Park&Ride at the interchange.

PARKING IN RESIDENTIAL BLOCKS

The most important legislation regarding parking management is the **regional framework Ley 9/2001 del Suelo de la Comunidad de Madrid** (Law of soil in the Region of Madrid) which says (for residential buildings):

> "For each 100 m^2 of constructed area there should be at least, 1,5 parking spaces, always in the interior of the private plot. The minimum assignation of parking spaces should be maintained although the use of the space is changed."

The municipal planning has to follow the standard set up in the regional law, later on the DSDP develop these standards. As can be seen in the above quote there is little room for negotiations about number of spaces and locality.

The interpretation of the law is very complicated, including for the professionals present at the simulation. The discussion was always oriented towards public protected housing, since it would be easier to change these standards or put up new criteria for this type of building than for private ones. One of the problems lately is that the constructors build more parking spaces than they have to, usually 2 spaces per dwelling, and we tried to find out why. We think that the conclusion was the following:

The constructor asks the municipality for licence to construct a residential building. The licence has only to be solicited for habitable spaces. Habitable spaces have to be situated above ground level. Parking spaces are not habitable and if they are not situated above ground level they can't be converted to habitable space. That means that for parking space below ground level the constructor doesn't need permission and the construction doesn't "count". If it doesn't count the constructor doesn't have to pay for the permission, -BUT owns the spaces and can sell them. This is the reason why the constructor is always eager to construct as many parking spaces as possible; it will always be profitable. One parking space in Getafe costs at the moment between 25.000 and 35.000 euros.

At present, for new housing areas, the normal standard is to construct 2 parking spaces linked to each dwelling. The number 1,5 spaces has always been something of a puzzle: what do you do with "half" of a space? When selling the flat the parking space(s) is included in the price. So the next question is if it would be possible to disconnect the parking space from the dwelling. According to the architects at least one parking space has to be linked economically or physically to the dwelling, it has to do with the division of the property for the tax registration. However the question if the constructor can oblige a resident to buy 2 spaces or just 1 was unanswered. There are unconfirmed indications that it is illegal to force a resident to buy 2 parking spaces per household and that it's possible to disconnect the second space. However the buyer has to bring a lawsuit against the constructor in order to be disconnected from the space.

The municipality and the solicitor can put requirements from the constructor, always within the regulations, in order to control the number of parking spaces constructed.

There was also a discussion about the possibilities to construct a separate parking building away from the residential area, still with a parking space linked to the dwelling. They compared it with requisites of certain equipments and public services that have to be built in a new area. But the final conclusion was that the constructor would not be given the licence for such a proposal.

PARKING ON THE STREET AND THE PARK&RIDE

Apart from the parking policy in private blocks, the number of parking spaces on public roads is over dimensioned. There are **no regulations** controlling this number, and the developers usually plan for two on street spaces per dwelling added to the two spaces inside the block.

According to the regional environmental strategy the local administrations can make demands on public parking if they wish; e.g. that all new parking should be preceded by environmental impact assessment or traffic assessment study. But it's always up to the politicians to take that decision.

Even if this is what the architects plan; there was no real opposition against decreasing the number on the street from the participants, especially at the Salón Central, to remove them completely or to move them to a more invisible location on the outskirts of the district. The only request they had was that some spaces had to be left for visitors and handicapped.

Another issue is if establishing parking fees or not in an area is a good idea. Everybody agreed that the Park&Ride at the interchange should be submitted to a fee; with exceptions for car sharing cars and for commuters with the public transport. Applying a fee on on-street parking is a different subject not so well perceived; in the centre of Madrid a general parking fee was introduced some 10 years ago, the area was increased a couple of years ago, with large protests as a consequence. The situation has not been handled very well administratively that is why there is a strong general opposition to it. Local policy makers in other municipalities are very cautious when talking about putting into service a similar fee.

The suggestion of reducing the Park&Ride at the interchange didn't lead to any real discussion. It was approved since the land would be distributed to other uses, like better access by public transport.

CONCLUSION ON PARKING MANAGEMENT

As a conclusion we can say that the main barrier is the regional legislation, this has to be changed if there will be any possibility to introduce new parking standards. It is assumed that all citizens when buying a house want to have a parking space included, but there is no investigation that confirms it. What is sure is that the constructors don't want to change the legislation to maximum standards since they are making a good profit on selling the parking spaces. One thing not mentioned before is that the legislation is regional and each Autonomous Region has developed its own standards. Therefore the situation can be different for other places.

In Spain it's seen as a personal right by many people to be able to drive their car for all types of trip and be able to park in front of their own door, especially in smaller cities. The question is if people will continue using their cars if they have to park it further away or if it's difficult to find parking. According to the participants the use of the vehicle would probably be lower.

Traffic calming area

The aim with the measure is to create safe spaces with pedestrian priority; not only safer regarding the speed but also regarding the amount of cars you can see on the street. Considering traffic calming areas, as in the case of bicycle and pedestrian network there is **no legislation** regulating its existence. The general traffic circulation is regulated in the Order of Council approving the General Circulation Regulation.

In the DSDP the coexisting area is reduced to the northern part where the one-family houses will be built. The rest of the area is included in the 30-area except for the principal street and the ring-road. We propose to extend the coexisting area to the multifamily housing as well and to include the principal street into the 30-area. In the SUTP the proposed speed limits are 20 km/h in a coexisting street and 30 km/h in the rest. We propose to lower the first limit to 15 km/h.

A good proposal, which was widely accepted by the participants, was to create a safe axis between the schools and the housing with pedestrian priority.

No one was against this measure, but thought it was a sound action. The discussion was concentrated on how to actually achieve traffic calming. As in many countries in Europe we live in a speed culture and we are always in a hurry. The usual speed bumps were not popular among the planners, especially the representative from CRTM

due to low acceptance from bus drivers. Angel Cediel informed about other types of measures which are "kinder" to the vehicles, like ears on the pavements and other kinds of paving, but still effective in lowering the speed.

There is a general opposition against areas full of cars, but due to what they call the "cultural aspect" it will be difficult to avoid that cars park on the pavements. This can only be achieved by legislation a tough follow-up by the police and fines.

Car free housing or housing with a low use of the private car

In this section it was proposed to change one of the blocks for young residents of the public protected housing to a block without cars. The conditions that were put were: close situation of shops and schools and sports facilities in the area, good public transport service with the city centre and the rest of the network, access to a car club, and car parking outside the block reserved for shared cars, visitors and handicapped.

The only legislative framework is for the parking management. In Madrid it is not possible to locate the parking spaces outside the housing block.

When this subject was first raised it was **met with scepticism**, the participants thought that there were too many conditions that had to be fulfilled, that in Spain this would never work, although they agreed that young residents housing (Vivienda jóven) would be the best place to start with. If it is successful there, then new areas could be explored.

The idea of not having access to a car was not appealing to any of them and they didn't think there would be a market for that. It would be too extreme to try to force people not to use the car.

The **main barriers** as they saw it would be first of all to change the regional parking legislation and secondly to convince the developers that there is a market for car free housing; two invincible aspects at this stage.

Car sharing and car pooling

When first preparing the simulation, we thought of two parts of this measure: the creation of a car club in the district (car sharing) and the creation of a car pool system (were two or more persons share the trip in one of the participants own car). Finally just the second part was proposed – the car sharing scheme – even if both measures were discussed.

There is **no legislation or regulation** to start either of the measures, and it's an unknown phenomenon in Spain. Some cities have tried to start car sharing schemes, but few of them are actually working or up dated. In Barcelona, however, a successful car club is working, the only one in the country, and there are a far-reaching plans to start up one in Madrid.

IDAE thinks that a car club is a good solution in areas with a lot of parking problems (like the city centre of Getafe), however it will not work starting a car club in a small district unless there is a bigger organisation behind it in the region. Therefore it's better to wait until the club in Madrid is consolidated and then gradually extend it to other areas.

Regarding car sharing where more than one person shares the trip in the same car, there were various opinions. In general the participants didn't believe in the idea, the independence of the individual was the most common argument. The best possibility for it to be successful is with trips to work, e.g. they didn't believe in car sharing to school.

