Sustainable Transport Policies in South Eastern Europe

Needs, Priorities and Lessons Learnt from EU Countries
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Edited by
Wioletta Szymanska

The Regional Environmental Center for Central and Eastern Europe
October 2008

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<tr>
<td>CAOVD</td>
<td>Ceska asociace organizatoru verejne dopravy (Czech Association of Public Transport Authorities)</td>
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<td>CIVITAS</td>
<td>City-VITAlity-Sustainability (EC initiative for promoting cleaner and better transport in cities)</td>
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<td>CNG</td>
<td>Compressed natural gas</td>
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<td>CSAD</td>
<td>Ceskoslovenska statni automobilova doprava (Czechoslovak State Bus Transport Company)</td>
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<td>DPO</td>
<td>Dopravni podnik Ostrava a.s. (Ostrava Transport Company)</td>
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<td>DPMO</td>
<td>Dopravni podnik mesta Olomouce (Transport Company of the City of Olomouc)</td>
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<td>EC</td>
<td>European Commission</td>
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<td>Ecos/Ouverture</td>
<td>Inter-regional cooperation programme between local authorities in the European Community and Central and Eastern Europe, financed by the European Regional Development Fund and Phare</td>
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<tr>
<td>EIA</td>
<td>Environmental impact assessment</td>
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<td>EIB</td>
<td>European Investment Bank</td>
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<td>EMME</td>
<td>Traffic modelling and travel demand forecasting software</td>
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<td>EU</td>
<td>European Union</td>
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<td>GPS</td>
<td>Global positioning system</td>
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<td>IDO AS</td>
<td>Istanbul Deniz Otobusleri AS (Istanbul Sea Buses Corporation)</td>
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<td>IDSOK</td>
<td>Integrovan dopravni system Olomouckeho kraje (Integrated Public Transport System of Olomouc Region)</td>
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<td>IEE</td>
<td>Intelligent Energy — Europe programme</td>
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<td>IETT</td>
<td>Istanbul Elektrik Tunel Tramvay Sirketi (Istanbul Electric Tram and Funicular Company)</td>
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<tr>
<td>IFI</td>
<td>International financial institution</td>
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<td>ISPA</td>
<td>EU Instrument for Structural Policies for Pre-Accession</td>
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<td>ITS</td>
<td>Intelligent transport system</td>
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<tr>
<td>JSP Skopje</td>
<td>Javno soobrakajno pretprijatie Skopje (Public Transport Enterprise Skopje)</td>
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<td>LRT</td>
<td>Light rail transit or “light metro”</td>
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<tr>
<td>MPK</td>
<td>Miejskie Przedsiębiorstwo Komunikacji (Poznan Municipal Transport Company)</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organisation</td>
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<tr>
<td>ODIS</td>
<td>Ostravsky dopravni integrovany system (Ostrava Integrated System of Public Transport)</td>
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<tr>
<td>Phare</td>
<td>Poland and Hungary: Assistance for Restructuring their Economies (EU assistance later expanded to other accession countries)</td>
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<tr>
<td>PKM</td>
<td>Przedsiębiorstwo Komunikacji Miejskiej (Gdynia City Public Transport Operator)</td>
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<tr>
<td>PKS</td>
<td>Panstwowa Komunikacja Samochodowa (State Car Transportation)</td>
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<tr>
<td>PKP</td>
<td>Polskie Koleje Panstwowe (Polish State Railways)</td>
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<td>PKP-PLK</td>
<td>PKP Polskie Linie Kolejowe SA (Polish Railroads Co., a daughter company of Polish State Railways)</td>
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<td>REC</td>
<td>Regional Environmental Center for Central and Eastern Europe</td>
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<td>Abbreviation</td>
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<td>RVF</td>
<td>Regio-Verkehrsverbund Freiburg GmbH (Regional Transport Association Ltd.)</td>
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<td>SEA</td>
<td>Strategic environmental assessment</td>
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<td>SEE</td>
<td>South Eastern Europe (Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, Kosovo [as defined by UNSCR 1244], and Turkey)</td>
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<tr>
<td>SKM</td>
<td>Szybka Kolej Miejska (Rapid Urban Railway)</td>
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<td>SUTP</td>
<td>Sustainable urban transport plan</td>
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<td>TCDD</td>
<td>Turkije Cumhuriyeti Devlet Demiryollari (Turkish State Railways)</td>
</tr>
<tr>
<td>TDI</td>
<td>Turkije Denizcilik Isletmeleri AS (Turkish Maritime Passenger and Freight Carrier)</td>
</tr>
<tr>
<td>VAG Freiburg</td>
<td>Freiburger Verkehrs AG (Freiburg City Transport Company)</td>
</tr>
<tr>
<td>VAT</td>
<td>Value added tax</td>
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<td>VROM</td>
<td>Het ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer (Netherlands Ministry of Housing, Spatial Development and Environment)</td>
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<tr>
<td>WPK</td>
<td>Wojewodzkie Przedsiebiorstwo Komunikacyjne (Local Transport Regional Company)</td>
</tr>
<tr>
<td>ZET</td>
<td>Zagrebacki elektricni tramvaj (Zagreb Electric Tram)</td>
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<tr>
<td>ZKM</td>
<td>Zarzad Komunikacji Miejskiej (City Transport Authority)</td>
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Background

This report is a follow-up to the 2004 REC publication Next Stop: Sustainable Transport, which included six case studies from Central and Eastern European cities. The studies from Sofia, Warsaw and Tallinn outlined the status, needs and priority measures to support the cities’ public transport systems. The studies from Bucharest, Budapest and Vilnius covered the priority problems and needs of public transport financing. The goal of the book was to outline a path towards sustainable transport and the integration of environmental, health and transport concerns into policy making in Central and Eastern Europe (CEE).

The REC continuously monitors the problems and needs of countries and cities in CEE, including South Eastern Europe (SEE), and assists local stakeholders in identifying and solving transport-related problems. The present book is a result of these efforts. It summarises recent urban mobility challenges in the SEE region and features five public transport case studies. The book concludes with recommendations for cities in SEE.

Transport-related problems are similar across Europe. The main problems outlined by the European Commission (EC) in its green paper on urban transport are the following:

- increasing congestion in cities;
- increasing air and noise pollution;
- increasing freight and passenger flows and lack of space;
- the accessibility of public transport to people with reduced mobility;
- worsening safety and security; and
- issues related to financial resources.

The EC green paper stresses the importance of decoupling mobility from its negative effects using a wide range of policy tools. Each mode of transport should be optimised to meet the objective of a clean and efficient transport system. All efforts to make transport more environmentally friendly, safe and energy efficient must be undertaken. Shifting to more environmentally friendly modes of transport should be considered. The optimal and sustainable use of resources should be assured through improved co-modality, that is, the efficient use of different modes on their own and in combination.

All major cities face the challenge of how to increase mobility while also reducing congestion, accidents and pollution, and the cities themselves should be the driving forces for finding solutions. The EC will promote supporting activities at the European level and continue to promote research into urban mobility. Current EC policy is turning towards more ambitious efforts to improve mobility in Europe’s urban areas. The Commission launched a debate on urban transport policy in 2007 and published the green paper to identify potential European added value to activities at the local level. It is clear that cities must take action to address the challenge of rapid motorisation and transport in urban and suburban areas, and must look for more sustainable transport policy options and measures.

Like cities in the new EU member states, the countries and cities of SEE face a number of challenges related to the transport sector. These include aging transport infrastructure and rolling stock, rapidly increasing private car ownership, growing congestion and reduced mobility. For countries with a short history of independence and a relatively new “car culture”, these challenges are particularly severe.

Nevertheless, there is a strong commitment on the part of all SEE cities and countries towards solving these problems. The Stabilisation and Association Process, of which all SEE countries are part, has become a strong driving force for change and is continuously motivating cities to make improvements. The countries of SEE are at various stages on the road towards EU membership. The present EU enlargement agenda covers the candidate countries Turkey, Croatia and the former Yugoslav Republic of Macedonia as well as the potential candidate countries Albania, Bosnia and Herzegovina, Montenegro, Serbia and Kosovo (under UN Security Council Resolution 1244). The latter group have been given the chance to become EU members on condition that they fulfil the necessary conditions. Transport is one of the most important fields in the process of harmonisation and integration with EU requirements. In this context, it is extremely important that SEE countries continue to im-
prove their urban transport situation and to follow EU transport policy guidelines and recommendations.

With this in mind, there is a clear need for greater attention to and assistance for urban transport in SEE countries; for experience exchange with more developed cities; and for EU recommendations.

In the first section of this book the editor has attempted to give an overview of the needs and priorities related to urban transport in SEE cities. These were identified on the basis of available documents (desktop research); personal interviews in the three pilot countries; discussions during the Regional Meeting on Sustainable Transport Policies in South Eastern Europe, June 21–22, 2007, Budapest; and other activities within the project Support for Public Transport Policies in SEE, funded by the Ministry of Housing, Spatial Planning and the Environment of the Netherlands. Other sources included documents submitted after the meeting by the participants. Proposed actions and priorities for further work to address the challenges are summarised in this section.

While looking at public transport in SEE, the need for experience exchange with other countries, especially with new EU members, clearly emerged. This need was also highlighted during the consultations with SEE stakeholders. The transfer of knowledge and lessons learnt can enable SEE cities to build on the experience of cities that have already gone through transition and integration with the EU and are now benefitting as full members from EU policy and EU financial mechanisms. The section “Lessons learnt” therefore presents five different public transport case studies. The focus is on small and medium-sized cities with good, accessible and transferable solutions.

In the concluding section, “Next steps”, we have tried to identify the main lessons learnt, recommendations and next steps for all SEE cities with reference to EU activities and recommendations.

The background materials and the documents summarising the Regional Meeting on Sustainable Transport Policies in South Eastern Europe are available on the project website.4

During the preparation of this book, the REC recognised the need for further support to local stakeholders in the SEE region and will continue its efforts to fulfil its mission in this region.

Key needs and priorities

Problems and needs related to urban public transport in the SEE region have been identified on the basis of available documents (desktop research); personal interviews in three pilot cities (Tirana, Albania; Skopje, the former Yugoslav Republic of Macedonia; and Belgrade, Serbia); and discussions during the Regional Meeting on Sustainable Transport Policies in South Eastern Europe, held on June 21–22, 2007 in Budapest, as well as documents submitted after the meeting by participants (additional information about Zagreb, Croatia and Istanbul, Turkey).


Since 2004, SEE countries have implemented reforms and changes under the Stabilisation and Association Process and some of the above issues have become less problematic. However, based on the research and on discussions during the regional meeting, it seems that all SEE countries are facing a rapid rise in individual motorisation and urban growth. The main problems are related to increasing congestion, suburban growth and poor air quality in urban areas. This, combined with very poor public transport systems — very often inherited — and a lack of funding, results in serious urban mobility problems. Car traffic must be reduced and public transport must be improved in order to offer a real alternative to the car, which is still regarded as a status symbol. Most cities in the SEE region still face significant, and sometimes basic, organisational problems related to the absence of a proper legislative framework and of means for further improvement. There is certainly a need for further capacity building and action to promote the implementation of the principles of sustainable mobility. Many cities simply lack a good strategy for the further development and improvement of transport integrated with a city planning strategy and adhering to the principles of sustainable mobility.

The challenges can be summarised under the following headings:

- Economic transition and changing lifestyles
- Legislation, strategies and policies
- Changing institutional frameworks
- Cooperation among public transport actors
- Limited financial resources
- Equipment, infrastructure and operational issues
- Image of public transport
- Internal management of public transport companies
- Environmental aspects
- Stakeholder inclusion and awareness raising.

In some SEE cities, the public transport situation has improved significantly (e.g. in Zagreb and Belgrade) and helpful measures have been undertaken such as the introduction of systems of paid parking in the city centre and investments in new low-floor trams, light rail and cleaner public transport vehicles. Some cities have begun preparing transport
plans, very often as a prerequisite for further donations or loans from IFIs. Such activities should be enhanced, systematised and followed by other cities as they are the key to solving the mobility problems of the SEE region.

Public transport case studies from EU countries — key messages

The five case studies illustrate different public transport systems, as well as success stories and problems in Central European cities. We have focused on sound, accessible solutions that are transferable between cities of similar size and we believe these can be good examples on which SEE cities can build their achievements.

- **Olomouc** is a typical medium-sized Czech city with two modes of public transport (buses and trams), integrated tariffs, and a rising number of public transport passengers.

- **Ostrava**, in the Czech Republic, is a polycentric, shrinking city in the industrial region. Urban public transport has survived the changes to Ostrava’s industry and labour market, and still represents a very high proportion in terms of urban journeys. The city has a good system for quality improvement.

- **Gdynia** (in the metropolitan area of Gdansk–Sopot–Gdynia, known as the TriCity) is the first Polish city with a controlled competitor model. The city has a very strong transport authority and also provides good examples of market research and customer satisfaction surveys.

- **Poznan**, Poland, has good public transport and an advanced intelligent traffic-light system, although such innovations do not ensure a sustainable transport policy. The city’s transport policy is more oriented towards cars and road development (e.g. suburban developments do not have good public transport connections).

- **Freiburg** is frequently seen as a model for sustainable transport. In the 1960s, this German city went against the trend and opted for the path of sustainable development. The integration of urban planning and transport development; a straightforward, smart and cheap tariff system; and plans for the immediate future in Freiburg have been an inspiration for traffic engineers from other cities for the last 40 years. However, other cities can now boast greater achievements in certain fields (e.g. Gdynia in transport management and economics).

The main lesson from these case studies is to prevent the disintegration of the public transport system. Cities must take the initiative; they cannot afford to wait and do nothing. Public transport standards should be improved in order to provide a real alternative to car usage. While the social role of public transport is clearly important, the target group should be very wide: the offer cannot be addressed only to the poorest citizens. This goal is relatively difficult to achieve, but the examples of Freiburg and — on a smaller scale — Olomouc, prove it is possible.

Recommendations to SEE cities

Recommendations generally applicable to SEE cities are developed in the section “Next steps and recommendations”. They can be summarised as follows.

- The first step is to develop a good sustainable transport policy to guide developments, then a transport strategy describing how to achieve goals, and finally a sustainable transport plan/programme spelling out implementation steps in more detail.

- A good parking policy that pays special attention to paid parking and parking restrictions in the city centre is a key to successful mobility management.

- A proper organisational and institutional framework is essential.

- Regional cooperation between cities and suburban communes should be encouraged and implemented.

- Cities should find ways to involve central governments in the process of public transport improvements.

- In order to improve cooperation and coordination between different public transport actors, capacity building is needed for local, regional and government authorities.

- Cities must take the initiative to get more deeply involved in public transport.

- Investment in public transport should be prioritised over car-oriented spending.

- Mobility must be taken into consideration in urban planning.

- Privatising the transport market, i.e. opening operating tasks to competitive bidding, can trigger further improvements in the quality of transport services and attract more citizens to use public transport.

- Better management of the financing of public transport is needed.

- Transport services should become client-oriented services, where the opinion and needs of clients and citizens are taken into consideration when making improvements and planning innovations.

- The image of public transport is very poor and needs ur-
Executive Summary

- The internal management and operation of public transport companies must improve.
- Cities in SEE should pay more attention to the environmental aspects of transport.
- The inclusion of stakeholders at every stage of planning, decision making and implementation is essential.
- Closer cooperation and experience exchange between SEE cities is needed.

Endnotes

1. Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, Kosovo (as defined by UNSCR 1244), and Turkey.
This report was prepared on the basis of information collected during consultation with a wide number of local transport stakeholders in Albania, Croatia, the former Yugoslav Republic of Macedonia, Serbia, the Czech Republic, Poland and Germany, and we would like to thank them for their support and involvement.

The section “Lessons learnt — Public transport case studies from EU countries”, which represents a substantial part of this publication, summarises five case studies. It was prepared by Michal Beim of the Institute of Socio-Economic Geography and Spatial Planning of the Adam Mickiewicz University, Poznan, Poland. We would like to thank him for his expert contribution to this publication.

We would also like to express our gratitude to all the participants at the Regional Meeting on Sustainable Transport Policies in South Eastern Europe, June 21–22, 2007, Budapest, for their input to the discussions and conclusions summarised in this publication. The meeting was organised by the REC with the support of the Ministry of Housing, Spatial Planning and the Environment of the Netherlands (VROM).

The local stakeholders consulted during the preparation of this book and invited to the regional meeting were the following:

**Albania**
- Kujtim Hashorva, director of the Road Transport Policy Directorate, Ministry of Public Works, Transport and Telecommunication, Tirana
- Vera Shiko, Shkelqim Gjevori and Bujar Kotri, Institute of Transport Studies, Tirana
- Hazbi Parllaku, president of the Association of Private Transport Operators, Tirana
- Enton Punavija, director of the Public Transport Directorate, Tirana
- Brunilda Jegeni, Environmental Center for Administration and Technology (ECAT), Tirana
- Dritan Shutina, executive director of Co-Plan, Institute for Habitat Development, Tirana

**Belgium**
- Ivo Cre, project manager, POLIS, Brussels

**Bosnia and Herzegovina**
- Ekrem Spahic, expert associate, Sector of Transport, Ministry of Communications and Transport, Sarajevo
- Rijad Tikvesa, president of Ekotim (Society for the Protection and Advancement of the Environment, Nature and Health), Sarajevo

**Croatia**
- Marijan Kljucaric, head of the traffic sector, City of Zagreb Urban Design, Construction, Housing, Utilities and Transport
- Helena Hecimovic, town councillor (Local Agenda 21 coordinator), Department for Municipal Services, Urban Development and Environmental Protection, Koprivnica
- Nada Maric, chief of the Department for Traffic Planning and Development, Zagreb Electrical Tramway

**Hungary**
- Andrea Bagoly, project manager, Strategic and EU Office, Budapest Transport Corporation (BKV)
- Marina Varga, Embassy of the Netherlands, Budapest

**Kosovo (as defined by UNSCR 1244)**
- Qamil Feka, head of Road Transport for Passengers and Freight, Ministry of Transport and Communications, Pristina
- Flutra Morina, senior officer for air protection, Department for Environmental Protection, Ministry of Environment and Spatial Planning of Kosovo, Pristina
- Rame Qupeva, director of the Road Infrastructure Department, Ministry of Transport and Communications, Pristina
Former Yugoslav Republic of Macedonia

- Katerina Dimusevska, coordinator of development projects, Public Transport Enterprise, Skopje
- Ana Gruevska, senior associate, Economics Department, Public Transport Enterprise, Skopje
- Nenad Tonic, traffic regimes and signalisation executive, Traffic and Transportation Department, City Government, Skopje
- Ana Colovic, director of the NGO ECO-SENSE, Skopje
- Violeta Terzioska, chief financial officer, SANOS bus and coach factory, Skopje
- Slave Raspaskovski, chairman and CEO, SANOS bus and coach factory, Skopje
- Orce Gjorgievski, general manager, JSP Skopje public transport enterprise
- Dusica Trpcevska-Angelkovic, head of the Spatial Planning Department, Spatial Planning Agency of the Republic of Macedonia, Skopje
- Ivon Velichkovski and Melvan Tairi, members of the Skopje City Council Transport Committee

Montenegro

- Milan Boskovic, senior advisor, Department for Spatial Planning and Communal Issues, Municipality of Niksic
- Milijana Kovac, senior advisor, Management Department, Municipality of Niksic

Poland

- Wojciech Suchorzewski, professor, Institute of Roads and Bridges, Warsaw University of Technology

Serbia

- Zvezdan Kalmar, coordinator of a project with CEE Bankwatch Network – Prague, Center for Ecology and Sustainable Development (CEKOR), Subotica
- Ruzica Bogdanovic, president of the Serbian Association of Town Planners, Faculty of Transport and Traffic, University of Belgrade
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- Jovan Simonovic, deputy executive manager of development and system engineering, City Public Transport Operator “GSP Beograd”
- Dragan Busarcevic, executive manager of development and system engineering, City Public Transport Operator “GSP Beograd”
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- Elizabet Paunovic, deputy secretary, City Assembly of Belgrade, Secretariat for the Environment

Turkey

- Ayse Nuket Benzer, DG Railways, Harbours and Airports Construction, EIA Department, Ministry of Transport, Ankara
- Kaan Yildizgoz, quality and corporate development manager, Istanbul Ulasim AS

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We would also like to thank the Czech Ministry of Environment for giving financial support to publish this book.
Needs and priorities for public transport in South Eastern European cities
Methodology for needs identification

The methodology for needs assessment comprised the following steps:

- three cities in the pilot countries were selected — Tirana (Albania), Skopje (former Yugoslav Republic of Macedonia), and Belgrade (Serbia);
- desktop research was carried out based on available documents;
- personal interviews were conducted in the three capital cities in the pilot countries in the period from April to June 2007. Altogether 26 people were interviewed during 19 meetings;
- the information gathered in the interviews was verified during discussions at the regional meeting on June 21–22;
- additional information provided by participants after the regional meeting about recent public transport developments in some of the cities from the region was reviewed.

This section provides a summary of the assessment of needs and priorities for public transport in South Eastern European cities carried out in 2007 as part of the project Sustainable Transport Policies in South Eastern Europe. More detailed information about the results of the interviews is presented in the background paper for the Regional Meeting on Sustainable Transport Policies in South Eastern Europe, June 21–22, 2007, Budapest, available at http://www.rec.org/REC/Programs/environmental_policy/sustainable_transport_policies/default.html.

This part of the book was prepared on the basis of material made available to the REC, as well as the personal opinions of interviewed stakeholders. While it is not intended to provide an exhaustive list of problems and needs related to urban public transport in SEE, the editor has made every possible effort to provide the most accurate and up-to-date information.
Public transport challenges and required actions

Transport has increased rapidly since the end of the Yugoslav wars (2002) and is becoming one of the main sources of air pollution. At present, public transport (including railways) seems to be neither popular nor attractive, while road transport is growing due to the rapid development of road networks. Since the conflicts in the SEE region ended, mobility in the region has increased significantly. The number of private vehicles has risen dramatically in all countries and territories of SEE, most of the incoming vehicles being second-hand imports from Western Europe. Most of the emissions from the transport sector come from road vehicles. The vehicle fleet is old, causing significant pollution in comparison with other European countries and territories. Urban areas are particularly sensitive to pollution, noise, congestion and the deterioration of urban infrastructure. Due to poorly organised public transport and the increased number of vehicles, traffic congestion in urban centres has become a daily problem.

A short summary of the situation in selected cities is provided below.

Belgrade, Serbia

Public transport represents between 60 and 70 percent of transport in Belgrade. The main public transport operator is GSP Beograd, which is owned by the city of Belgrade and operates buses, trolleybuses and trams. There are also several private operators, represented by an association of private operators. Transport is the biggest source of pollution in Belgrade. Air quality legislation is old fashioned and requires modifications, some of the air quality indicators being no longer relevant. There is no regulation of old cars. The city is congested and there is a shortage of parking places. Public transport rolling stock, especially trams, is old. The city lacks transport planning, although some aspects are covered by the Urban Master Plan until 2021. Walking and cycling are gradually being included as alternative modes of transport. There is a lack of coordination and cooperation at the institutional level (e.g., the parking plan is not being drafted in consultation with planners and does not support the sustainable development of the city). Cooperation among institutions is problematic at national level, and also at local level. There are not enough experts in relevant fields and little understanding of the principles of sustainable development and planning. Interviewees confirmed that there is a lack of education on transport-related problems and low awareness among citizens.

The city and the main public transport operator are aware of the problems and attempts have been made to improve the situation. Over the last four years, 50 new trolleybuses have been purchased and some trolleybus lines have been reconstructed. Since 2000, a major city rehabilitation project has been implemented with financing from various sources (IFIs, the city budget, donations). There has been a big improvement in the parking policy since 2000. A special three-zone parking system has been developed (red zone: parking permitted for one hour; green zone: parking permitted for two hours; blue zone: parking permitted for three hours).

A Park&Ride scheme was introduced at the Sava Centre but was not accepted by the public, probably because it did not offer good public transport connections (it linked with only one bus line) and did not receive sufficient publicity. The most important public transport investments are as follows:

- An LRT (light rail transit or “light metro”), which is included in the Urban Master Plan for Belgrade until 2021. A technical study has been completed and technical specifications are currently being worked out under the direction of the Land Development Agency. The underground section will be beneath the city centre (six stops) and surface sections will connect with trams. A part of the cost will be covered from a European Investment Bank (EIB) project.
- Construction of an inner city ring road.
- Construction of a semi-ring road connecting the left and right banks of the Sava River via a new bridge. Implementation will start in 2008.
- Construction by the state of an outer ring road — currently under construction.
- Preparation of a transportation master plan (ordered and prepared by the German city Karlsruhe).
Skopje, former Yugoslav Republic of Macedonia

The main public transport operator in Skopje is JSP Skopje. There are two private companies, which together operate approximately 250 buses for passenger transport. Public transport is a significant problem in Skopje. Since the start of the decentralisation process in 2004, the central government has had no responsibility for public transport in the capital. The city is responsible for public transport but has no means for organising it. Because of its very limited budget the city is not able to subsidise the public transport company or support the public transport system as in other European cities, nor does it subsidise discounted rates for certain social groups (e.g. disabled people, pensioners, students). At the same time, JSP Skopje has no possibility to obtain loans from banks for investments, since neither the city nor the government is willing to back the investment with guarantees.

At the time the interviews took place, public transport was not reliable: there was only a bus service and the bus fleet was very old (some vehicles dating from the 1970s). Increasing traffic congestion also meant significant delays. Due to the poor quality of the service and the poor technical condition of the bus fleet, public transport was unreliable, unsafe and unattractive, and the number of passengers was therefore steadily declining.

The cost of all discounted tickets is covered by JSP Skopje from its own budget, while, in addition, the company is obliged to pay the full rate of VAT (18 percent). The company is self-financing and has approximately 70 percent cost recovery. At the time of the interviews, JSP Skopje was heavily in debt to the government as a result of unpaid VAT. Later in 2007 the company managed to negotiate with the government for a lower VAT rate. There was also information that Skopje plans to introduce a tram network in the future.

There is no parking charge policy in the city (although there were plans to introduce one). The slow development in this area is partly due to the fact that on-street parking places are owned by the state and the money from fines goes to the state budget. There is no urban transport policy and no support for developing sustainable transport systems. Car usage is growing, while cycling and walking are seen only as forms of recreation. Additionally, citizens perceive public transport as transport for the poor. There is very little awareness of car-related problems or of the concept of sustainable transport.

Tirana, Albania

Since 2002, public bus services in Tirana have been provided by six companies (five privately owned and one publicly owned). Eighty percent of the public transport service is currently provided by the private operators, who are not subsidised by the city, and 20 percent by the city operator. Buses are the only form of public transport and there is no bus terminal in Tirana. The bus service is unreliable and of poor quality. The tariff system is controlled centrally by the government and ticket prices do not cover basic operational costs. There is a lack of relevant transport data to assess the state of public transport and the need for subsidies.

The proportion of public transport users among those travelling to work is quite high (at approximately 38 percent), although walking is still more popular (approximately 41 percent). Cycling represents approximately 6 percent.

There are significant problems in relation to suburban transport in the metropolitan area of Tirana. So-called informal (illegal) private operators provide transport services between the city and suburbs without any contract or licence. There is little coordination among institutions, and support for and approaches to the transport system are hugely fragmented.

The city has no transport policy or strategy. Several studies have been carried out (with the support of banks and the EU) which highlight the need for one big project led by the municipality and larger funds to address problems in an integrated way.

According to city representatives, the city is considering an urban rapid bus transit system with dedicated bus lanes in order to increase the speed of public transport and to offer a better service. This option seems to be the most financially feasible at present.

According to a representative of the Albanian Ministry of Transport, the National Transport Plan calls for a new bus terminal, an intermodal terminal, and the construction of a ring road around the city. The ministry is considering giving up control over ticket pricing, which is currently centralised because of a lack of capacity at the municipal level. At the moment, the price of tickets is low for social reasons (low average incomes and high unemployment).