The **cultural barrier** was expressed as the Spanish mentality to be the owner of something and to show it, they are not a sharing people and it's still a status to have a car, the bigger/more expensive the better. In other cultures

it's normal to share household goods, like the washing machine, in Spain this is unthinkable. Despite the desire to be the owner there are many cars that are "never" used.

An administrative barrier that might be important for the creation of a car club might come from the municipality; if less people own cars they will lose taxes. Every car must be registered to a municipality and that brings money. It's also important to have in mind that this is a new system which can be difficult to implement in the beginning.

Tele-working

The last measure treats the possibility of establishing a tele-working centre in Los Molinos. In this centre the neighbours would have at their disposal all instruments they need for conducting their work without being at work. A proposal for tele-working centres has also been made in the SUTP. The residents would gain in having more free time as they don't spend time travelling and be less stressed as they don't suffer from traffic incidents.

However, **the participants were quite sceptical**. They didn't think there would be too much interest from the Spanish population (cultural issue) and that it's not their responsibility to establish this centre. It's up to the employers to decide whether they will allow their workers not to attend the work place and how to solve the working conditions. The lack of interest from the municipality would be the largest barrier.

In order to legislate the right to tele-work, more than a question of in what planning instrument it should be introduced, it's a matter of discussions between companies and collective contracts (like trade union contracts).

11.4.2 Acceptance for Mobility Management

In general the participants were more open to the integration of MM-measures than we expected, and they all agreed that it's a good approach to plan mobility aspects at the same time as the urban planning is done. It was clear the architects and urban planners had little or no knowledge about several measures we talked about. Nevertheless they didn't have any problems to take in the new information and give favourable responses. The DSDP seemed to be a very interesting subject and mixing personal opinions with professional experience it led to very interesting and beneficial discussions.

Mobility office

It was clear that since this was the first measure taken up after the initial discussion about the DSDP, they were still trying to figure out the general meaning of MM.

The measure was not commented on greatly, but it was considered a good measure that could play a big role in the future mobility. The suggestion to integrate the creation into the Conservation Association came from ARPEGIO and it's remarkable that no one from the city hall said that it could be the responsibility of the municipality. Of course this would be an extra expense for them too.

The measure was seen as indispensable for successful planning, but I don't know if they really understood the dimensions it could have.

Interchange El Casar and new public transport services

The general opinion was that the interchange had large possibilities to be a natural travel centre in the district, concentrating the mobility office and making all sustainable transport activities be gathered there. This is a typical example of a DSDP not taking into consideration the actual benefits of the interchange. The interchange

is drawn in the DSDP, but there are no stipulations of its actual task. And since the public transport is not included in the DSDP or traffic assessment study a lot of information is lost.

As a planning measure, this was easier to understand for the participants, and they had a lot of ideas of improvements. Certainly, including more information about mobility in the DSDP would improve the result and be a source to better mobility, but it would not change the planning process in itself.

The most participating persons were Alfonso Serrano, Lorenzo Hernandez and Domingo Martín.

Walking and bicycle network in Los Molinos

As for the above described measure, this is also mainly a planning measure. The most important change in planning would be to integrate it into the DSDP from the beginning and in the traffic assessment study. If it's taken into consideration seriously from the beginning by the local authorities, then it will have more support among the citizen.

The traffic police was the least enthusiastic regarding the redistribution of space from parking to bike lanes or pavements. He recalled incidents from his experience as a professional as the most important motive.

Parking management

The discussion around maximum parking standards was very interesting; traditionally in Spain in general and Getafe in particular, the number of parking spaces has been increased as much as possible in order to solve the deficit. This discussion made them open their eyes. However they didn't think it would be realistic with the present conditions; neither legislative nor acceptable by the citizens.

It was thought that parking management in general is one of the most effective measures towards the use of cars. In the case of establishing a fee for on-street parking, the municipal representatives were quite reserved; on the other hand IDAE thought it would be a very good, if not necessary idea. The representative from IDAE thought that parking management is a good control to positive segregation, allowing car sharing cars park for free, although this need a tough enforcement to work.

Traffic calming area

Even if it wasn't discussed I have the impression that they thought coexisting roads and 30-zones should be included in the municipal planning with the technical conditions explained. The safety for children and residents is of highest importance; however the maintenance of calmed traffic is something adequate for the mobility office to study and carry out.

Car free housing

As mentioned in the previous chapter this measure was not seen as a realistic one. If it would work though, it would certainly influence on the traffic situation, but until it is performed and evaluated they didn't think it would be a good approach for Spanish conditions.

At the moment the Spanish citizens are not interested in buying a house without parking space, not even people without cars, since in the bottom they think the car is indispensable; young people look forward to when they will form a family and families already have at least one car.

Car sharing

This is a measure that won't be introduced in the planning process, it's something the mobility office should organise and promote. The participants think it's questionable if any of the measures would really make any change in the transport situation; it's more of a back-up measure that doesn't make any harm.

The representative from IDAE was the only one thinking that especially the car club could be the future.

Tele-working

Not commented.

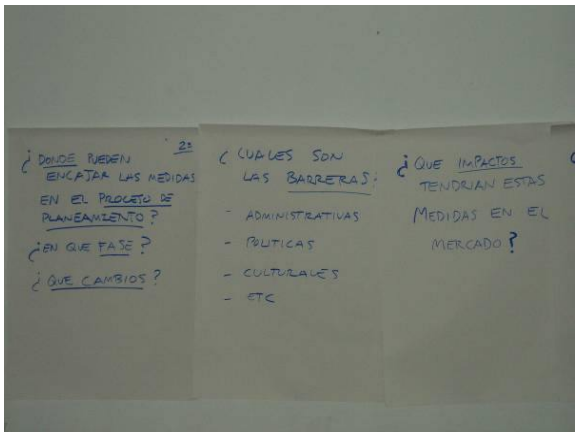
11.4.3 Description of other results

The last part of the simulation was a kind of result of what the participants had learned during the day. They knew more about the subject and each measure and talked with more self assurance and conviction.

There was a slight misunderstanding between ETT and the head of mobility when we first talked about the simulation and asked if he would be interested in participating. The word "simulation" in Spanish is more related to modelling traffic systems so he thought we would present a programme "solving all the needs for Getafe with a simulation model". It took us plenty of effort to correct this mistake and try to motivate him to attend a "workshop about mobility and planning".

During the simulation input was made about the different measures to increase the knowledge and to show experiences in other countries. The representative from IDAE was very up to date on many MM issues (he is coordinating several SUTP, public bicycle projects, etc.) and was a great inspiration for the others and help for us.

At the end of the simulation.



Some of the final questions.

Figure 45: Spanish planning simulation in Getafe on 18th of June, 2008 (photos: Caroline Mattson)

How can these measures change the planning process?

It's clear that the model of a city that we chose will be reflected in the mobility; if it's a disperse city with long distances or a dense city with all services close to the residence. A measure that changes the initial planning conditions will also be reflected in the mobility.

It's necessary to change the regional law of land use since many of the normatives for local planning has to fulfil the regional guidelines. This is especially essential for parking management; at the moment there is little room for own interpretation of the parking standards for the municipalities. If they want a low standard the only thing they can do is to accept the minimum one decided at regional level and make it maximum.

The representative from IDAE told us that a national mobility law is being written at the moment. This could be a new framework for mobility management at local level, if the law resembles the Catalonian Mobility Law, which has established among other things, the obligation of making a SUTP for all municipalities larger than 50.000 inhabitants.

He was also a little sceptical towards all types of existing laws – environmental, planning, transport, etc. They should all be in one framework, a master plan that combines all competences of the municipality and substitutes the existing frameworks. A common framework increases the opportunities to integrate MM into planning.

In what stage of the process should the changes be introduced?

The MM-measures and the integrated planning should be done as early as possible in the planning process. If possible, the different standards for planning and mobility should be defined in the General Urban Plan. Finally, it should be outlined in the DSDP.

There is nothing hindering the MM-measures from being introduced during the whole planning process, but to get a better basis and acceptance, the sooner the integration the better.

The General Urban Plan together with the local SUTP should be the framework for sustainable mobility. They are two instruments that work on local level and that should be compatible. As at this moment the SUTP is not a legal framework, a suggestion is to increment the scope for the traffic assessment study and integrate it better into the DSDP.