Zagreb, Croatia

The city of Zagreb has a high, and increasing, level of individual motor traffic. The capacity and quality of public tram and bus transportation and of the commuter railway in the city are insufficient and offer no competition to individual motor transport. The main shortcoming of public transport is slow travelling speed, largely due to the congested roads. Traffic is undoubtedly among the top air polluters in the territory of the city of Zagreb, but air pollution is not measured systematically, nor is there systematic monitoring of traffic and its influence on the environment. No
overall programme for the protection of air from traffic is systematically carried out or supervised. In 1999, the share of public transport was 37 percent. Until 2003/2004, the number of public transport passengers rose but since then has decreased. The number of passengers using the commuter train is increasing and the city has plans to develop the existing infrastructure and, by establishing a tariff-transport union in the territory of the city of Zagreb and surrounding counties, to meet increasing demand for this service and to offer an alternative for cars coming from suburban areas.

The public transport company Zagreb Electric Tram (ZET) operates within this area and neighbouring municipalities, covering a total of 1,192.63 km². It has separate contractual arrangements with each municipality with respect to service levels and fares. Trams provide the main city centre penetration, with buses generally acting as feeders. There are also funicular and cable-car services in Zagreb.

The Traffic Study of the City of Zagreb (approved in 2003 and prepared by a British consulting company) is used to guide city traffic policy and to elaborate the annual and four-year programme of work in the field of traffic. It was also used to elaborate the General Urban Development Plan of the City of Zagreb. Public passenger transport is subsidised to the amount of approximately 70 percent of the total expenses of ZET.

In 2004, ZET began a major renewal of its bus and tram fleet. The bus fleet was considerably rejuvenated with the purchase of 27 new low-floor buses made by Mercedes and MAN. A contract for 140 low-floor trams for the city of Zagreb was signed with domestic producer CROTRAM/KONCAR & GREDELJ: 70 trams were delivered by the end of May 2007 and are now in operation, and the remaining 70 trams will be delivered by the end of 2009. The city has tried to give priority to trams on the streets by introducing so-called yellow lanes, but without great success. Better enforcement and cooperation with traffic police is needed.

One of the most important problems in Zagreb is the shortage of parking spaces in the wider city area. Since 1995, a system of payment collection has been established in the central part of the city, based on zone divisions: permitted parking times and parking fees vary by zone. Since the beginning of 2006, a modified system of parking charges has been in place: existing collection zones were expanded, new criteria for parking times and fees were introduced in particular zones, and fees for the use of public garages were reduced.

The most important traffic-related developments in the period 2000 to 2005 were the construction of new roads and road facilities and the reconstruction of existing ones; and the installation of traffic-lights at crossroads and technical traffic regulation. Bicycle facilities were considerably improved in the past planning period: around 250 km of bicycle tracks were renovated or established. Also in 2005 signals for visually impaired people were installed at a number of crossroads. Eight minibuses are operated by ZET for the use of handicapped persons. The city also carried out a feasibility study into the possibilities for the production and use of bio-diesel in ZET public transport vehicles in Zagreb. Modern information and communications equipment is being installed by ZET in order to create a monitoring management system for public transport. The city’s road network is continuously being expanded and modernised in order to connect new housing and business zones, and also to increase flow rates and traffic safety. Over EUR 100 million are invested annually in the maintenance of the Zagreb city road network.

Future transport-related plans in the city comprise:

- the preparation of a study of the road and rail traffic system in the city of Zagreb and its surroundings — a kind of traffic master plan for the city of Zagreb;
- transport tariff integration in the territory of the Zagreb region;
- the construction of a ring of roads around the central city area and the continued expansion of the road network to keep pace with the dynamics of new housing and business zone construction;
- the further systematic expansion of the network of public passenger transport lines in the city;
- the further reconstruction and development of the commuter railway line (including its extension towards the south of the city);
- an underground–surface fast-track system, beneath the ground in central parts of the city and relying on tram routes or national railway lines in peripheral areas.

Istanbul, Turkey

Public transport in Istanbul comprises an extensive bus network, various rail systems, funiculars and maritime services for the more than 11 million inhabitants of the city, spread over an area of 5,712 km².

In terms of public transport, the greatest problems are the huge population (increasing annually by 2.5 percent), and the growing number of cars (increasing annually by 5 percent). Between 2003 and 2006, there was a 24 percent increase in the number of vehicles (469,000 vehicles, of which
214,000 were cars). These data indicate a twofold increase in car ownership compared to population growth in Istanbul.

The construction of new routes in Istanbul remains limited. There are more new routes in new residential areas, but no new roads are created in the centre and the capacity of the roads remains the same while the amount of traffic increases.

The 1,376 car parks in Istanbul have a capacity of 7.6 percent of the total number of cars — that is, commercial car parking opportunities are unavailable for 92.4 percent of cars. In Istanbul, cars represent 26.34 percent of transportation. Land public transport accounts for 67.06 percent, rail for 4.6 percent, and sea transport 2 percent.

Municipality buses, public buses, inner-city and general ships, car ferries, the tunnel, metro and suburban train systems all vary in price and operate on the basis of either tokens or ticket fares. There are more than 50,000 private transport entrepreneurs, since transport is based largely on private and individual entrepreneurship (78 percent).

The AKBIL (“Smart Ticket”) system was introduced by the Metropolitan Municipality of Istanbul in April 1995 in Istanbul Sea Buses Corporation. In September 1995 it was tested in double-decker buses operated by the Istanbul Electric Tram and Funicular Company (IETT) and the ticketing system became more widespread in 1996–1997 to cover all IETT buses, the tunnel, trams and some private buses and city marine lines. AKBIL integrates the ticketing of 17 different means of transport belonging to 11 different agencies, and offers discounts of between 10 and 25 percent.

The main problems related to transport in Istanbul are the following:

- the dramatic growth in population and car ownership;
- unregulated urban growth;
- unfavourable geographical features (uneven topography, the Bosphorus and Golden Horn);
- road-based policies;
- environmental pollution;
- lack of coordination between the responsible institutions and multi-headed administration in in-town transportation; three local administration organs (IETT; the Istanbul Sea Buses Corporation [IDO Corp.]; and Istanbul Transport Corporation [Ulasim Corp.]); and two central administration organs (Turkish State Railways [TCDD]; and Turkish Maritime Passenger and Freight Carrier [TDI]); lack of a single metropolitan transport authority; and
- an unclear and contradictory administrative and legal framework.

### SEE region

It is clear that some cities in SEE are aware of their transport-related problems and have taken action towards mitigating them. However, most are still facing fundamental challenges that are difficult to overcome for various reasons.

Public transport challenges in the SEE region can be grouped under the following headings.

### Economic transition and changing lifestyles

Historically, SEE countries have had a relatively high proportion of public transport, but due to greater freedom made possible by recent economic development, the number of cars is growing rapidly. Cars have become status symbols, luxuries that were once not affordable. The number of people using public transport is decreasing, with public transport perceived as transport for the poor. Also, the many second-hand cars imported from Western Europe are causing significant air and noise pollution.

### Legislation, strategies and policies

In the absence of a proper regulatory governmental framework, a political and organisational vacuum exists that impedes further improvements to the public transport system. There is no local transport policy, and no parking-charge policy in cities. Often there is no transport strategy at national level, or the existing policy is outdated. Investment decision makers give big infrastructural projects priority over public transport. Some cities have no regulatory framework for legalising relations between the city and transport operators, or between public and private operators. It seems that there is no political vision or willingness to make the few structural changes necessary to improve the situation.

### Changing institutional frameworks

The research and discussions indicated that the main problem stems from the complete withdrawal of the state from responsibility for local public transport. However, the decentralisation process is not complete and some competences remain at governmental level. Municipalities have usually inherited outdated and non-profitable public transport systems, often without adequate financial means. The problem is exacerbated by the absence of a clear division of responsibilities between institutions and the lack of capacity for planning and cooperation.
Cooperation among public transport actors

There is little understanding or cooperation among central and local governments. Problems are usually related to suburban transport and inter-city transport, and there is no inter-municipality or regional cooperation. Transport operators complain about poor contractual arrangements with the cities, which are responsible for the organisation of public transport, as well as the lack of proper compensation for their services. Typically, municipal bus and tram services are not integrated with the — usually state-owned — railway service.

Limited financial resources

A very typical problem is the lack, or very low level, of subsidies for transport operators, which makes it difficult for them to cover discounted fares for certain social groups. A related problem is the lack of funds for investments and operational costs, as there is usually little money left from public sources for direct investments. Some of the interviewees indicated that the difficult financial situation of public transport is related to the fact that priority is given to road construction and big infrastructure investments. Low capacity and lack of know-how for obtaining EU pre-accession...
• Finding of ways and means to finance the urgent renewal of neglected infrastructure and rolling stock and the creation of new services.
• Acceptance that, in most cases, public transport cannot be a self-financing system.
• Identification of alternative ways to finance infrastructure and operational costs.
• Investigation of possible help from central government – e.g. to lower the VAT rate on public transport services.
• Accessing financial support and making more efficient use of national, European and international funding.

BOX 5

Limited financial resources – activities needed

• Finding of ways and means to finance the urgent renewal of neglected infrastructure and rolling stock and the creation of new services.
• Acceptance that, in most cases, public transport cannot be a self-financing system.
• Identification of alternative ways to finance infrastructure and operational costs.
• Identification of measures and options to increase fare revenues or to generate additional revenues.
• Investigation of possible help from central government – e.g. to lower the VAT rate on public transport services.
• Accessing financial support and making more efficient use of national, European and international funding.

BOX 6

Equipment, infrastructure and operational issues – activities needed

• Establishment of incentive schemes for operators.
• Increase in the urban space dedicated to public transport (e.g. separate bus lanes, etc.).
• Improvement of interoperability between metro, tram, light rail and bus systems.
• Improvement in travelling speed and decrease in travelling times.
• Improvement in the technical safety and reliability of vehicle fleets.
• Investment in new or second-hand rolling stock – an in-depth economic study should be carried out prior to any choice, taking into account local conditions.
• Implementation of integrated ticketing systems and transport intermodality.
• Establishment of common information and ticketing systems.
NEEDS AND PRIORITIES: CHALLENGES AND REQUIRED ACTIONS

BOX 7

Image of public transport – activities needed

- Treatment of customers as individuals with certain expectations and perceptions.
- Introduction of customer orientation as an essential part of public transport companies’ corporate philosophy.
- Implementation of public transport image-improvement campaigns and advertisements of public transport to citizens and passengers.
- The use of mass media to promote public transport.
- Awareness raising and education for citizens, politicians and operators (directors).
- Market research in order to find options for improvement.

BOX 8

Internal management of public transport companies – activities needed

- Increase in overall performance at company and business unit levels in order to better cope with existing competition or future competition.
- Improvement in financial performance by further cost reduction and an increase in revenue in order to cope with reduced public funds.
- Streamlining, or even downsizing, of the organisation in order to improve efficiency.
- Finding better ways to outsource non-core business or new business.

BOX 9

Environmental aspects – activities needed

- Promotion of cycling, especially in small and medium-sized cities where this is a more feasible solution.
- Enforcement of the polluter pays principle and other environmental regulations including SEA and EIA procedures.
- Regulation of old cars and imported second-hand cars.
- Consideration of the use of clean fuels or retrofitting.

BOX 10

Stakeholder inclusion and awareness raising – activities needed

- Inclusion of all stakeholders in the planning and decision-making process.
- Greater attention to public opinion.
- Provision of more information to the public.
- Awareness raising and education of citizens, politicians and operators (and a better understanding of problems faced by operators).
funds and possible funding from IFIs were identified as additional obstacles to the improvement of public transport. In some cities, possibilities to obtain loans are also very limited due to difficulties in providing loan guarantees.

**Equipment, infrastructure and operational issues**

In many SEE cities, public transport infrastructure is very poor. The rolling stock is dated, sometimes beyond its operational lifetime, and there is almost no traffic control. Public transport has no priority on the roads. In many cities there is almost no, or very little, investment in public transport. All these factors result in a very poor transport service, but operators lack the capacity to tackle the problems. There are almost no incentives for operators to be more efficient and competitive, as they receive gross cost subsidies for running their services regardless of their actual performance, or there are no subsidies at all. Transport-related problems in small cities differ from those in big cities.

**Image of public transport**

The car is frequently associated with freedom and individualism, while public transport has a less attractive image. It is perceived as an unreliable, slow and uncomfortable service, and as the transport of the poor. In addition, citizens have little awareness about sustainable transport. Operators do not regard passengers as clients — there is no market research and no marketing or advertising for public transport. These activities are seen as a cost factor rather than a means for generating revenue. Very few transport operators have a formal marketing strategy: usually they have no marketing expertise, especially in small cities. In addition, passenger information systems are quite poor, which can discourage passengers from using the service.

**Internal management of public transport companies**

Public transport companies are very often overstaffed and inefficient. They are not competitive, since public transport services are generally a monopoly market. Internal restructuring is needed, but the management must also address social issues and confront the trade unions.

**Environmental aspects**

There is little enforcement of environmental laws and regulations (SEA, EIA). The laws are applied in theory, although in practice the EIA and SEA procedures in transport projects are inadequate. In the SEE region, with few exceptions, alternative and environmentally friendly modes of transport such as walking and cycling are perceived as recreational activities. Also, the quality of fuels used is very low and this, combined with the high number of second-hand imported cars, contributes significantly to air pollution.

**Stakeholder inclusion and awareness raising**

Stakeholders are not fully involved in the planning and decision-making process. Public opinion is very often not taken into account when planning and providing services. There is very little awareness of the negative environmental effects of private car usage or of the advantages of public transport.
The research carried out and the discussions that took place during the regional meeting reveal that all SEE countries are facing rapid individual motorisation and urban growth. The main problems are related to increasing congestion, suburban growth and poor air quality in the cities. These problems, combined with very poor public transport systems, often inherited, and a recent lack of funding, result in serious transport problems in the cities. Car traffic must be limited and public transport must be improved in order to offer a real alternative. It is clear that some cities in the SEE region (e.g. Zagreb, Belgrade) have begun working towards these goals, by investing in the road infrastructure and in public transport, for example. Some cities are preparing transport plans, which are very often a prerequisite for receiving further donations or loans from IFIs.