Which are the barriers for the implementation of MM-measures?

The most important barrier is t cultural; all decisions, political and administrative, are finally decided based on cultural values. Strong campaigning is needed to change the cultural values and probably also obstructions to use the private car and facilities to use other modes.

As far as for political barriers the participants admitted that there is something called fear to fail and fear not to be re-elected. It can be seen e.g. in the change of attitude during the legislative period. At the beginning they dare to act more than in the end, especially when it comes to short-term measures. If the measure has to be introduced over a longer term this situation is less accentuated. If the mayor is very charismatic this barrier can be overcome.

What impacts could these measures have on the market?

If new standards and requirements are established from the authorities the developers are very flexible and adapt fast to these new conditions. They always manage to turn a new regulation in their favour. Establishing maximum parking standards or promoting car free housing wouldn't have that much effect on them on the long

term; they would find a way to get benefits from it. The biggest problem is to convince the legislative entity to regulate in favour of sustainable modes of traffic.

What the residents would think wasn't discussed, but a typical Spanish characteristic is to be strongly against every new measure suggested –especially issues that would change their habits or the habits of other people- but they consent quite rapidly when it's implemented.

11.4.4 Simulation as method

Missing persons

The representative we missed most during the simulation was someone from the real estate company and more people with a developer role. That would have given a better balance between the private and public sector and between the planner and constructor side. The missed attendance from a constructor or real estate representative led to that we didn't ask for the constructors' role in the planning process nor what they thought about the pay-off of measures.

The participants thought that someone from an accessibility or handicapped association would have been interesting.

A third group that wasn't represented was the future users.

What worked well?

One basic thing I think was to "open up" the people – to make them willing to speak and express their opinions. This was done in the beginning when discussing the present DSDP. The most important result was that all participants were set on the same level of knowledge about the area, even the ones coming from outside of Getafe like CRTM and IDAE and had never participated in the planning process. Secondly an openness to express opinions was established, where everybody asked and contested without being nervous.

A second aspect was to discuss the DSDP from a mobility point of view. Since there was such a large participation from architects and planners, they needed to hear the mobility aspects in the planning. Usually they don't think of the consequences for sustainable mobility their thoughts can have.

I think the level of discussion was high, with everybody participating and trying to really understand each measure and which benefits they could give.

What did not work?

It took some time to make the participants understand what the meaning of the simulation was. During the first two measures there was not so much discussion or opinions. Even if I think the transition from the "0-scenario" to the "MM-scenario" was soft, it took some time for the participants to react. We took a break and after that it became better. Maybe it was because of the subject, new public transport services, or maybe because they needed a break.

Suggestions for improving the method

We didn't ask the research questions after discussing each measure but waited until the end, to make a more general conclusion of the simulation. Maybe we didn't get too much detailed information because of that, but we think we got more dynamism into the discussions in this way.

In order to get a fruitful discussion I think the participants need to be prepared; on what the simulation is and the goals with it and also on the subjects. Here are two suggestions of how to reach this:

- Divide the session into two, separated in time: The first one preparing them with the initial state of the planning, the different measures and some first questions or ideas to solve barriers. The second one going more into depth in the measures, the legal conditions and what could/should be changed and a final action plan or conclusions. In this case the participants can think of new ideas and search for information in between the sessions and come back with more constructive ideas.

- The creation of a programme for administrations and developers. IDAE has launched an educational programme called Administrative Education towards Municipalities in Mobility directed to local administrations. Lessons about an integration of planning and mobility and new ways to collaborate could be included.

The participants asked for a more visual model, more technical, of how it can be "before and after" the planning, based on the conclusions drawn. This could also serve as an instrument for correction of the plan and for the follow-up when the plan is approved and being constructed.

The simulation should be done in the first phases of the local planning. According to the participants the best way to get acceptance for the measures would be to integrate the measures as soon as possible – already in the general urban plan on municipal level and if possible integrated in the guidelines in the regional planning.

However it's difficult to normalise the execution on an administrative level. The planning process consists of many parts and the ones responsible have to have a very high knowledge about the process. It will be hard to find persons that are competent enough to handle a simulation process within the planning process.

Valuable method

First of all the simulation is useful for the integration of mobility, planning and environmental aspects in the process of writing any of the local plans; the General Urban Plan or the DSDP. The participants think that it would have been very useful to have this kind of simulation or meeting before the approval of the plan. Then all aspects can be taken into consideration from the beginning and the integration will have a better basis. The participants asked why this kind of simulation hadn't been done before.

After the simulation it has come to our knowledge that the debate had a very good learning impact. The concept of controlling the number of parking spaces in building and the maximum parking standard were new for most of the participants. The author of the DSDP, Mónica de Blas, is at present writing another DSDP for an area in another Spanish region, and has managed that a block of houses is made without parking places in the building. After talking to several persons at the city council, one of the government employees said that it would probably be possible to separate the parking spaces from the dwellings. (More details are expected after summer holidays.)

Also the man from IDAE, Angel Cediel, has said in the introduction to a national conference that the simulation was a very interesting way of looking at the integration of MM-measures into planning and that he had learnt a lot from the session.

Opinions from the participants

As a final task we asked the participants to give their view on what they thought about the simulation, if it could be a useful tool in the planning process and what could be improved. Below you find some of the opinions:

- I think it has been very interesting. It's a useful tool for urban planning. It's important to make it interesting for the stakeholders that participate in the planning. It has been very good that the traffic police officer has participated and shared his knowledge around mobility problems in the area.
- The session could be very useful:
    - As a previous study before any planning process has started.
    - As a follow-up to ongoing urban measures.
    - In order to adjust corrective measures at any moment of the planning.

  It will be necessary to define pilot actions, modelisations, to evaluate the decided criteria.
- Interesting, useful in the initial phase but it should take into consideration the revision of the mobility with respect of time. It should be possible to improve and revise the criteria and objectives. Try to achieve a revisable link.
- Useful and necessary method that should be a basic element in the preparation phase of the planning of urban developments.
- Participation processes are very interesting always and when all significant stakeholders are present; social, technical and administrative, etc. and when the process (simulation) is implemented in the initial phase of the design of the measures.
- Good methodology, maybe necessary with more social stakeholders. It's a good prevention tool. Would be necessary to instruct the responsible public workers to evaluate.
- This instrument is useful and necessary and a lot more if it was done before the realisation of the planning process.
- Useful, necessary, interesting but difficult to normalise on administrative level.

11.5 References

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12 Annex V: Country report Slovenia

12.1 Introduction

12.1.1 Purpose of this report

This report presents the results of the third step of working stage (WS) Simulation: Execution of planning simulations in Slovenia. According to the WP D research plan by using a planning simulation, the possibilities of the integration of mobility management (MM) in the process of planning of new or renewed buildings and sites were explored in the context of concrete cases, each grounded within an actual planning context. Two planning simulations took place in old Member States (MS) (Germany, Spain) and three in new MS (Slovenia, Lithuania, Poland). In the reported planning simulation the identified best practice MM measures and supporting measures were selected and their transferability to Slovenia and its planning system was analysed.

12.1.2 List of abbreviations

DRSC	Direkcija RS za ceste (Slovenian Roads Agency)
FCCT	Faculty of Chemistry and Chemical Technology
FCI	Faculty of Computer and Information Science
GURS	Geodetska uprava RS (The Surveying and Mapping Authority of the Republic of Slovenia)
HFS	Heavily Frequented Sites
LPP	Ljubljanski potniški promet (local PT operator)
LUP	Land Use Planning
MM	Mobility Management
MOL	Mestna občina Ljubljana (Municipality of Ljubljana)
MOP	Ministrstvo za okolje in proctor (Ministry of the Environment and Physical Planning)
MS	Member States
OPN	Municipal Spatial Plan
OPPN	Občinski podrobni prostorski načrt (Detailed Site Development Plan)
PT	Public Transport
SUTP	Sustainable Urban Transport Plan
TIA	Transport Impact Assessment
WP	Work Package
WS	Working Stage

12.2 Preconditions

12.2.1 State of LUP and transport integration

Land use plans in Slovenia are prepared by municipal departments of spatial planning. Municipalities are responsible for determining goals and guidelines for spatial development in a municipality, the use of space, setting requirements for approving interventions into space, and taking decisions concerning spatial planning of local importance.