Most cities, however, are still left with significant, and sometimes fundamental, organisational problems related to the lack of a proper legislative framework or of means for improvement. Further capacity building is required and action needs to be taken towards the implementation of the principles of sustainable mobility. Many cities simply lack a good transport strategy for the further development and improvement of transport, integrated with a city planning strategy and following the principles of sustainable mobility.


According to the mid-term review: “The objective of a European Union (EU) sustainable transport policy is that our transport systems meet society’s economic, social and environmental needs. Effective transportation systems are essential to Europe’s prosperity, having significant impacts on economic growth, social development and the environment.”

All European cities must find a way to reconcile the demand for increased mobility with the need to reduce congestion, accidents and pollution. The cities will be supported in their efforts by the EC, which will continue to promote research into urban mobility.

One of the important recommendations of the EC thematic strategy on urban transport is for cities to develop sustainable urban transport plans with the involvement of all stakeholders, as a framework for all activities.

The green paper on urban transport “Towards a New Culture for Urban Mobility,” adopted in September 2007 by the EC, marked the start of a consultation phase on the key issues of urban mobility: free-flowing and greener towns and cities, smarter urban mobility, and urban transport that is accessible, safe and secure for all European citizens. Stakeholders were invited to share their views with the Commission by March 15, 2008, after which a concrete action plan was to be drawn up and published by early autumn 2008, based on the input from all European cities and stakeholders. The action plan will include possible activities at EU, national, regional, and local levels, and at the level of the transport industry and the public, and will be an additional guidance document for further improvements.

Effective transport planning requires long-term vision to plan financing for infrastructure and vehicles to design incentive schemes to promote high-quality public transport, safe cycling and walking, and to coordinate with land-use planning at the appropriate administrative levels. Transport planning should take account of safety and security, access to goods and services, air pollution, noise, greenhouse gas emissions and energy consumption, and land use. It should cover passenger and freight transportation and all modes of transport. Solutions need to be tailor-made based on wide consultation of the public and other stakeholders, and targets must reflect the local situation.

The Commission strongly recommends local authorities to develop and implement sustainable urban transport plans.
With this in mind, and considering that EU accession is on the agenda of most SEE countries, there is a clear need for experience exchange with other, more advanced, cities (either in the SEE region or EU member countries, especially those that have recently joined). Cities should also take into account recommendations made by the EC in strategic documents related to sustainable urban mobility — for example the preparation and implementation of sustainable urban transport plans.

Endnotes


2. The information for Zagreb is compiled from the report “State of the Environment of the City of Zagreb”, May 2006, chapter on traffic and information, delivered by the City Office for Physical Planning, Environment Protection, City Development, Construction, Municipal Affairs and Traffic.

3. Information supplied by KONCAR & GREDELJ.

4. Based on data supplied by Istanbul Ulasim AS.


Lessons learnt — public transport case studies from EU countries
LESSONS LEARNT

This section provides a summary of five public transport case studies from the Czech Republic, Germany and Poland. Four case studies focus on cities (Olomouc and Ostrava in the Czech Republic; Poznan and Gdynia in Poland). The public transport system in Freiburg, Germany is included as an example of very good practice.

The goal of this section is to present lessons learnt in the development of public transport using the example of cities with a comparable economic context. Four of the cities are in countries which previously had a centrally planned economy and historically had a high proportion of public transport. At the same time, lessons learnt from their recent experience of transition and adaptation to changing economic and social circumstances can be of interest to other SEE cities that are now beginning to develop efficient and sustainable public transport systems. The case study of Freiburg provides an example of a model city from the point of view of public transport and mobility management.

In Poland and the Czech Republic two cities were chosen in each country — one smaller and one medium-sized city — which have public transport systems with specific and interesting features.

Each of the case studies includes a description of:
• the statistical background;
• the organisational model of public transportation in the city and the metropolitan area;
• the public transport system;
• the technical and innovative solutions applied in public transportation;
• the fare system, marketing, and special offers;
• agendas, plans and strategic documents;
• other activities for sustainable transport; and
• participation in EU programmes (past, present and near future).

The case studies were prepared on the basis of data from various sources, gathered during in-depth interviews with local public transport stakeholders in each city. A list of sources is given after each case study. For the purposes of comparison, each case study begins with a general description of local public transport in the country as a whole.

<table>
<thead>
<tr>
<th>CASE STUDY CITY</th>
<th>MAIN TRANSPORT FEATURES</th>
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<td>Olomouc, Czech Republic</td>
<td>a typical medium-sized Czech city with two modes of public transport (buses and trams)</td>
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<tr>
<td>Ostrava, Czech Republic</td>
<td>a shrinking, polycentric city located in an industrial region with decreasing importance</td>
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<tr>
<td>Gdynia, Poland</td>
<td>the first Polish city with a controlled competition model, located in the TriCity metropolitan area (Gdansk-Sopot-Gdynia)</td>
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<td>Poznan, Poland</td>
<td>a city with an advanced intelligent traffic-lights system, a car-oriented policy, and urban sprawl problems</td>
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<td>Freiburg, Germany</td>
<td>a “model city”: a very good example of a public transport system</td>
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Local public transport in the Czech Republic

In the Czech Republic, as in other Central and Eastern European countries, the development of transportation has been detrimental to the environment and public health. The number of passenger cars and freight transport vehicles has greatly increased since the 1989 Velvet Revolution that marked the end of communism in the Czech Republic. At the same time, the significance of public transport has fallen. Between 1990 and 2006, the level of motorisation in the Czech Republic rose by 81 percent, from 220 to 398 cars per 1,000 inhabitants. In addition, in the first decade of the economic transition budget problems forced cutbacks in subsidies for public transport and politicians gave priority to road infrastructure development rather than the railways or public transport.

A breakthrough in thinking about public transport came with the preparations for EU accession and was marked by the purchase of the “Pendolino” modern high-speed trains in 2004. Urban local transport is organised and financed by the communes. Larger communes have their own transport operator, while smaller communes organise tenders for public transport services. In the majority of cases, the winners of tenders are companies based on the former Czechoslovak State Bus Transport Company (CSAD), which was divided into smaller companies and privatised during the transition period. Regional transport is financed and organised by regional authorities. According to national law the regional authorities are obliged to provide transport services throughout the region that are coordinated with the needs of the labour market and educational services during weekdays, with a minimum of two connections on Saturdays. Other scheduling depends only on the political decisions of the regional governments.

In the first decade of the economic transition, the total number of passengers per year using urban transport in the Czech Republic dropped by approximately 21 percent, from 2,969 million to 2,341 million in 1998. Since then, the number of passengers has fallen more slowly, reaching 2,238 million in 2006.

The situation was more dramatic in terms of intercity and rural bus transport. The total number of passengers per year dropped from 1,377 million in 1989 to 386 million in 2005 (i.e. by about 72 percent). In 2006, there was a slight rise in the number of passengers for the first time — to 388 million. The main reason for the falling numbers is that, in terms of regional transportation, cars are more competitive and more flexible. In addition, the Czechoslovak State Bus Transport Company was divided into several independent companies with a monopoly in the different regions. This resulted in coordination problems and the absence of a common fare system. Falling passenger numbers led to a reduction in the number of connections, which meant severely reduced mobility for some families, who could not afford a car and who did not live near a railway station.

The legal framework for bus transportation is set down in the Law on Road Transport. In the Czech Republic, transport operators require business concessions and dedicated licences for the lines they operate. The licences cover details such as timetables, routes, stops, etc. Trams and trolleybuses are regulated in general by the Law on Railroads.

Historically, trams were a popular means of transport in medium-sized Czech cities. Trams operate in seven cities today, while tram networks in a further nine cities were closed in the 1950s and 1960s as a result of “modern” views on transportation. The importance of trolleybuses in urban transport has risen since the 1980s. They are cheaper and more flexible than trams and more environmentally friendly than buses. Trolleybuses operate in 13 Czech cities.

An average length of 12 km of line per 100 km² of territory makes the Czech railway network, along with that of Germany and Belgium, the densest in the world. In 2006, the total length of the Czech railway network was 9,597 km, of which 7,746 km were single-track lines, and 1,851 km were double-tracks or multi-tracks. Of the total network length, only 102 km were narrow gauge. Electrified lines represented a total of 2,926 km. In terms of power systems, 1,688 km of lines were electrified at 3,000 V direct current, 47 km at 1,500 V, and 1,306 km at 25 kV/50 Hz alternating current. The different power systems were introduced as the result of political decisions taken a few decades ago, because alternating-current
voltage is more effective. Passenger trains run on all but 177 km of the network.

The Czech railway network functions very well in spite of the differences in power system. The railways have survived the socio-economic transformation quite well: since the 1989 Velvet Revolution only a few lines have been closed, a situation radically different from that in Poland. Between 1989 and 1999, Czech railways lost 40 percent of passengers (the figure falling from 290 million a year to 174 million). However, since 2000 more passengers have been attracted back to the railway. The number of passengers per year had already risen to 183 million by 2006. This relatively small loss in passengers is largely due to the fact that the railway system in the Czech Republic is based on wide regional connections served by economical light rail units, usually diesel. Local and regional services are well connected, creating a coherent system. The tracks are in better condition than in Poland, travel times are shorter, and ticket prices are relatively cheap. In addition, passenger information has been comparatively good since communism: it is even possible to trace the actual position of a train via Internet thanks to a system that monitors almost all trains in the network.

The prices of public transport services are regulated and depend on the local situation, the transport operator, the city council or the local transport authority. Freedom in fare pricing policy is still limited. The Ministry of Finance establishes by decree the maximum price of tickets. The rates in force in 2005 were established on December 6, 2006 in the Pricing Journal. The decree contains a table of the maximum basic ticket prices and a factor used in the multiplication of the basic price. This factor depends on many things: the price of the buses, the number of vehicles, public subsidies, etc. The factor allows the ticket price to be adjusted to the situation of the company. A similar approach is used in rail transport.

This same decree regulates discount rates for various types of transportation (urban, regional and domestic buses, and domestic railways). Each type of transportation has separate concessions, although the minimum is similar in each case. Transport operators, communes and transport authorities can offer bigger discounts or other allowances than those set out in the decree. The main (minimum) allowances are:

- 100 percent for dignitaries of certain state bodies (such as the parliament);
- 100 percent for judges;
- 100 percent for children under 6 years of age;
- 50 percent for children aged between 6 and 15, for all routes, all classes, and throughout the year;
- 62.5 percent for schoolchildren under 15 years of age, only for personal season tickets (minimum validity one week);
- 25 percent for schoolchildren and students over the age of 15, only for personal season tickets (minimum validity one month) on the route between home and school, during weekdays in the school year (excluding July and August);
- 50 percent for parents or carers of disabled children;
- 75 percent for disabled persons (second or third disability category), including blind people; and
- 100 percent for the guides of blind persons (the same allowance applies to guide dogs).

The differences between allowances apply only to urban transport: children and students without employment are eligible for a 50 percent reduction, and disabled persons travel for free. Additionally, those on low incomes (as defined by the Law on State Social Aid) are eligible for half-price tickets. The same decree also regulates the maximum prices chargeable by taxis within the territory of the commune.

Up to the end of 2007, public transport services were charged a reduced VAT rate (5 percent up to 2007; and 9 percent from 2008). Changes in VAT rates result in raised ticket prices. In the long term, the Czech government is planning to introduce a single, flat rate of tax for all goods and services, which may also lead to an increase in the price of public transport.

The first association of public transport operators was established in the Prague metropolitan area. Since 1993, public transport authorities have been created in almost all Czech agglomerations. The Czech Association of Public Transport Authorities (CAOVD) came into existence in 2003 to support change to the legal framework for urban, agglomeration and regional transportation, and to provide a platform for the exchange of knowledge and experience.

The Czech Republic’s Transport Policy for 2005 to 2013 is a complex document that sets out the strategic and conceptual goals for transportation and transportation networks. The Transport Policy is based on the EU white paper: “European Transport Policy up to 2010: Time to Decide,” published in 2001, and on the conclusions of the Johannesburg Summit on Sustainable Development, held in 2002. The general goal of sustainable development in terms of transportation should be founded on three pillars — economic, environmental and social — and can be defined as "achieving a suitable modal split by ensuring equal conditions on the transport market.”

The document places an emphasis on public transport, since the present division between public and individual passenger transportation is threatening the functionality of the
transport system. The main problems indicated in the policy are the increase in road congestion, the negative environmental impacts of transport, and excessive dependence on public transport subsidies. To this end, the policy suggests raising charges for access to road infrastructure on the one hand, and reducing subsidies for public transport on the other. More market-oriented conditions should be created in transport, although this solution would entail the big disadvantage of raising the prices of transport services in general. The opening of the market to competition should provide protection from dramatic price increases in public transportation. The policy document highlights the fact that the current legal framework makes obligatory the signing of short-term public service contracts that are unfavourable and limit the possibilities of renewing public passenger transport rolling stock. The system of tenders privileges the state operator and is a barrier to the development of competition.

Concerning individual motorisation, the Transport Policy concentrates on three main areas: a performance-based toll collection system for using the public transport infrastructure; the reduction of noise, pollution and greenhouse gas emissions; and the improvement of traffic safety. In meeting these objectives, the quality and maintenance of the existing infrastructure and the optimisation of the road network have a greater role to play than the widening of roads or the development of new ones.

Measures related to transport infrastructure are elaborated in a separate strategic document — the General Development Plan for Transport Infrastructure — which is one of the sectoral follow-up documents to the Transport Policy. The second of these follow-up documents is the Territorial Transport Services Support Strategy, which concentrates on the harmonisation of public passenger transport; the renewal of the regional and urban public transport fleet; the renewal of the railway rolling stock; and the implementation of information and telematic technologies in public transport, ensuring the achievement of unified transport information system (UTIS) objectives.

The National Strategy for the Development of Cycling was also prepared in 2004. The main goal is to promote cycling as an alternative to public transport and individual car transport. The document describes the main aims of the cycling policy: to create better conditions for the construction of the cycling infrastructure; to increase the safety of vulnerable road users (cyclists, pedestrians); to incorporate bicycle traffic into the integrated transport system; to increase public awareness about bicycle traffic; and to develop cycling tourism.