Municipal administration departments are also responsible for transport planning at the local level. In practice, strategic local transport planning is undertaken by departments of spatial planning in most municipalities, within the scope of municipal spatial plans, while transport departments fulfil operative tasks which are often independent of strategic guidelines. There are no examples of integral local transport strategies or sustainable urban transport plans (SUTP) in Slovenia. Strategic elements of transport planning are included in spatial strategies only, and they almost exclusively concentrate on infrastructure which makes them incomplete (no MM).

The integration of spatial and transport planning on a national and municipal level in Slovenia is poor. On the conceptual level, spatial acts contain several up-to-date policies which originate in the integration of spatial and transport planning. Many difficulties were shown in implementation of these acts, especially in an environment without a comprehensive transport policy which supports competitiveness of the private car and in which activities that generate much traffic are often located at areas only accessible by private car use. The Spatial Order of Slovenia, for example, determines that central activities should be located in close vicinity of public transport (PT) nodes and that development e.g. shopping centres, universities and intermediate and primary schools should be accessed by PT. It suggests that a five-minute walk should be assured from residential areas, mixed areas, special areas and social infrastructure areas to PT stops. Bigger cities like Ljubljana have incorporated this idea into their spatial strategies, yet the success remains low because the plans do not prohibit development at other locations. PT corridors and nodes alone do not sufficiently sustain development in the existing city transport policy.

12.2.2 State of local (and if relevant regional and national) transport plans as they affect this site

As stated above, the city of Ljubljana doesn't have a comprehensive and formal transport strategy. Strategic elements of transport planning are included in the spatial strategy and plan only, and they almost exclusively concentrate on infrastructure. Sustainable development is one of the important guidelines in drawing up spatial acts at state and municipal levels. Unfortunately, guidelines are not directly transferred into measures and are not implemented. One good example of this is the development of transport and spatial planning in the capital town Ljubljana. For the last 20 years, its spatial plan has contained a strategic guideline to replace car transport with PT and non-motorised transport means. In all these years, the re-introduction of a tram was planned, as well as accelerated development of non-motorised transport and renovation of the city centre which could be accessed by PT. Development trends of the city transport, however, took a different course than planned. Transport policy in the city supported the use of cars, which resulted in a sharp decline of PT. The city centre experienced a significant regression, the inhabitants decreased some 10 %, and the activities (especially shops) were transferred to suburbs and into the surrounding municipalities. Lately, some new trends have been seen which give hope of changes for the better. The city centre is being closed to motorised traffic in spite of a planned increase in parking places in the centre and on its boundaries. Solutions are being searched for enhancing the offer of PT and non-motorised transport means.

It is important for the simulation that no document exists which would define parking policy in Ljubljana or development of PT. A long-term development of PT is defined in the spatial plan, yet no changes have been made in the last 20 years in this field. So, modifications of bus lines do not result from strategic decisions made in the city, but from ad hoc initiatives of a PT operator.

12.2.3 Local transport data

Current state and trends of traffic has been described in detail in a study carried out in 2003. The document analyses different aspects of travelling habits of the inhabitants of the wider Ljubljana region, and in detail of the inhabitants of the Municipality of Ljubljana.

The results of the study show:

- level of car ownership is 1 car per 2.27 inhabitants of the Municipality of Ljubljana and 1.89 inhabitants of the region,
- mobility is 3.1 trips per inhabitant per day in the municipality and 2.5 in the region,
- 33 % of all trips are related to work and education, the rest is related to leisure time activities, shopping and other; percentage of trips related to work and education is decreasing.

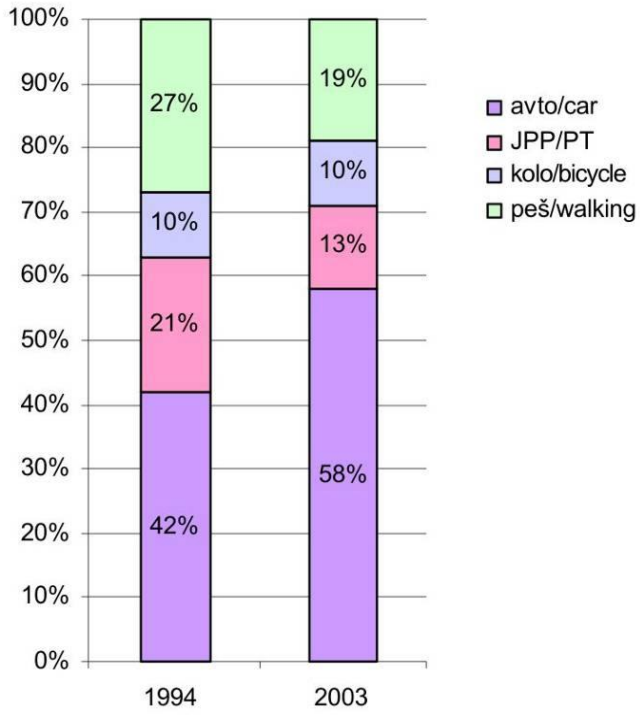

Figure 46: Modal split in Municipality of Ljubljana 1994/2003 (source: MOL, 2003)

The above graph shows changes in modal split between the years 1994 and 2003. These changes indicate new trends in Ljubljana urban traffic, namely a large increase of personal car traffic to the detriment of PT and walking.

A representative of the PT operator has pointed out that the present state of PT, according to several factors, is not so bad. The network of PT stops in the region is well developed and this situation is intended to be maintained and further improved. The problems are travelling times because present PT is not comparable to other transport modes owing to low speeds.

The university with over 60,000 students, 6000 employees and its faculties scattered all around the city, presents an important traffic generator in Ljubljana (270,000 inhabitants). Students are rapidly becoming car-users in the last few years and this problem is more and more obvious with traffic jams every October when the new semester starts.

12.2.4 Legal situation

No legal reasons were identified why some of the possibilities for integrating MM and LUP found in the WS1 report cannot in fact work.

12.3 Simulation site description

12.3.1 General information

The simulation site is situated within the outer ring road of Ljubljana, approximately 3 km west of the historic city centre. Landscape Park Rožnik, an important recreational area, is in close proximity of the site.

Figure 47: Macro location of the simulation site within the City of Ljubljana (source: GURS, 2008)

Figure 48: Micro location of the simulation site with regard to the city centre (source: GURS, 2008)

According to the existing spatial plan, the wider area around the simulation site is dedicated to educational use. A Detailed Site Development Plan (OPPN – Občinski podrobni prostorski načrt) was prepared for the area. It determines the type of utilisation, exploitation and densities for each spatial unit, as well as requirements to be considered when dealing with public, green or parking surfaces. This document is a basis for acquiring a building permit.

The university in Ljubljana describes the site as one of its main development areas, which will be used mainly for an extension of natural science and technical faculties: Faculty of chemistry and chemical technology (FCCT) and Faculty of computer and information science (FCI). Besides FCCT and FCI a new Faculty for mechanical engineering is planned in the area. The final site of the building though is not yet chosen. The planning simulation focused on the new university buildings for FCCT and FCI.

The number of students visiting both faculties at the existing locations is approximately 3500 and is expected to remain in the same range. Both faculties employ approximately 330 people. The net area of the new buildings is 38,536 m².

The simulation complex will be composed of 3 buildings. Two faculty buildings will be connected with a pavilion, called building X. Parking spaces occupy two full floors of each building. The total number of parking spaces projected on the site was originally 428 but was cut down to 350 just before the simulation.

12.3.2 Technical description of buildings

The building housing FCCT has 6 floors (basement, ground floor, 3 other floors and a roof terrace); two of them are occupied by parking spaces. The net area of the building is 22,668 m². The building housing FCI has 6 floors (basement, ground floor, 3 other floors and a roof terrace); two of them are occupied by parking spaces. The net area of the building is 12,013 m². Building X has 4 floors (basement, ground floor and 2 other floors)with a net area of 3,854 m². No parking is planned for this building.

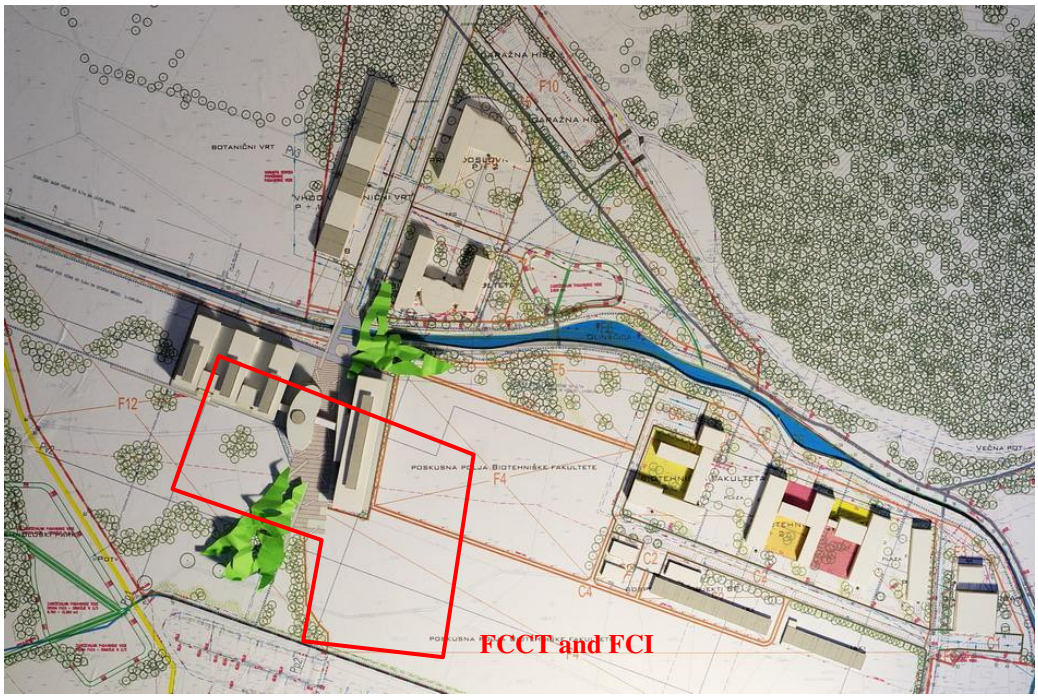

Figure 49: Simulation of the new buildings (source: 4M architects, 2006)

The total number of parking spaces planned for the new buildings is:

- FCCT: 280 parking spaces (12 parking spaces for the disabled) in 2 floors of the building,
- FCI: 124 parking spaces (5 parking spaces for the disabled) in 2 floors of the building + 24 on ground level,
- Total: 428 parking spaces: 404 parking spaces in 2 floors of each building + 24 parking spaces on ground level.

The last information received from the architects during the simulation was that the total number of predicted parking spaces for the two faculties included in the study was cut down from 428 to 350. For the whole area of OPPN 1167 parking spaces were planned. More parking spaces are planned in garage houses at the border of the area. They, however, will not be built simultaneously with two faculties; the participants even expressed their doubt that they would ever be built.

It is obvious that the area will face severe parking problems when both faculties are opened. At least 5000 new car trips per day can be expected in the area. Future parking spaces will hardly meet the requirements of the faculty staff, while more than 3000 students will have no access to them according to present plans. It is therefore expected that parking places in the vicinity of both university campuses will be greatly overloaded.

12.3.3 Accessibility of the area

The site is accessible by two existing bus lines, number 14 - Vrhovci and seasonal bus number 23 - ZOO. Both bus lines have bus stations within apx 400 metres to the site.

Figure 50: Distance to the closest bus stops (author: Jani Kozina, UIRS)

Bus line number 14 is more frequent and assures 101 bus journeys a day in each direction between 5:00 - 23:00, which means that a bus leaves a stop on average every 10.7 minutes. In morning peak hour (7:00 - 9:00) the bus leaves a stop every 9.2 minutes and in afternoon peak (15:00 - 17:00) every 10 minutes.

Bus line number 23 offers only a seasonal service (between 1st of May and 31st of October) with a frequency of only 5 bus journeys a day. Accessibility of the simulation site by PT in the technical description was mainly focused on the line number 23 as PT provider was (according to the information available to project team) considering extension of the line to Koseze (further north east) and an increase in frequency. Therefore no footpath connecting the new faculties with bus stops on the line 14 was planned in the project. In contradiction to this assumption, some additional information was given by the PT operator at the simulation: bus line 23 is anticipated to cease operation due to the heavy loss!

Both detailed spatial documents for the site (OPPN and technical description of new faculty buildings) does not mention accessibility of the site with a new PT line.

The technical description explains that new buildings will be accessible by many existing, important and well used cycling and recreational paths. The building layout does not interfere with these paths and allows access between buildings to a planned technological park further south.

Car access to the site is planned from the north. The access road is an important connection between the city centre and Šiška (northwest part of Ljubljana). Access from south side is not planned.

Parking spaces and additional garages are planned in the OPPN along the main road.

12.3.4 Projection of generated traffic

The project description predicts a total of 3000 daily users for both buildings. The total number of enrolled students on both faculties in the year 2007/08 on all levels of study is approximately 3500, but not all of them are regular visitors (for instance postgraduate students). The total number of employees at the end of 2007 was 327.

According to ITE methodology (USA) we can expect 7600 car trips a day (in and out) of the study site. The calculation, adapted to Slovenian travelling habits, gives a result of at least 5000 car trips a day related to the two new faculties only. Once built, the whole complex of the university centre will generate much more traffic. In Switzerland this kind of site would be defined as heavily frequented site (HFS), according to Swiss standards.

Heavily frequented sites in Switzerland are defined as single objects or areas with a number of single objects, which are connected from the point of view of land development. Furthermore those objects or areas have a considerable impact on the spatial arrangement and generate a minimum of 100 days per year with more than 3000 car trips (in and out). To reduce the impact of HFS on space and the environment a sufficient road capacity and high level accessibility with existing PT and slow transport (bike and foot path network) is required. At already existing HFS good accessibility by PT is required. All sites in the catchment area of 300 m of a S-Bahn stop or in the catchment area of 150 m of another PT system with a frequency of a minimum 8 stops per hour fulfil the preconditions of a HFS. This if requirements of the communal land use plans or special land use plans is also fulfilled (synergo, 2007).

12.4 Simulation description

12.4.1 Scope of the simulation

The main scope of this simulation was to explore the possibilities of the integration of MM in the process of planning of a new university complex in Ljubljana. Best practice MM measures and supporting measures for university buildings across Europe were selected and their transferability to the Slovenian planning system was analysed.

WS Analysis showed a low level of the integration of sustainable transport and MM with LUP in Slovenia at the current time. It was therefore a challenge to plan the simulation to explore the possibilities of the integration of MM and LUP in preconditions which are unfavourable to integration.

As evident from the introduction to the simulation site, considerable traffic problems are expected at the studied location. After the faculties are opened, they will be badly accessible on foot and by PT. In spite of minimal parking standards which should assure sufficient parking spaces, their number will be too low. This lack of parking spaces will result from the construction of the university campuses in phases, which means that parking spaces planned in OPPN will not be built simultaneously with the faculties but at an indefinite time in future. Problems will also arise from the fact that increasing student motorisation has not been considered. Neither has been considered the bad accessibility to the area by PT and the impossibility to park within the faculty space. It is likely that this will increase the impact on the vicinity of both faculties. The majority of participants in the simulation were aware of the predicted problems and they were therefore anxious to cooperate and adopt unconventional solutions (which MM surely is in Slovenia).

12.4.2 Content of the simulation

As MM is mostly an unknown concept in Slovenia, simulation included the wide spectrum of possible MM and integrated transport and LUP measures and therefore looked at the whole building permission process for a site as well as at preconditions.