Olomouc — an increasing number of passengers using public transport

Background

Olomouc was the capital of Moravia until the seventeenth century, when the position was taken over by the rapidly expanding city of Brno. Today, Olomouc, which is located on the alluvial plain of the River Morava, is the capital of the Olomouc region. It is the second biggest tourist attraction in the Czech Republic and its inner city has the country’s second largest complex of historical monuments.

<table>
<thead>
<tr>
<th>TABLE 2 Olomouc — general information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (2006)</td>
</tr>
<tr>
<td>Area</td>
</tr>
<tr>
<td>Population density</td>
</tr>
<tr>
<td>Modal split (2002)</td>
</tr>
<tr>
<td>Car — 18.5% (drivers — 15.8%, passengers — 2.7%)</td>
</tr>
<tr>
<td>Bicycle — 8.8%</td>
</tr>
<tr>
<td>Pedestrian — 24.6%</td>
</tr>
<tr>
<td>Number of cars per 1,000 inhabitants</td>
</tr>
<tr>
<td>Total length of public roads</td>
</tr>
<tr>
<td>Total length of cycle paths</td>
</tr>
</tbody>
</table>

Source: compiled using data from the Czech Statistical Office and the Transport Research Centre, Department of Non-motorised Traffic
Suburbanisation is not a significant problem in terms of city development: since the end of communism (1990), the city has lost only around 5 percent of its inhabitants. However, forecasts indicate a 10 percent rise by 2020 in the number of inhabitants, bringing the population up to 112,000 people.

Olomouc is also an important regional hub. The railway station, built in 1845, is located in the eastern part of the city, less than 2 km from the old town centre. Adequate public transport, in the form of omnibuses connecting the city with the railway station, was in operation in the city from 1845. After the company established railway tracks between the railway station and the southern and western parts of the city, these lines also became very popular. An electric tram system was launched in the city in 1899, and in 1927 Olomouc became the first Moravian city to introduce bus transport. Tram transportation has a strong tradition in the Czech Republic and trams have survived here longer than elsewhere in Europe.

Public transport organisation

Public transport in Olomouc is organised by the town hall as part of the regional transport system. The Integrated Public Transport System of Olomouc Region (IDSOK) is responsible for creating a common fare system and for the division of income from the sale of multi-zone tickets. Decisions about routes and frequency are taken by the operators, while IDSOK coordinates the timetables in order to ensure coordination, where possible. IDSOK is managed by the regional authority of the Olomouc region. It was established in 2003 on the basis of four smaller integrated fare systems. Since 1997, a common fare system has been in existence around the city of Olomouc, and since 2001 the towns of Hranice, Sumperk and Zabreh have also been part of the common fare system. In 2007, IDSOK covered almost the entire area of the Olomouc region.

The routes and timetables of trams and urban buses are decided by the operator, the Transport Company of the City of Olomouc (DPMO). The company is 100 percent owned by the city of Olomouc. As a municipality-owned company it can sign long-term deals, without tenders, that correspond to the most important targets of the transport policy and contain the same economic indicators. The city controls the company through a board of supervisors and a general assembly of partners.

The total running costs of DPMO in 2006 were CZK 303,502,000, and the total income amounted to CZK 313,186,000. The main source of income (49 percent or CZK 153,324,000) was in the form of a city subsidy. The next largest source of income (35 percent, or CZK 109,982,000) was ticket sales. It is worth noting that season tickets represented about 49 percent of income from ticket sales.

Other sources of income were the selling of advertisement space (3 percent of the total income, or CZK 10,188,000); additional fees, including fines for fare dodgers (2 percent, or CZK 6,935,000); and subsidies from the regional authority (1 percent, or CZK 3,483,000). The remaining 10 percent was made up from various sources. The most profitable advertisements were vehicle-wraps (about 37 percent of advertising income), posters inside vehicles (28 percent), and small billboards on vehicles (16 percent). Other forms of advertising were posters on pylons, announcements in printed guides and timetables, and leaflets. In addition, DPMO rented out historical vehicles, organised sightseeing trips, etc.

The main expenditures in 2006 were investments (CZK 78,485,000), salaries (CZK 96,112,000) and company social activities and events (CZK 7,367,820). Investments have remained steady over the last five years: in 2006 they were concentrated on modernisation and the purchasing of new trams (CZK 47,177,000) and buses (CZK 23,963,000).

Network

Passengers in the city of Olomouc can use the trains, trams and buses of several operators within a single ticket system. Trams and buses operated by DPMO play the most important role. There are six tram lines: on four of them trams run every 12 minutes at peak times (usually between 05:00 and 19:00), and every 15 minutes at other times until 22:00 or 23:00. On the other two, trams run every 24 minutes, between 05:00 and 19:00 only. During weekends and holidays, trams run on only four of the lines: on two of the lines every 12 minutes during peak hours on Saturdays (05:00–12:00) and every 15 minutes at other times. On the other two, trams run every 15 and 20 minutes. On Sundays fewer trams operate: on one line trams run every 12 and 15 minutes; on a second line trams run every 15 minutes. On a further two lines trams run every 15 and 20 minutes. The peak hours on Sunday are between 14:00 and 19:00.

DPMO operates buses 24 hours a day in Olomouc: buses on two of the lines run with the highest frequency, that is, every 10 minutes during peak hours. On seven lines, the frequency during peak hours is between 12 and 20 minutes; and on five lines buses run every 24 to 30 minutes during peak hours. The rest of the lines provide a complementary service with a much lower frequency, sometimes only a few buses a day. For example, one line operates only in the early morning and another only late at night. It is worth noting that a special bus line operates in the city (the number 41 bus, or “bariera” [barrier]), with low-floor buses designed for handicapped people. At weekends, only 17 bus lines operate (one of them, with a con-
### Ticket and tariff system in Olomouc

<table>
<thead>
<tr>
<th>TYPE OF TICKET</th>
<th>NORMAL</th>
<th>REDUCED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zone no. 71 — Olomouc City</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single ticket (valid for 40 minutes on weekdays or 60 minutes on Saturdays, Sundays and holidays)</td>
<td>CZK 10.00</td>
<td>CZK 5.00</td>
</tr>
<tr>
<td>Transferable 24-hour ticket</td>
<td>CZK 30.00</td>
<td>CZK 15.00</td>
</tr>
<tr>
<td>7-day ticket</td>
<td>CZK 90.00</td>
<td>CZK 45.00</td>
</tr>
<tr>
<td>Monthly personal ticket</td>
<td>CZK 240.00</td>
<td>CZK 120.00</td>
</tr>
<tr>
<td>Quarterly personal ticket</td>
<td>CZK 600.00</td>
<td>CZK 300.00</td>
</tr>
<tr>
<td>Special half-yearly ticket for senior citizens (70+)</td>
<td>CZK 100.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Special yearly ticket for senior citizens (70+)</td>
<td>CZK 200.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Special yearly ticket for war veterans and some invalids</td>
<td>CZK 100.00</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Other zones (multi-zone tickets can include Olomouc as one zone)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single ticket for 1 zone (valid for 40 minutes on weekdays or 60 minutes on Saturdays, Sundays and holidays)</td>
<td>CZK 7.00</td>
<td>CZK 3.00</td>
</tr>
<tr>
<td>Single ticket for 2 zones (valid for 45 minutes on weekdays or 60 minutes on Saturdays, Sundays and holidays)</td>
<td>CZK 12.00</td>
<td>CZK 6.00</td>
</tr>
<tr>
<td>Single ticket for 5 zones (valid for 90 minutes)</td>
<td>CZK 30.00</td>
<td>CZK 15.00</td>
</tr>
<tr>
<td>Single ticket for 10 zones (valid for 180 minutes)</td>
<td>CZK 62.00</td>
<td>CZK 31.00</td>
</tr>
<tr>
<td>Single ticket for 15 zones (valid for 180 minutes)</td>
<td>CZK 92.00</td>
<td>CZK 46.00</td>
</tr>
<tr>
<td>Single ticket for 20 zones (valid for 240 minutes)</td>
<td>CZK 122.00</td>
<td>CZK 61.00</td>
</tr>
<tr>
<td>Single ticket for 24 zones (valid for 240 minutes)</td>
<td>CZK 146.00</td>
<td>CZK 73.00</td>
</tr>
<tr>
<td>Transferable 24-hour ticket for one zone</td>
<td>CZK 30.00</td>
<td>CZK 15.00</td>
</tr>
<tr>
<td>7-day ticket for 1 zone</td>
<td>CZK 55.00</td>
<td>CZK 27.00</td>
</tr>
<tr>
<td>7-day ticket for 2 zones</td>
<td>CZK 110.00</td>
<td>CZK 55.00</td>
</tr>
<tr>
<td>7-day ticket for 5 zones</td>
<td>CZK 275.00</td>
<td>CZK 137.00</td>
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<tr>
<td>7-day ticket for 10 zones</td>
<td>CZK 550.00</td>
<td>CZK 275.00</td>
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<tr>
<td>7-day ticket for 15 zones</td>
<td>CZK 660.00</td>
<td>CZK 330.00</td>
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<tr>
<td>7-day ticket for 20 zones</td>
<td>CZK 660.00</td>
<td>CZK 330.00</td>
</tr>
<tr>
<td>7-day ticket for 24 zones</td>
<td>CZK 660.00</td>
<td>CZK 330.00</td>
</tr>
<tr>
<td>Monthly personal ticket for 1 zone</td>
<td>CZK 180.00</td>
<td>CZK 90.00</td>
</tr>
<tr>
<td>Monthly personal ticket for 2 zones</td>
<td>CZK 350.00</td>
<td>CZK 175.00</td>
</tr>
<tr>
<td>Monthly personal ticket for 5 zones</td>
<td>CZK 880.00</td>
<td>CZK 440.00</td>
</tr>
<tr>
<td>Monthly personal ticket for 10 zones</td>
<td>CZK 1,760.00</td>
<td>CZK 880.00</td>
</tr>
<tr>
<td>Monthly personal ticket for 15 zones</td>
<td>CZK 2,120.00</td>
<td>CZK 1,060.00</td>
</tr>
<tr>
<td>Monthly personal ticket for 20 zones</td>
<td>CZK 2,120.00</td>
<td>CZK 1,060.00</td>
</tr>
<tr>
<td>Monthly personal ticket for 24 zones</td>
<td>CZK 2,120.00</td>
<td>CZK 1,060.00</td>
</tr>
</tbody>
</table>

*Source: IDSOK, as of November 30, 2007*
The system of Olomouc Region (IDSOK). The system covers the whole of the Olomouc region and is divided into 34 zones. Ticket prices depend on the number of zones crossed and, with the exception of the city of Olomouc, are the same in each zone. Tickets valid exclusively within the city limits are slightly more expensive. Tickets are valid on trams and trains and city or regional buses. Discounts are available for season tickets: for example, while there are 24 price levels for single tickets (the most expensive being valid for travelling in all 24 zones), the price of the most expensive monthly pass is the same for 12 zones as it is for 24 zones. Within the city of Olomouc there is also a wider variety of tickets available, including 24-hour and quarterly tickets, and special fares for season tickets for elderly or handicapped persons. Interestingly, the validity of single tickets varies: at weekends and on public holidays a single ticket is valid for a longer period than on weekdays. There are two reasons for this: firstly, trams and buses run less frequently at the weekends; and secondly, this is a way of promoting public transport for purposes other than travelling to work or school, when the car would usually be seen as a more attractive option.

Additional fares are charged for carrying bicycles (CZK 15) and large items of luggage (between CZK 3 and 10), depending on the number of zones crossed. Penalties for fare dodgers are not particularly high — between CZK 300 and CZK 30 for transporting large items, bicycles or dogs without an additional ticket. There are some special fines (of CZK 300) for disruptive behaviour (stopping or contaminating a vehicle, violence etc.). IDSOK and DPMO are planning to raise the level of fines for fare dodgers up to between CZK 700 and 1,000. Season-ticket holders travelling without their personal ticket pay only a handling charge of CZK 30. After 60 days, unpaid debts of fare dodgers are sold to private debt-collection companies.

Tickets are available from a wide network of shops and kiosks (more than 250 sales points in Olomouc) and from automats located at the most important tram and bus stops. Income from ticket sales covers about 36 percent of the total public transport costs in Olomouc.

Public transport operators and rolling stock

Urban lines in Olomouc are operated exclusively by DPMO. The company operates 60 normal trams, three historic trams, and one technical tram. The most popular type of vehicle is the Tatra T3 (51 trams). The nine most recent trams are modern designs, partly with low floors: Vario LF (2), Inekon 2001 Trio (3) and Skoda Inekon (4). The Inekon trams are newly designed, while the low-floored Vario LF trams are based on the Tatra T3 (the most popular tram world-wide). In total, low-floored trams comprise 11.5 percent of the fleet. The modernisation of the Tatra T3 vehicles is a very important task for DPMO. In addition to a newly designed interior, the trams are fitted with a thyristor-controlled traction system, which greatly improves energy efficiency. In 2007, there were 24 modernised Tatras: together with the modern trams, energy-saving trams make up 55 percent of the tram fleet in Olomouc. The average age of the trams is 21 years.

The bus fleet comprises 78 buses, most of which have high floors. DPMO operates 24 standard-length buses made
by Karosa (types B 732, B 932, B 932E and B 952), and 19 articulated buses made by Karosa (types B 741, B 941, B 941E and B 961). All of the most recent buses are low-floor vehicles produced by the Polish company Solaris: these comprise 26 standard-length buses (Urbino 12) and seven articulated buses (Urbino 18). Additionally, the company operates two small buses, 7.5-metre-long SOR Bs. The average age of the bus fleet is six years. The introduction in 2006 of modern buses that fulfil the EURO III emission standards increased average oil consumption by about 1.23 liters/100 km (around 10 percent) as a result of the lower efficiency of the motors due to the complex filters.

**Policy towards car traffic**

Olomouc is located at the intersection of three national roads (known in the Czech Republic as “first-class roads”), which bear the burden of the high-speed long-distance and international European transportation in the region. The main transit traffic uses the southern and western by-passes. The southern by-pass was completed in 2004. The construction of the western tangential road (now almost complete) was begun in 2004.