12.4.3 Relevant MM measures to be integrated at the simulation site

MM measures were selected on the basis of desktop research of MM web sources (ACT TRAVELWISE, ELTIS, EPOMM, MOST, and OPTIMUM) and consultation with WP D partners. Four groups of MM measures relevant for the simulation site were presented, most of them as concrete cases, mainly from the UK and Switzerland:

- parking policy:
  - maximum parking standards (good practice - maximum parking standard in CH and UK),
  - parking charges and passes (good practice - The Robert Gordon University, Aberdeen, UK),
  - parking management in the neighbourhood (good practice - The Robert Gordon University, Aberdeen, UK),
  - cross-financing from parking to alternative modes (good practice - travel plan for Cork University, IRL),
  - parking priority for car-sharing and carpooling.
- PT improvements:
  - improved access by PT (good practice – Zurich, CH, The Robert Gordon University, Aberdeen, UK),
  - developer's co-financing of improved PT access (good practice, UK guidelines)
  - promotional PT tickets and info package for the opening of new faculties and for new students.
- cycling and walking:
  - improved access for cycling and walking,
  - safe cycle parking, parking standards,
  - showers and lockers for non-motorised travellers (good practice, UK guidelines),
  - promotion of cycling and walking.
- mobility plan for faculties:
  - transport impact assessment as a basis for a mobility plan (good practice - CH and UK),
  - information,
  - promotion.

Not all the measures were presented and discussed in the same detail.

Figure 51: Planning simulation at the Urban Planning Institute of the Republic of Slovenia in Ljubljana on 11th of June, 2008 (photo: Jani Kozina, UIRS)

12.4.4 Programme of the simulation

The simulation took place at the Urban Planning Institute of the Republic of Slovenia in Ljubljana on 11th of June, 2008 from 9:00 to 14:00, with the programme as follows:

9:00 – 9:10 Welcome

- welcome and presentation of the participants

9:10 - 9:25 Introduction

- short presentation of MAX
- short presentation of MM concept
- purpose of the simulation

9:25 - 10:00 Problems

- short presentation of the planning process for the chosen site
- expected transport problems related to the site
- discussion on reasons for the predicted situation

10:00 - 11:00 Solutions

Best practice of MM and LUP integration

- parking management
- PT
- cycling and walking
- mobility plan for faculties

11:00 - 14:00 Transferability of measures - discussion

- parking management
- PT
- cycling and walking
- mobility plan for faculties.

Figure 52: Discussion at the planning simulation (photo: Jani Kozina, UIRS)

12.4.5 Who took part in the simulation?

National level

Ministry of Environment and Physical Planning of the Republic of Slovenia - The Spatial Planning Directorate

Polona Demšar Mitrovič - responsible for spatial planning at the local level

Municipal level

City of Ljubljana

Sintija Hafner Petrovski – Urban planning department - responsible for detailed site development plans

Boris Jagodič – Transport planning department - responsible for detailed site development plans

Ljubljana public transport

Andrej Kmetič – head of city PT department

Urban Planning Institute of the Republic of Slovenia

Ina Šuklje Erjavec – landscape architect

Site level - developers

University of Ljubljana – Department of Investment Management

Slobodan Milojević – investment manager

Site level – users

University of Ljubljana –Faculty of chemistry and chemical technology

Janez Topovšek – secretary general

Jurij Vernik – technical adviser

Kostja Makarovič – student's representative

University of Ljubljana –Faculty of computer and information science

Franc Solina – head of building council

Jurij Čepon – technical adviser

Mitar Milutinović – student's representative

Site level – constructors

Mojca Švigelj Černigoj – head of the project, 4M architects

Organisation of the simulation

Urban Planning Institute of the Republic of Slovenia

Luka Mladenovič, Jani Kozina

MAX partners

University of Maribor

Marjan Lep, Aljaž Plevnik

Invited - not present

Miran Gajšek – head of Urban planning department

Groleger architects – authors of detailed site development plan

Gašper Blejec, Boštjan Ramovš – traffic engineers – co-authors of detailed site development plan

12.5 Simulation results

A general feature of discussion about actual planning and MM instruments & measures was that the discussion kept jumping back to preconditions and hard measures. It was difficult to focus the discussion to questions related mainly to MM measures. We are of the opinion that this results from the level of performance of our traffic system and the level of integration of transport and MM into LUP in Slovenia and Ljubljana. Numerous questions about the implementation and integration of MM measures are irrelevant in such a situation. Most of the MM measures presented were considered as interesting and useful, yet they would only become relevant after the improvement of preconditions or implementation of hard measures.

12.5.1 Description of discussed planning and MM instruments & measures

As stated above, four groups of MM measures were discussed, not all in the same detail:

- parking policy,
- PT improvements,
- cycling and walking,
- mobility plan for faculties.

Parking policy

The discussion included the below measures:

- maximum parking standards,
- parking permits criteria and parking charges for employees,
- controlled parking in the neighbourhood of the campus,
- cross-financing from parking charges to alternative modes.

Do the existing laws and the existing planning instruments allow the implementation of the proposed measure?

The main attention was given to parking standards. National orientations regarding parking standards are vaguely exposed in the Spatial Order of Slovenia (PRS, 2005). Lately, national construction by-laws have been passed which require 1.5 parking places per apartment throughout the state (year 2003), 2 parking places per a playgroup unit in kindergartens (year 2000) and 5 % of obligatory parking places for the disabled (year 1997). No standards for other uses are defined on a national level. These requirements are compulsory for all levels and demand modified parking standards for apartments and kindergartens before maximum parking standards are adopted.

Detailed requirements with regard to parking standards are left to municipalities. In practice parking standards are defined in the OPPN. The existing OPPN prescribes a minimal number of parking places with respect to activities and centralisation of the area. In Slovenia, no municipality act exists that would determine maximum parking standards. Spatial planners use the available, mostly out-dated technical guidelines, which, however, are not compulsory. An attempt (a study) was undertaken to change the existing practice in Ljubljana in 2005, applying maximum parking standards for some central parts of the city, but this hasn't passed political approval.

Is the integration possible through negotiations and does the law allow negotiations at all?

Negotiations between an investor and a city about the number of parking places are officially not possible because the building permit is only delivered when a sufficient number of parking places are assured in the area. This number is determined in the OPPN standard which prescribes a minimal number of parking places per user or per surface needed for an activity. As a rule, there should be no deviations from the OPPN parking standards, yet in practice there are exceptions arising from agreements between the investor and the city (when the investor proves, for example, that he has hired or purchased parking places in the vicinity).

There is no state law which would allow an investor to invest in PT or other transport modes in exchange for assurance of required parking places. Former legislation contained the notion of an "urban contract" which was an agreement between the investor and the municipality that would assure the realisation of public spatial plans owing to a strong private interest. The present legislation has replaced this notion with an "infrastructure contract" so that an investor is given the possibility to choose either to complete the structure only or to assure total infrastructure in the area.

In spite of this, as stated by a representative of Ljubljana, it is possible in practice to replace 50% of the required parking places within the city centre with refunds paid to the city in case there are no spatial capacities on the building lot. The refund is then used for constructing parking places elsewhere in the city or for improvement of PT. Yet, the area studied in the simulation is not situated within the city centre, so such an arrangement is not possible for the faculties.

With respect to the measure of controlled parking in the neighbourhood of the campus, future users shared the opinion that the vicinity of the faculties will surely be over packed with cars, yet it is the task of the city to handle this problem. The answer to the question raised by the representatives of the university whether the municipality could impose on the investor to arrange controlled parking in the neighbourhood of the campus was that such a solution is unacceptable because the university is a public institution and the city has already set too many requirements that the university should fulfil. The representatives of the university also stressed that the municipality, in realising construction at this location, is trying to solve problems of a broader area, which is an unjust pressure made on this public project. Ljubljana is a university city therefore the university should have a different status compared to other investors who build for profit.

How and where in the planning or building permission process can the measure be integrated?

Most of the discussion on parking policy focused on determining the number of parking places around new buildings and on maximum parking standards. Other measures such as parking permits criteria, parking charges for employees and cross-financing, from parking charges to alternative modes, seemed logical to the participants and feasible considering limitations of expected parking conditions around the newly built faculties. Implementation of the latest measures is the obligation of users of the buildings and there are no big obstacles for it despite of the idea of cross-financing from parking charges for alternative modes.

Users have established that some parking policy will have to be adopted for the faculties, because the new faculty buildings will not assure sufficient parking places for the employees, let alone the students. The faculties

will have to adopt a principle of allocating parking places based on a certain system. Most likely, parking will not be free of charge.

Representatives of the municipality administration shared the opinion that introduction of limitations in parking actually reflects a conflict between the professional field and policy. While experts agree that such measures are indispensable, there is no political will to implement them. One reason for such a situation is potential dissatisfaction of voters when such measures are carried out. Therefore, state regulation or some guidelines shall be needed, maybe in the form of a by-law entered in space legislation which would determine the introduction of a restrictive parking policy and maximum parking standards. This will greatly help the professionals when being confronted with political opposition.

According to the opinion of the municipality administration, education and good information conveyed to both students and the staff is one of the indispensable conditions for a good functioning parking policy. With respect to parking at the Faculty of Arts in the city centre for example, it was the staff that caused most of the problems. The representative of the PT operator was of the opinion that during such simulations as the present one the opportunity should be seized to change travel behaviour of PT users, which is especially important if a steady increase in fuel prices is considered.

Architects warned that if parking was possible at the studied location and payable, students would still not decide to park there. Most likely, they would search for other parking possibilities in the vicinity which are free of charge. Such is the situation in the Bežigrad campus which has a payable parking with a reduced parking fee for students, yet it is empty, while the streets in the vicinity of the faculties are packed with illegally parked cars. In the case where parking is limited, it is necessary to assure alternatives which, however, should be competitive to transport with personal cars, at least regarding the length of the trip.

Besides already stated requirements for parking places, the participants also pointed out a considerable financial load caused by parking surfaces. The need was stressed that public and private investors are separated and that greater flexibility is achieved in the regulation of public investments. The public sector may therefore be the first step for integration of MM into LUP.

Most of the participants shared the opinion that funds raised by parking charges would barely be sufficient for the maintenance of parking places and nothing would be left for the financing of alternative modes.

The participants had no idea how to find a solution to decrease the parking load on the surfaces in the vicinity. This will be probably achieved in cooperation with the city. The accessibility to the faculties with other transport modes should be also determined on the level of the university and the city.

The discussion finally showed that it seemed reasonable to the participants that parking policy is planned and adopted on the level of a faculty or the university considering, however, the available parking space. As shown later in the discussion, parking policy could become part of the mobility plan of the university or the faculty. The adopted parking policy should define priority groups for the allocation of parking places (motion-disabled persons, distance to home for staff combined with inexistence of other transport modes, etc.) as well as financial aspects (parking charges, cross-financing from parking charges to alternative modes, etc.).

PT improvements

The below measures were highlighted during the discussion:

- Improved PT access
  - construction of new buildings along existing and high-frequency PT lines,
  - introduction of new lines or improved frequency of lines,
  - re-routing of lines or new stops.
- Information about PT
  - distribution of PT maps and schedules (to first year students when they arrive).
- Fares
  - student ticket (integrated into a student card),
  - promotional free tickets for first year students or when students arrive on campus.

Do the existing laws and the existing planning instruments allow the implementation of the proposed measure?

The first part of the discussion focused on preconditions of integration - development that generates lots of trips should be concentrated at nodes and along the corridors of the PT network. These areas (nodes and corridors) should be identified in strategic and local plans, possibly by the use of accessibility measurement. Thresholds of accessibility could then be set, such that certain types of development are discouraged or not permitted in areas where accessibility levels are below the threshold. This is not the case in Slovenia and Ljubljana.

In city municipalities, the improvement of PT offered is planned on the principle of OPN. OPNs, however, do not determine future routes and frequency of lines. Even Ljubljana has not defined its PT development for the next 10 years. In practice, routes and frequency of lines in Ljubljana are changed on suggestion of the PT operator (LPP). LPP is a public company within the city holding which is owned by the city.

For the studied location, the access to the faculty using the existing PT lines and stops within the distance of about 400 m was defined in OPPN, which served as a basis for preparing the construction project. During the simulation the viewpoint prevailed that such a standard of PT access is insufficient for such a type of structure as the studied one, considering especially the future development of the area.

In the discussion, the problem of the adopted practice used when establishing new lines has been stressed, especially when new lines are established by a PT operator, on the basis of known circumstances, and not by the city on the basis of its vision or strategy. If this practice persists, the question may arise in which during the planning phase a PT operator, LPP in our case, should enter into the planning process. If the present course of events is considered, the operator would be informed about the problem of bad PT access to the studied location only after the opening of the faculties, when access starts to cause problems. It would therefore be reasonable to change this planning procedure, so that a PT operator is invited to planning in earlier phases of the procedure.

It would be still more reasonable to determine the framework of lines and their frequency already in OPN or in a separate transport plan. These input data would make it possible to search for surfaces where bigger traffic generators can be located along the existing or planned PT lines of high-frequency.

An efficient integration could also be achieved by state guidelines which would set access standards for bigger traffic generators, similar to Swiss standards presented in the introduction. The participants stressed the need for new standards by drawing attention to the practice that each new building should have sanitary infrastructure, i.e. be connected to the sanitary sewer, which is one of the requirements to obtain the building permit. Similarly to this, an adequate PT access to the building could also present a requirement for obtaining the building permit.

The problem in the studied case is non-harmonisation of the time schedule or construction phases in an area, this is not defined and not included in present space acts. This hinders PT integration and planning.

Is the integration possible through negotiations and does the law allow negotiations at all?

Formally, negotiations in the planning process are not possible, yet in practice such agreements nevertheless take place. Taking parking policy as an example, we have established that it is possible to refund to the city a half of parking places in the city centre. The city, as stated before, uses this refund for investments in the improvement of PT. An arrangement seems therefore possible between the investor and the city, according to which the investor would co-finance a new PT line and be allowed, in exchange, to disregard some project requirements (he could, for example, neglect the parking arrangement).

Line 23, for example, which is a seasonal line that connects the Zoo with the city centre, is co-financed by the Zoo. This shows that similar arrangements are possible for other institutions that require PT.

How and where in the planning or building permission process can the measure be integrated?

The discussion has shown that future development of this university area will justify a new, higher-quality PT connection. Quite a considerable part of this discussion was dedicated to finding possibilities for new lines. It was interesting that most of the participants (except the PT operator) considered that the line passing directly through the future campus and the stop in front of the entrance to both faculties were an unfeasible solution. The main argument was that there is no road connection that would allow the introduction of the line through the centre of the area. The argument that construction of such a line is technically rather simple and financially acceptable, was opposed especially by users, who stated that PT through the area is an unacceptable solution. The same opinion was shared by the architects. It seems that such a viewpoint reflects a general perception of PT which is mostly regarded as a transport mode of the past.

With respect to accessibility of new faculties, it was established that there are several footpaths planned at this location, yet their aim will mostly be a recreational one, not so much the connection of places. The footpaths will therefore badly fulfil the function of a direct access to the area and the existing PT stops (especially to a high-frequency line no. 14). It was established that there is the need to improve walking connections to all surrounding PT stops, yet the realisation of these connections is presently not planned in the project.

Owing to the limited access to the area with students' cars, the students' representatives expressed the need that the optimal access with PT is reconsidered and bus schedules adapted to their daily rhythm.

The discussion on fares was short. The price of PT fares seemed reasonable to all participants, also to the students; it is especially favourable for monthly ticket holders. The fare system, which presently does not allow changing of buses whilst using the same ticket, will be abolished in one year and replaced with a new fare system which will be based on „smart card" technology. This technology could also be used on students' cards. Promotional discounts (for example a monthly free ticket for freshmen or staff when moving to new locations) are not problematic and can be realised by agreement and organisational measures.

Measures on information about PT were discussed within the mobility plan.

Cycling and walking

The below measures were discussed:

- improved access for cycling and walking,
- safe cycle parking, parking standards,
- showers and lockers for non-motorised travellers.

Do the existing laws and the existing planning instruments allow the implementation of the proposed measure?

No bicycle parking standards have been adopted in Ljubljana, yet such standards are allowed by the Slovene legislation. Presently, they are adopted on the initiative of individual towns. The town of Maribor passed a spatial act in 2006 in which the number of bicycle stands is determined with respect to the activity.

Another problem is the inexistence of Slovene construction standards for bicycle stands and bicycle storage/showers. In the project these standards were mostly taken from international literature and practice as it was the case for the majority of other standards.

The problem is also that no person in the city administration is responsible for bicycle infrastructure. This situation, however, will change with the commencement of the project Civitas Elan. Ideas have been presented to open a new post in the city administration for a person who will be responsible for cycling in the city.