For several years a priority investment focus in Olomouc has been the redevelopment of the area in front of the main railway station. This is one of the busiest traffic nodes and forms a natural entry into the city. This investment project should be completed in 2010 and will result in basement parking for 341 vehicles, an underpass, the relocation of a tram line, a new road, and a developed space with greenery and lighting. Drivers leaving their cars in the car-park at the main railway station receive a free public transport ticket valid for 60 minutes.

Parking zones have been established throughout the historic city centre and in some streets outside this zone, and the charges apply on weekdays between 09:00 and 18:00. One hour’s parking costs CZK 10 or CZK 20, depending on the street. Parking season tickets can be purchased for sub-areas, costing CZK 400 for three months, CZK 600 for six months and CZK 1,000 for one year for private individuals; and CZK 4,200, CZK 6,300 and CZK 10,500 respectively for companies. A pass for all parking zones, for both individuals and companies, costs CZK 8,400 for three months, CZK 12,600 for six months and CZK 21,000 for one year. There is also a time restriction of up to two hours in place. In addition, in the parking charge zones there is also a time limit of up to two hours, with certain exceptions in specially indicated places.

Infrastructure for car traffic plays a secondary role in city development plans, which are not designed to promote the ease of car travel.

**Bicycle traffic**

According to research carried out in 2000 and 2001, cycling represents a relatively high proportion of journeys in Olomouc. The estimated figure is 8.8 percent of journeys, even though a mere 9 km of cycle paths were constructed between 1994 and 2001 in the city as a whole. As a medium-sized city with a big university, Olomouc offers great potential for cycling. The short distances between city districts are an additional advantage, contributing to the selection of Olomouc as the subject of the first cycling development plan in the Czech Republic.

The Strategic Cycling Development Plan for the City of Olomouc was prepared in 2003. The plan was drawn up as a pilot programme of the Ministry of Transport and Communications and the Grant Agency of the Czech Republic. The preparation and implementation of the plan have given rise to several principles and measures resulting from the examination of the National Cycling Strategy as a whole.

Cycling should be seen as an integral part of the transport system as a whole, and it should be developed as part of a healthy, environmentally friendly lifestyle. The strategic plan does not therefore concentrate exclusively on the technical aspects of bicycle traffic but also identifies objectives in the areas of environmental protection and public health. The following objectives are included in the plan:

- to reduce the number of cycling accidents;
- to reduce demand for motorised transport by adapting land-use, municipal and regional development plans;
- to improve the cycling infrastructure (by the construction of cycle paths, cycle parking places and calm traffic zones);
- to create conditions for the development of further education for inhabitants of Olomouc;
- to make cycling, walking and public transport more attractive and to support linkages among these modes of transport;
- to reduce cardio-vascular diseases and obesity;
- to reduce emissions and noise levels;
- to create suitable conditions for the development of further sports and social activities for the inhabitants of Olomouc;
- to increase support for tourism through bicycle tourism; and
- to promote the image of the city (standard of living, concern for the environment and living conditions of inhabitants, cooperation between public bodies, NGOs and citizens).
The plan was followed up by an increase in funds for investments in new bicycle paths and tourist cycle routes in the city and throughout the region. Around 33 km of bicycle lanes and paths were planned. To date, almost half of the planned routes have been constructed, although they are not of the highest quality: they have usually been constructed using concrete paving slabs. The parking infrastructure is also inadequate, although it should be noted that Olomouc boasts modern bicycle parking facilities at the main railway station, with a capacity of almost 300 bicycles.

In addition, two “cyclobuses” operate during the most popular cycling season, at weekends only. These special buses have trailers to carry bicycles and they connect the city centre with places of interest in the suburbs and the region. The first (to Svaty Kopecek, Zoo) is operated by DPMO and the second (to Ovcarna) by Connex Moravia. The popularity of these buses greatly depends on the weather and the lines are not particularly profitable: ticket prices are the same as for a normal connection plus a fare per bicycle, and they are used mainly by cyclists.

### Participation in European Community programmes

#### Development of urban public transport

The most important project in terms of Olomouc’s public transport was implemented in 2006 and 2007. “The development of urban public transport in Olomouc” involved the comprehensive renovation of public transport in the city and focused on three main aspects: intelligent traffic-lights with priority for trams and buses (13 main intersections, integrated with global positioning systems); real-time passenger information at stops (51 panels at 20 stops); and the purchase of three new partly low-floor trams.

The main achievements of the project were faster connections, reduced public transport costs, increased travel comfort, and improved access for handicapped people. These achievements should increase the total number of passengers transported by DPMO by about 1 percent.

The total cost of the project carried out by DPMO was CZK 140,849,000, 75 percent of which came from the European Community Regional Development Fund.

#### Reconstruction of the tram tracks on Denisova Street

In 2007, around 0.5 km of tram tracks on Denisova Street, crossing the historical city centre, were completely reconstructed. The aim of the project was to revitalise the historical street and to improve the tram infrastructure by installing new low-noise rails and creating barrier-free stops. The costs were relatively high, with the tram infrastructure comprising about one-third of expenditures. The remaining costs covered the “underground infrastructure” and the creation of a new image for the street (new road surface and pavements). The project can be seen as an example of the interaction between revitalisation and sustainable transport development.

The total cost of the project was CZK 105,000,000, 75 percent of which came from the European Community. The investment was carried out by the city council.

### Personal and social skills training for bus and tram drivers

The project to develop the personal and social skills of bus and tram drivers was implemented in 2005 and 2006 and was supported by the European Social Fund to the amount of CZK 2,822,000.

The main goals of the project were:
- to improve drivers’ empathy with certain groups of passengers, such as the elderly, handicapped people, mothers with young children, and schoolchildren;
- to encourage drivers to be more helpful to passengers;
- to improve drivers’ self-respect and self-control; and
- to teach drivers to handle conflict situations.

The project was carried out by DPMO.

### The most important plans

#### The modernisation of the DPMO fleet

Plans for the period 2008 to 2013 focus on the modernisation of the tram and bus fleets: 18 trams and 20 new buses will be purchased, with 85 percent support from the EC. The estimated total cost of 18 modern trams is CZK 524,000,000 (including EC support) and the 20 modern buses will cost CZK 217,000,000.

The renewal of the DPMO fleet is only possible as a result of the Czech interpretation of European law, which, in contradiction to the Polish interpretation, allows the purchasing of buses to be financed from European funds.

#### Reconstruction of the public transport terminal near the main train station

The renovation and reconstruction of Jeremenkova Street and the square close to the main rail station in Olomouc is a very important project that focuses on the integration of the different modes of public transport: trains, trams, and regional and urban buses.

The project is a continuation of previous activities in this area and is due to be completed in 2010. The construction
work includes the relocation of tram tracks and bus lanes in order to create a system of “door-to-door” stops, making it easier for passengers to change vehicles. In addition, Park&Ride and Bike&Ride parking facilities will be created in the framework of the project, integrating individual transport with public transport. Intelligent traffic-lights that give priority to trams and buses will also be installed. Also within the project the area between the rail station and the regional authority offices will be developed as a modern intermodal node, where public transport, pedestrians and cyclists have priority. The total cost of this project is CZK 250,000,000 (90 percent of which was funded by the EC).

Conclusions

The main lesson to be learnt from the city of Olomouc is that a well-organised public transport system, even one operating with an imperfect fleet and budget restrictions, can be an effective competitor to the car. The keys to success are reasonably priced tickets, good passenger information, the prioritisation of public transport, relatively comfortable stops, and the historical decision not to eliminate the trams, which went against prevailing trends. Not only are trams an element of the city’s image, they are an important part of the system: the trams go through the city centre and connect the most important districts relatively quickly, even though only around 30 percent of tracks are separated from other traffic on the road.

The integration of tariff systems in the city and its agglomeration has created one big system from the various carriers and modes of transport and encourages inhabitants of the surrounding communes to use public transport.

As a university city with short journey distances, Olomouc has huge potential for pedestrian and cycling traffic. Despite the small number of cycle paths, cyclists play an important role in modal share and skilful use has been made of this fact in the city. The cycling policy in Olomouc serves as a good example for other Czech cities.

It is worth mentioning that DPMO provides very good information about its activities. It publishes detailed annual reports that present the urban public transport situation, and the company, to a wide audience. In addition, DPMO keeps city residents informed about important facts and plans using unsold advertising space inside its vehicles. The information is also presented in a very attractive form, for example photo exhibitions inside DPMO vehicles.

Literature


Links

The City of Olomouc — www.olomouc.eu
Urban Transport Company of Olomouc City — www.dpmo.cz
Connex Moravia — www.connexmorava.cz
Transport Research Centre in Brno and Olomouc — www.cdv.cz
Private portal about public transport in Olomouc — www.olomoucka-ahndic.cz
Private page about public transport in Olomouc — www.mhdnahanet

Ostrava — public transport in a polycentric city

Background

Ostrava is the third-largest city in the Czech Republic, and its agglomeration forms the country’s second-largest metropolitan area. It is the industrial heart of the Czech Republic, and the university city is also the administrative centre of the Moravian-Silesian region. Since the end of communism, many of the heavy industrial plants have been closed down or transformed. Due to the recent and ongoing massive restructuring of the heavy industry in the area, the unemployment rate rose well above the country average and is still high (at between 12 and 15 percent). Since the beginning of the socio-economic changes, around 40,000 inhabitants have moved away from the city, and a similar tendency can be seen in the region as a whole.

The history and urban structure of Ostrava have been significantly affected by the exploitation of the high-quality coal deposits discovered in the area. Ostrava’s polycentric urban structure resulted from the absorption into the existing city of many of the surrounding towns and villages in which mines and factories were located. Ostrava is located on the relatively flat land at the confluence of the Ostravice, Oder and Opava rivers, in a north–south valley known as the Moravian Gate.
The history of urban public transport in Ostrava began in 1894, when the first steam tram was introduced. Seven years later, the tramlines were electrified and new tramlines connected the city centre with surrounding districts, villages and towns. At the same time, rail connections between the city and the surrounding communes were developed. In the 1920s, with the rapid development of the industrial areas in Czechoslovakia, Ostrava’s trams became more important: new tramlines and local railtracks were constructed, connecting the surrounding towns and villages to Ostrava as well as with each other. Buses were then introduced, since some city districts had no tramlines. The first bus began operation in 1928 and buses became an important supplement to the tram and rail network, with an increasing number of vehicles.

During the Second World War, some parts of the tram network were destroyed, although network development continued after the war. The 1960s and 1970s saw the expansion of the bus network, while in 1978 trams made a comeback after experts predicted that, in view of the oil crisis, trams represented a better mode of urban transport.

The first trolleybuses began operation in 1952. In keeping with nationwide trends in the late 1950s and 1960s, some tram tracks in Ostrava — for example to Michalkovice — were replaced by trolleybus traction. In the late 1970s, trolleybuses, like trams, were made a priority, although eventually trolleybuses were given preference since both the tracks and the vehicles were cheaper to develop. Trolleybuses were also given preference over buses for ecological, as well as technical and financial, reasons. The city operator, the Ostrava Transport Company (DPO) produces trolleybuses in cooperation with the Polish company Solaris Bus and Coach.

Public transport organisation

Ostrava’s Integrated System of Public Transport (ODIS) has a rather loose structure and is relatively free to organise the line network and timetables. The city of Ostrava, which is the sole owner of DPO, has the most substantial influence over ODIS. All urban transport timetables are organised by DPO, in the framework of a long-term contract with the city. DPO is controlled by a general assembly.

Regional transport is regulated by ODIS, a company with limited liability owned by participating municipalities and the self-government of the Moravian-Silesian region. ODIS is responsible for coordinating different modes of regional and local transport; selling tickets; accounting for operational costs; publishing timetables; and creating new lines, etc. The main emphasis is on regional transport, outside the city of Ostrava. In 2006, eight companies operated within the framework of ODIS.

Network

In 2006, there were 16 tramlines in Ostrava, with a total length of 207.5 km and a network length of 65.7 km. Trams usually run between 04:30 and 23:00. In peak hours on weekdays they run every 10 minutes, and at other times every 20 to 30 minutes. However, there are many exceptions to this rule: on some lines, trams run during peak hours on weekdays only; on other lines, trams run throughout the day and night. The night trams run every 60 minutes, and there are two special lines which operate only at night. In 2006, there were a total of 91,818,000 person-journeys, that is, 50

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**TABLE 4**

<table>
<thead>
<tr>
<th>Ostrava — general information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population (2006)</strong></td>
</tr>
<tr>
<td><strong>Area</strong></td>
</tr>
<tr>
<td><strong>Population density</strong></td>
</tr>
<tr>
<td><strong>Modal split (2005)</strong></td>
</tr>
<tr>
<td>Car — 39%</td>
</tr>
<tr>
<td>Bicycle — 1%</td>
</tr>
<tr>
<td>There are no studies of pedestrian numbers in Ostrava: pedestrians represent between 10 and 15% of traffic as a whole.</td>
</tr>
<tr>
<td><strong>Number of cars per 1,000 inhabitants</strong></td>
</tr>
<tr>
<td><strong>Total length of public roads</strong></td>
</tr>
<tr>
<td><strong>Total length of cycle paths</strong></td>
</tr>
</tbody>
</table>

*Source: compiled using data from the Czech Statistical Office, the Town Hall of Ostrava, and DPO*
percent of all DPO passengers. Tramcars covered 14,356,000 km (when a tram consists of two connected tramcars, it is counted twice).

Trolleybuses commonly run every 10 minutes during peak hours on weekdays and every 20 minutes at other times, including weekends. Two of the 11 lines operate only at night, and two lines operate both day and night. The total length of the lines in 2006 was 90.4 km, with a network length of 29.3 km. Trolleybuses carried 7 percent of passengers, that is, 12,479,000 people, and the vehicles covered 3,018,000 km.

Bus lines represent the highest number (62) of DPO lines, with a total length of 859.7 km. The total length of roads with bus traffic (e.g. several bus lines) is 364.1 km. Buses carried 43 percent of passengers, that is, 79,581,000 people, and covered 18,399,000 km. Bus frequency varies according to the line: on some lines buses run every seven minutes during peak times, while on other lines buses run every 120 minutes throughout the day. On most bus lines, the average frequency is between 15 and 40 minutes.

Since Ostrava is a polycentric city, journeys to the city centre do not dominate trip structure. The most common trips are between factories or mines and the residential areas. Although the total number of passengers in recent years has been relatively stable, the proportion of passengers using trams has been falling steadily. The number of trolleybus passengers has remained stable, while the number of passengers using buses has risen. This tendency is the result of the changing structure of industry and services.

Average tram speed is 17.52 km/h, average trolleybus speed 13.97 km/h, and average bus speed 19.76 km/h. The relatively slow average speed of trolleybuses is caused mostly by their routes, which go through the overcrowded city centre. Separate lanes for buses and trolleybuses are not common, while separate tram tracks represent approximately 43 percent of the entire tram network.

Tariff system

The city of Ostrava is a part of ODIS, which comprises 59 tariff zones. The city of Ostrava alone is divided into four tariff zones, which correspond to the historic districts of the city. Most trips take place within one zone of the city.

The system integrates the entire tram, bus and regional train lines and covers a significant part of the Moravo-Silesian region. ODIS was established in 1997, on the initiative of the city of Ostrava, and the system has been growing continuously.

Ticket fares within ODIS are a combination of zone- and time-based rates, and single tickets allow for transfers (within the covered zones). The tariff system is relatively complicated — there are a huge number of zones and the main cities, Ostrava and Opava, are also divided into zones. Additionally, there is no universal fare — ticket prices in the regional zones differ from prices in the city zones. There are very few discounts for multi-zone tickets: in zones one to 10, the price per ticket is the base ticket price multiplied by the number of zones. Only tickets covering the whole ODIS network are cheaper, costing approximately the same as 11.5 one-zone tickets. For zones exclusively within the city of Ostrava a special discount is available of up to 25 percent (compared to the sum of the regional and city tickets), although common tickets for certain regional zones and four city zones simply cost the sum of the prices of these tickets. Besides standard tickets there are special fares for infants, schoolchildren, students, the retired and pensioners. Only one real discount exists — a pass for the entire network for people over 70 years of age, costing just CZK 380.

Tickets can be purchased from over 100 vending machines, 15 transport offices, over 500 external vendors, and from drivers (although in this case a surcharge is payable). Passengers may board vehicles with a maximum of three pieces of luggage. If an item of luggage exceeds the minimum dimensions (30 x 40 x 60 cm), a fare must also be paid for the luggage. An additional fare is also payable for dogs and cats, although it is also possible to buy a monthly pass costing around two-thirds of a standard monthly ticket.

Sixty-two percent of revenue is from season tickets (CZK 289,919,000), and 38 percent from single and 24-hour tickets (CZK 174,570,000).

As a precaution against fare dodgers and vandals, during evening and night hours passengers are obliged to board buses and trolleybuses using only the front doors and must show their season ticket or immediately validate a single ticket. The fine for failing to have a valid ticket is CZK 1,000 if paid on the spot, and higher if paid at a later date. Ticket inspectors in Ostrava are employed by DPO. In 2006, 3.6 percent of controlled passengers did not have a valid ticket. Only 6.7 percent of fines were paid at the time of the control.

Public transport operators and rolling stock

In Ostrava, DPO is the only urban transport operator. It is owned by the city of Ostrava and has a long-term contract with the city.

In 2006, there were 296 tram units in Ostrava (only two of them were trailers without engine). The tram fleet comprises mainly old-style high-floor vehicles. The most popular are the Tatra T3 (192 trams) and Tatra T6 A5 (38 trams). The other 25 high-floor vehicles were Tatra KT8D5 (16 trams) and Tatra K2 (nine trams). There were also 35 partly
## Table 5

<table>
<thead>
<tr>
<th>TYPE OF TICKET</th>
<th>NORMAL FARE</th>
<th>CHILDREN (6–15)</th>
<th>STUDENTS (15–26)</th>
<th>PENSIONERS</th>
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</tbody>
</table>
low-floor trams: 14 Skoda 03T “Astra”; nine Inekon 2001 Trio; 11 Vario LF; and one Vario LF3. The two trailers (VV60LF) also had low floors. The Vario series of trams is produced in Ostrava by DPO.

The majority of trolleybuses (51) are high-floor Skoda vehicles (14Tr, 15Tr, 17Tr, 21Tr). Nine of them are articulated vehicles. The remaining 14 are modern-type Solaris Trollino vehicles (12AC, 15AC, 18AC). DPO cooperates in the production of Solaris Trollino trolleybuses for the Czech, Polish and Lithuanian markets. Along with tram production, this represents a source of income for DPO, which has cooperated in the production of about 60 trolleybuses.

The main bus fleet comprises high-floor buses made by Karosa: there are 179 standard-length Karosa buses (B 732, B 932, B 952 and C 954) and 72 articulated buses (B 741, B 941 and B 961). The modern low-floor buses are mostly made by Solaris — there are 48 Solaris Urbino vehicles (12, 12H, 15). DPO also uses 13 Karosa-Renault City; two Skoda 21Ab; and five Mercedes Benz (412 D and 411 CDI) minibuses.

DPO has been testing buses powered by alternative fuels (compressed natural gas and bio-ethanol), but the tests have not gone well. Nevertheless, testing will be continued in the coming years since the city hall is considering the purchase of 10 buses powered by compressed natural gas (CNG).

The company endeavours to use mainly low-floor vehicles.

<table>
<thead>
<tr>
<th>TYPE OF TICKET</th>
<th>NORMAL FARE</th>
<th>CHILDREN (6–15)</th>
<th>STUDENTS (15–26)</th>
<th>PENSIONERS</th>
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<tbody>
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<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>365-day personal ticket for 1 zone</td>
<td>CZK 1,716</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>365-day personal ticket for the whole network</td>
<td>CZK 19,000</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>365-day personal ticket for the whole network for people over 70 years of age</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>CZK 380</td>
</tr>
</tbody>
</table>

Source: ODIS
The proportion of journeys made by low-floor vehicles is higher than the proportion they represent within the fleet. In 2006, 16.6 percent of tram journeys, 45 percent of trolleybus journeys and 19.8 percent of bus journeys were made by low-floor vehicles. Lines on which low-floor vehicles operate are specially marked in the timetable.

Each year, DPO incurs losses of around CZK 10,000,000 as a result of acts of vandalism, 60 percent of which is damage to vehicles. There is no video monitoring at stops, since this is the responsibility of the city.

The average cost of one kilometre travelled by DPO vehicles was CZK 41.16 in 2006. Cost increases in 2006 were relatively high, as a result of rising fuel prices and salary increases for drivers. Like other Czech or Polish carriers, DPO has a shortage of drivers, many of whom have emigrated to other countries in search of better jobs.

Total operating costs of urban transport in Ostrava were CZK 1,472,249,000, which represents 69.5 percent of the entire budget of the company. Income from ticket sales covered only 31.5 percent of this amount. Subventions from the city were CZK 970,674,000 (65.9 percent of urban transport costs); from the regional authority CZK 11,803,000 (1.2 percent); and from other communes CZK 13,102,000 (1.4 percent). The rest of the company’s budget was mainly dedicated to the production and modernisation of trams and trolleybuses. Income from the sale of products and services (other than passenger transport) was CZK 351,097,000, that is, 16.5 percent of the total budget.

Total expenses were CZK 2,117,722,000, the main expenses (by sector) being: 13 percent energy and fuel consumption (CZK 275,230,000); 23.9 percent wear of material (CZK 506,332,000); 36.6 percent labour costs (CZK 762,297,000); 13.5 percent depreciation (CZK 286,892,000); and 4.3 percent repairs to company property (CZK 91,571,000).

Total quality management in DPO

DPO have introduced a “customer agenda” aimed at increasing passenger satisfaction. Part of it is the fulfilment of “public transport quality standards.” The main indicators and the extent of their realisation are shown in table 6.

Problems in relation to ticket vending machines are mainly the result of acts of vandalism. In order to keep the vehicles clean, drivers check the interior at the stops and remove any rubbish. The general cleaning of the vehicles is outsourced. DPO publishes statistics related to these quality standards, including complaints and comments received from its passengers. The company’s annual reports are published on its website.

In 2006, DPO received quality management certification ISO 9001:2001; and ISO 3834-2:2006 in 2007. The company is environmentally responsible and has a special programme for disposing of waste.

Policy towards car traffic

The city of Ostrava is an important transport hub and lies at the main intersection of the Moravian-Silesian region. It is easily accessible by car from several directions. The city road network is 1,117 km long. The main network (for transit or inter-district traffic) is 327 km (29 percent of total length), and motorways or motorways within the city limits are 30 km long (3 percent).

The city is crossed by an important international route, the E75, which runs from Budapest to Gdansk. Ostrava will soon have a further connection to the rest of Europe, following the completion of the D47 motorway, which will join the D1 (Prague–Brno) and the Polish A1 (Katowice–Gdansk). This route is part of the Trans-European Network, a multimodal north–south corridor running from Katowice through Bohumin, Ostrava and Brno to Vienna.

In 1997, the General Transport Plan for Ostrava was passed: it has as its objective to optimise the network by investments in the construction, organisation and management of transportation, taking into account sustainable development. However, in practice investments are generally concentrated on car infrastructure in the city, rather than on public transport.

There were 86 sets of traffic-lights in Ostrava in 2005. Fifty-one intersections were equipped with intelligent traffic-lights, but only 23 of these gave priority to public transport. In practice, public transport was given little preference. “Green waves” for car traffic function at 50 sets of lights. The main goal of the intelligent traffic-lights system in Ostrava is to allow for higher traffic loads at intersections and on roads and tram lines as well, rather than to give special privileges to buses, trolleybuses or trams.

In Ostrava, heavy traffic regulation has been introduced in selected residential areas. Other restrictions are in place in parts of the historic city centre, where pedestrian zones have been created. There are paid parking zones in the city centre and some districts. These zones cover an area in which almost one-third of city residents live. The price for one hour’s parking is CZK 20 in the city centre and CZK 5 in other zones. The maximum parking time is limited to between 30 minutes and two hours, depending on the street. Parking charges apply on weekdays between 08:00 and 18:00. Those living within a parking zone are provided with one parking place but must purchase a special annual permit for CZK 600. The permit does not guarantee the availability of a parking space.
Bicycle traffic

Since most city journeys are relatively long, bicycle traffic does not play a significant role in the transport system and is still regarded mainly as a recreational pursuit. In 2005, Ostrava had approximately 175 bicycle paths, lanes and tourist routes (with no differences between bicycle infrastructure and signed routes). Most of the paths were for use by cyclists and pedestrians, or were bicycle lanes on pavements. The budget for bicycle infrastructure in 2006 was about CZK 15,000,000.

The City Hall is planning to promote bicycle use, with a primary focus on investing in the extension of the bicycle path network and the renewal of the existing on-line map of bicycle paths and routes.

There are no Bike&Ride parking facilities, since research has suggested that it is too early for the integration of public transport and bicycle use in Ostrava.

For several years, at weekends and on public holidays between April and the beginning of October, two special trams for the use of cyclists were in operation, on which bicycles could be transported on special racks free of charge while passengers paid the standard fare. The Tatraf T3 trams had 20 spaces for bicycles and 20 seats. It ceased operation in 2007, because of low profitability.

Participation in European Community programmes

The modernisation of Ceskobratrska Street

Ceskobratrska Street is one of the most important streets in the centre of Ostrava, and is used by cars, buses and trolleybuses. The road and pavements will be resurfaced, the overhead trolleybus wires will be renewed, and a 240-metre-long bridge will be renovated. The city is planning to move about 20 percent of car traffic from Ceskobratrska Street to other streets in Ostrava. Construction work began in 2007 and is due to be completed in 2008. The total cost of the project is CZK 309,000,000: of this, CZK 182,000,000 came from European funding; the regional government contributed CZK 56,000,000; and the remainder was paid by the city.

Increasing the competitiveness of DPO

The company received support from the European Social Fund for the "development of employees' qualifications as an important factor in the competitiveness of DPO." The project comprises the training of employees from the vehicle construction and maintenance departments. The total cost of the project is CZK 2,000,000, of which CZK 700,000 comes from EC funds. The remainder is covered by the Ministry of Industry and Trade of the Czech Republic and from company resources.

Other projects

Another EC-supported project concentrated on the revitalisation and modernisation of the historic city centre. This included the reconstruction of Stodolni Street; the rebuilding of the streets around St. Catherine's Church; and the creation of a new image for the market square in Ostrava's old city centre. The project was financed mostly through the Phare programme.
Most important plans
In the coming years, urban public transport needs to be boosted with the addition of a few dozen new, low-floor trams, buses and trolleybuses. DPO is planning to access support from the European Commission Regional Development Fund. The main road investments will be realised by the Road Management of the Moravian-Silesian Region, as the city of Ostrava does not manage all roads within the city limits. Most of them are owned, maintained and financed by regional road management. The first task will be the renovation of Frydecka Street.

Conclusions
Urban public transport has survived the changes in Ostrava’s industry and labour market, and still represents a very high proportion of urban journeys. Certain approaches that were successful in the past, such as the division of the city into four tariff zones, have become more problematic, as fewer journeys are being made within a single zone. A commuter-oriented complicated tariff system can discourage passengers who usually travel by car from using public transport for incidental trips. Treating the public transport system only as a connection from home to workplace, rather than as an integrated system offering mobility within the city limits and region day and night, might present a serious threat to DPO in the future. The tariff system in the region is also open to question: only a few discounts are available for passengers travelling through many tariff zones, which may discourage passengers on certain routes, especially since using a car is cheaper than going by public transport in the suburbs and for making regional connections. Both these potential threats are currently countered by offering cheap tickets.

One example of good practice is the introduction of total quality management in public transport. “Small difficulties”, imperceptible from an office desk, can very often cause problems for passengers and disrupt the public transport system: examples might be difficulties with ticket accessibility, a lack of timetables at stops, and dirty vehicle interiors. The programme introduced by DPO is designed to identify and overcome these difficulties.

The City Hall seems to have become reconciled to the increasing role of individual motorisation. At present, 60 percent of non-pedestrian trips are made by public transport, but the proportion is decreasing. In the near future, a 50 percent share of public transport for non-pedestrian trips is a realistic prospect. The main focus in transport infrastructure investments is on road improvement and development.