Is the integration possible through negotiations and does the law allow negotiations at all?

See sections 0 Parking policy and 0 PT improvements.

How and where in the planning or building permission process can the measure be integrated?

On the initiative of users, architects included bicycle storage facilities and showers in their project, yet they will be available to the staff only. Problems which were encountered by the architects when they tried to justify investments in storage facilities for the staff discouraged them to do the same for students. There was also some doubt whether such facilities are actually needed by students. The opposite argument was that these facilities would incite students to start cycling to school from distant places for recreation.

At the old location, there are no faculty bicycles available, yet users think that it is reasonable to introduce them in the future.

There was one common point in this discussion. The participants expressed their doubts about the efficiency of soft measures for walking and cycling. They agree that soft measures may serve as a supplement to hard measures, but they do not believe that soft measures alone can be efficient. This mistrust can be explained with insufficient information about soft measures and lack of their implementation in Slovenia. As a consequence, much of the discussion focused on infrastructural solutions (new bicycle and walking connections, bicycle sheds, storage facilities).

Mobility plan

The below measures were discussed:

- transport impact assessment (TIA) as a basis for a mobility plan,
- content of the mobility plan - information, promotion.

Do the existing laws and the existing planning instruments allow the implementation of the proposed measure?

According to the Slovene planning practice a TIA study should be submitted by an investor to the municipality as part of his/her building permit application project, especially in cases when the municipality estimates that the new structure will greatly harm transport flows in the vicinity of building locations. The same requirement can be made by the Slovenian Roads Agency (Direkcija RS za ceste – DRSC) when they anticipate that the new building will have a harmful effect on national road traffic. The decision in favour of a TIA study is subject to the judgment of the responsible person in municipal administration or DRSC as no formal basis exists in the ordinance or by-law. A TIA study generally results in passing infrastructure measures, and very rarely in changing location of the prospective construction.

For TIA to become a stronger tool for the integration of MM into LUP, it should become an obligatory planning instrument for newly built structures above a definite threshold of daily migrations. For the achievement of such a goal, a special by-law (an obligatory act) or guidelines (recommended practice) should be prepared and included into the Spatial Order of Slovenia.

The representative of MOP added that recommended practice does not function well in Slovenia and that obligatory acts should are best adopted.

Is the integration possible through negotiations and does the law allow negotiations at all?

See sections 0 Parking policy and 0PT improvements.

How and where in the planning or building permission process can the measure be integrated?

The viewpoint of the users and other participants in the simulation was that it is reasonable to influence transport development with strategies and visions. Therefore, they supported the mobility plan for both faculties. They especially favoured the idea that change of location of activity is an excellent opportunity to influence travelling behaviour. They believed that promotion and conveying information are an important part of the above document, yet they nevertheless stressed the importance of hard measures and preconditions.

The discussion returned to parking fees as a possible source of financing the mobility plan. The participants insisted that funds raised from parking fees should be used for the maintenance of parking places. They granted less support to the cross financing of alternatives or the financing of the mobility plan.

12.5.2 Description of acceptance for Mobility Management

The situation at the selected location is ready for the implementation of MM measures, yet there are numerous other barriers. Many of them do not originate in the system but in the fact that most participants in the planning

process lack knowledge, awareness and information. Unawareness of possibilities offered by soft measures to solve transport problems is obvious.

The main point of the simulation was not to make participants understand the MM concept, but individual MM measures. Therefore, there was no discussion about MM as a concept.

In general, no confidence was expressed in the effectiveness of MM measures introduced as separate measures (without hard measures). The discussion continued to return to hard measures and preconditions. MM measures seemed reasonable to the majority of participants, yet they used them as a supplement to hard measures and not as an individual solution. The reason for this lies especially in the lack of knowledge about MM in Slovenia as well as in the lack of practical examples. No significant differences therefore existed between the participants' groups with respect to MM.

Users and investors considered MM measures as an occasion to moderate predicted transport problems at the new location. An important element of soft measures seemed to be the possibility of their prompt implementation, which would slow down the aggravation of problems.

The participants thought that it was interesting that institutions alone can assure more sustainable transport behaviour of the staff and visitors when preconditions for sustainable transport solutions do not exist on the town or state level. The potential lies in the initiative of the institution itself. As an example, students mentioned the carpooling portal of the Student organisation in Ljubljana.

12.5.3 Description of other results

Before embarking on a more detailed discussion about the proposed planning and MM instruments and measures, the participants discussed preconditions which are the cause of the predicted transport problems.

Lack of transport and LUP integration

The first statement made during the discussion was that transport and LUP integration was insufficient on all levels in Slovenia. Locations of bigger traffic generators are set away from existing PT corridors, while future PT development is not defined in any document. Also in cases when transport and LUP integration are defined on the strategic level, there are no mechanisms to implement solutions in space or to realise integration by entering it into more detailed planning instruments. A good example of inexistence of integration is a detailed site development plan (OPPN) for the simulation site of the new commercial and sports centre in Stožice in Ljubljana. This is a stadium with 16 thousand seats, a multi-purpose sports hall with 12 thousand seats and a commercial-business centre with 80 thousand square meters of gross surfaces. This plan does not contain any connections to new PT lines or any new stops along the existing lines.

Non-existence of SUTP

The participants stated the fact that the reason for problems was nonexistence of urban transport strategy or SUTP. This results in dilemmas in parking policy, parking standards and PT access to new buildings. A representative of MOL stressed that the lack of strategic starting-points often causes dilemmas which are encountered by the city planning service in the elaboration of OPPN. The staff are often faced with a decision whether to limit access with personal cars or to support transport demand. The same dilemma was encountered by students. As a principle, students should not be allowed to access faculties and campuses by car, yet in making decisions, the planning service often takes students' demand into account. Participants stated an example where this demand was already satisfied: in two newly built student dormitories parking places were assured in the basement garage for most of the students. A decision was taken to implement adapted (reduced) parking

standards for student residences. However, the main fear of the planners was that traffic problems would be transferred to the surrounding areas.

Decline of PT supply

A big problem is also the state of the transport system in the country. Owing to nonexistence of transport policy, aggravation of PT supply (price, frequency, travelling time) in the last decade, and increased ownership of personal cars, students coming to Ljubljana from other regions increasingly use personal cars for weekly transport to Ljubljana. During the week they use the car daily or occupy city parking places.

LUP system in transition

In the transition period, the lack of authority has been experienced also by the office for spatial planning. The staff do not have experience with facing pressure from investors or politicians. Reduction of parking places is often the consequence of investors' wish to economise and not the result of transport policy.

Ad hoc spatial development of the University

In the discussion, nonexistence and no implementation of a long-term vision of spatial development of the university was also stressed. This vision is often changing with respect to available land in the city. It is not clear whether a decision will be to build fewer campuses, as wished by the university, or whether development will remain dispersed and depend on presently available land. The latest trends, especially in construction of campuses, showed the latter.

Owing to the dispersed nature of the faculties in Ljubljana as well as other university buildings, students and university staff already create important traffic flows. The discussion has shown that the introduction of the Bologna study programmes will increase migration between the faculties and consequently strengthen traffic flows. A proposal was made to implement direct PT lines between campuses.

12.5.4 Description of simulation as a method

According to our experience, the planning simulation has shown to be very applicable when novelties in the planning process are introduced. We believe that the key element for the success of this method is the use of the actual example in discussion. The presentation of the actual procedure makes it easier to better understand the situation and to introduce possible changes/improvements in the procedure.

The selection of the simulation site was a good one because it contained complex problems and good timing before the end of the building permission process.

The biggest problem in our simulation was too much time spent discussing MM measures. This was due to the sub-goal of the simulation which was to present the possibilities offered by the MM concept for solving actual transport problems. It may be that this ambition was too great and the central goal of the simulation was neglected. To avoid such problems, better preparation for the simulation is advisable.

Another problem was how to limit the discussion on MM measures. It was difficult to do otherwise, especially in the environment where the MM concept is unknown and where hard solutions to solve transport problems are still the main topic of discussions.

A good solution could be the presentation of the problem and method at the meetings of participants before the simulation. During these small group meetings the problems could be presented and so the organisers and participants could be better prepared for the simulation. Good participation was also assured.

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