An interesting initiative is the production and modernisation of vehicles by the carrier. In normal conditions this is not common practice, although it is a good solution for cities and companies that cannot afford huge investments in a modern fleet. These activities are especially important with respect to trams — modern low-floor trams cost between EUR 1.5 and 2 million. General modernisation can include the installation of energy-efficient motors and the adaptation of old vehicles to the needs of handicapped people, but in the long term this cannot substitute for the purchasing of modern vehicles. Experience acquired during production, modernisation and repair, in combination with the know-how of other companies, makes it possible for DPO to offer these services to other companies and to build modern vehicles that can be sold successfully on domestic and foreign markets.

Literature
Local public transport in Poland

Poland has always had a relatively poor public transport system. Although the modal share of local public transport in non-pedestrian trips within urban areas was on average 90 percent in the 1980s, buses and trams were perceived as a necessary evil, both by passengers and by city governments. During communism, overcrowded vehicles, irregular service and serious mistakes in infrastructure planning discouraged citizens from using public transport. However, there were no real alternatives: other means of transport were limited since it was difficult to purchase a car, motorbike or bicycle. Cars could be bought through special savings programmes that lasted many years. In addition, from 1982 to the fall of communism petrol was rationed to between 30 and 50 litres per car per month, depending on engine size. Car owners usually drove to their garden plots in the suburbs rather than to work. For everyday trips, people were forced to use public transport. Public transport vehicles were generally of poor quality, and usually worse than in other socialist countries. Lower-quality technical solutions and slightly worse economic conditions in the country resulted in a less satisfactory offer than, for example, in East Germany or Czechoslovakia, and a very poor image for public transport.

After the end of communism, enormous changes took place throughout the public transport system. The most profound changes were in rail travel habits. In the first five years following the change in political system, Polish State Railways (PKP) lost half its passengers, with numbers falling from nearly 1 billion in 1989 to 466 million passengers in 1995. The main reason for the decrease was the change in the labour market — a high unemployment rate, new forms and locations of labour, and increased employee flexibility. Until 2005 there was no improvement in this tendency: PKP transported 360 million passengers in 2000; and 258 million in 2005 (including the 40 million passengers of the newly established company Mazowieckie Railways). Since 2006, the situation has slowly been improving. The total number of passengers using PKP and Mazowieckie Railways in 2006 rose by nearly 7 million, and in 2007 by about 10 million.

There have also been dramatic changes with respect to other types of public transport. In the first five years after the change in political system the regional bus company, State Car Transportation (PKS, previously a state-owned company and now the brandname of many independent companies), lost nearly half its passengers, transporting only 1,132 million passengers in 1995. The downward tendency has continued, with numbers falling to 955 million in 2000, and 751 million in 2006. After the division of the state-owned company into a few dozen independent companies, and following the privatisation of some of these, the loss of passengers has been dependent on many factors: usually the transport operator’s policy, the wealth of inhabitants, and competition from other means of transport or private carriers. In contrast to the railways, bus operators can apparently earn good profits. A common practice among PKS companies is to compensate for the low-income connections with lucrative long-distance routes between major cities. Bus companies offer lower prices, better safety and more passenger-oriented timetables than train operators.

The situation is a little better in terms of local public transport. In the first five years following the transformation, urban public transport companies lost only one-fifth of their passengers. In Polish towns and cities, 7,340 million passengers were transported in 1989; 5,910 million in 1995; 4,954 million in 2000; and 3,994 million in 2005. As was the case for the railways, 2005 was a breakthrough year: in 2006, the number of passengers rose — to 7 million — for the first time since the beginning of the transformation in 1989.

At the beginning of the 1990s, local public transport survived an organisational shake-up. Firstly, transport operators were communalised and transferred to the competence of the commune self-governments that were newly established in 1990. Communalisation was often preceded by the division of the formerly state-owned Local Transport Regional Company (WPK), which had been responsible for local public transport in urban areas of the region. The transfer of tasks to the self-governments was not followed by the allocation of special funds. Local transport is regarded as the task of the communes (the Law on Self-Government of March 8, 1990). Communes receive money for this in the...
general subvention from the national budget. No special funds are earmarked for public transport, and the entire transport policy depends on the commune self-government. The general subvention has to cover the statutory concessions for certain categories of passengers.

Local public transport concessions are regulated by many acts/trade laws; for example, student allowances are regulated by the Law on Higher Education, although the majority of discounts are regulated by the Law on Entitlements to Free Rides and Reduced Fares on Public Transport. In terms of the legal, organisational and financial aspects of public transport in Poland, and also in the case of concessionary fares, a distinction must be made between passenger rail transport (local and long-distance rail transport), regional bus transport and local public transport — buses, trams and the underground. Although this division has marked consequences for public transportation, it is merely the reflection of historical competition: before the change of political system, WKP was responsible for urban transport; PKS for regional bus transport; and PKP for rail — resulting in the play of various interest groups (trade unions, users, carriers etc.).

Those entitled to free use of urban public transport are members of parliament, disabled war veterans (and their carers), and disabled people up to the age of 16 (and their carers). Those entitled to half-price tickets are students, war veterans and handicapped schoolchildren (including those with school ID who are above the age of 16). It is worth underlining that schoolchildren do not have any statutory allowances. It is possible, and common practice, for a commune or transport operator to establish other concessions, of any size, not prescribed in national law.

Public regional non-rail transportation is governed by a different legal framework, including different organisational and financial rules, described below, and other concessions.

For a single-trip ticket, the following concessions apply:

- 100 percent for members of parliament and children up to the age of four;
- 95 percent for carers accompanying a dependent invalid or for blind people;
- 78 percent for members of the police force, soldiers, customs officers, etc., first-degree invalids, and handicapped children and their carers;
- 49 percent for invalids dependent on a carer; and
- 37 percent for children between four and six years old, blind people, war invalids and war veterans.

For a monthly ticket, the concessions are:

- 78 percent for handicapped children;
- 49 percent for schoolchildren and students; and
- 37 percent for teachers in all schools and for academic lecturers and professors.

In the case of rail transportation, concessionary fares differ from those available in urban and regional bus transportation, as illustrated by the following selection:

- 100 percent for children below the age of four, on-duty members of the police force, customs officers etc., members of parliament;
- 95 percent for the carers of dependent invalids or guides for blind people;
- 78 percent for disabled children and young people and their carers, and for disabled war veterans;
- 49 percent for schoolchildren and students below the age of 26 for monthly tickets and 37 percent for other tickets;
- 49 percent for dependent invalids on slow passenger trains and 37 percent on other trains;
- 37 percent for blind people and war veterans;
- 37 percent for teachers, academic lecturers and professors (only on slow trains); and
- 37 percent for senior citizens — on two occasions per year.

The biggest disadvantage presented by these legal conditions is that they make it difficult to integrate the many kinds of transport within one fare system: for example, different concessionary fares apply in urban and regional public transport and there is no clear definition as to which transportation is urban and which is regional. Carriers operating in metropolitan areas can apply either set of rules.

In 2006, the national subvention covering the statutory concessions for railway operators was PLN 373 million, while regional subsidies for regional transport were approximately PLN 918 million. Before regionalisation, total subsidies for passenger rail transportation in 1998 amounted to PLN 560 million.

For 2008, subsidies for rail infrastructure of national importance were PLN 1,008 million, awarded to the Polish Railroads Company (PLK), a division of PKP. Before the regionalisation of financing, subsidies for regional buses depended on the number of kilometres travelled by the operator: in 1998, subsidies amounted to PLN 165 million. Since regionalisation, subsidies have depended on the difference between the statutory concessions and the normal prices of sold tickets. In 2006, subsidies totalled more than PLN 400 million. Neither mechanism results in a real possibility for organising public bus transportation in the regions.

The regional self-governments (marshal’s offices) have no effective mechanism for creating a transport policy: as a
result, subsidies exist for lucrative bus connections, while socially important connections are being discontinued. In the case of rail transportation, marshal’s offices have strong financial and legal instruments for the creation of a transport market. In 2004, Mazowieckie voivodeship established the railway company Koleje Mazowieckie, in cooperation with PKP-Regional Connections (PKP-PR). In 2007, the marshal’s office purchased the shares of PKP-PR, making it the second railway company owned by the regional government. In 2007, a Polish-British joint venture, the PCC-Arriva consortium, won the tender for services on non-electrified tracks organised by Kujawsko-Pomorskie voivodeship, and on December 9, 2007 the first private regular train on the PKP-PLK network began to operate. Earlier, in October 2005, the Rapid Urban Railway (SKM) was launched in Warsaw. It is owned by the city and operates in Warsaw and the surrounding communes. For journeys within the Warsaw city limits, SKM operates a common ticket and fare system with the Warsaw Transport Authority.

Subsidies for buses and regional railways are paid by marshal’s offices from taxes. In terms of the allocation of funding, this sometimes puts regional councillors in the difficult position of having to make a choice between a new rail connection and a hospital.

Public rail and road transportation in Poland is taxed at the reduced VAT rate of 7 percent.

Since 2006, railway maintenance and investments (construction, renovations, modernisation) have been supported by the Rail Fund (Fundusz Kolejowy), established in 2005 by the Law on the Rail Fund. The 2006 Rail Fund budget was PLN 240 million. The source of income is a 20 percent share of one of the taxes on fuel (“road duty”).

The main organisational form for urban public transport is the commune-owned company. Only a few towns or cities (like Tczew, in northern Poland) have decided to privatise the city transport operator. Some cities (like Kalisz) decided to establish joint venture companies with investors that have good know-how. In a few cities (among them Warsaw and Gdynia), the City Hall decided to organise a tender for bus services: the city sells tickets, organises the schedule, etc. and operators are paid according to the number of kilometres travelled and the quality of their services (punctuality, cleanliness). Under European law, tendering has become an obligatory procedure.

It is worth adding that privatisation often provokes strong protests. In Kielce, in 2007, the privatisation of the city transport operator (MPK) was stopped after strong protests by public transport staff. After three weeks the city decided to sell the company to the employees, rather than to the French holding Veolia.

Poland does not have a national bicycle policy. Cities usually regard cycling as a trendy form of recreation, not as a real solution to traffic congestion. In addition, experience in Polish cities shows that most of the money spent on cycle paths and bicycle infrastructure has, paradoxically, made cycling conditions worse, since poor-quality infrastructure causes more problems than no infrastructure at all. The situation is caused by a lack of communication among decision makers, designers and users (e.g. cyclists’ organisations). Legal barriers also prevent the implementation of modern bicycle traffic solutions in common use in Western European countries. The combination of these factors makes the development of bicycle infrastructure particularly difficult.

A few cities, such as Krakow and Gdansk, have introduced a bicycle audit — a public consultation procedure involving NGOs, users and experts. As a result of these consultations, technical solutions are more user friendly and safer, and public money earmarked for the building of cycle paths is not wasted. In Gdansk, a special bicycle infrastructure development programme has been co-funded by the Global Environment Facility (GEF), which will continue over the next few years with European funding.

According to the Polish Law on Spatial Planning from 2003, spatial planning is carried out on three levels: national, voivodeship and commune. Only the lowest planning level, that is, local spatial development plans, are locally binding. These plans are designed for small territories and usually cover only up to a few percent of the commune’s area. Other plans are only policies that are binding for authorities, not for private investors. Higher levels of planning protect only the most important national and regional responsibilities, such as roads, railways, protected areas, etc. There are special laws that make it easier and quicker to invest in road and rail infrastructure (the law on special rules for preparing and realising investments in state roads of April 10, 2003, and the law amending the law on rail transport and some other acts of September 19, 2007). Planning in metropolitan areas is not coordinated in Polish law, which is one of the reasons for uncontrolled suburbanisation in areas not served by public transport.

The Polish example illustrates that the biggest problem in terms of public transport is poor laws. Different concession systems and different subsidy methods for each mode of transport make it very difficult to fully integrate local and agglomeration transportation. For the existing metropolitan transport authorities, the constraints of the law sometimes make it difficult to establish an integrated ticket for public transport in agglomerations when allowances for trains are different from those for urban buses and trams. According to European priorities in relation to integrated public transportation in agglomerations, the Polish Parliament has for many years been preparing a new law on public transporta-


tion, but without results so far. New regulations are needed to halt the fall in the number of passengers using public transport. In cities, public transport still has a relatively high modal share of between 30 and 50 percent, but the rapidly increasing number of cars (in 2006 there were 351 cars per 1,000 inhabitants) is a real threat to sustainable mobility. Bicycle traffic is still undervalued, with a modal share of only 1 to 5 percent of all journeys.

Gdynia – the Swedish model of regulated competition

Background

The port of Gdynia is situated in the northern part of the TriCity conurbation, which numbers over a million inhabitants. The origin of Gdynia dates back to Poland’s loss of Gdansk and its port after the First World War. The construction of the city began in 1921, which means that the urbanisation and road system in Gdynia are comparatively modern. There are hills to the west of the city, and the Bay of Pucka to the east. The structure of the terrain has an impact on transit times and explains the minor importance of pedestrian and bicycle traffic. The population of the TriCity has remained unchanged since the change of political system. The level of suburbanisation is relatively low. In addition, the migration balance is compensated by an influx of people into the city from other towns and villages. From the beginning, Gdynia’s port and shipyards have made it essentially an industrial centre.

Public transport in Gdynia began in 1929 when the first bus line became operational. Trolleybus lines were introduced in 1943, during the German occupation, as a result of the petrol shortage. In the last days of the Second World War, the network was destroyed and it took some months to reactivate the lines.

Organisation of public transport

Gdynia was the first city in Poland where a regulated competition model was applied in the field of public passenger transport. The process resulted in the selection of a transport organiser — the City Transport Authority (ZKM) — as well as bus and trolleybus operators. The model postulates total separation between transport organisation and transport operators.

The regulated competition was initiated in 1994/5 and was accompanied by strong resistance on the part of the trade unions. As a result, the city remained an administrator of three big commune concerns — the Bus Transport Company (PKA), the City Public Transport Company (PKM) and the Trolleybus Transport Company (PKT), which still have contracts for a given number of kilometres. The participation of communal transport companies within the passenger transport field as a whole is estimated at about 76 percent. The other lines are operated by companies chosen by tender. Those currently working for the ZKM are Veolia Transport Gdynia, the “Gryf Kartuzy” Bus Company, Ornowski Travel Rumia, PKS Węgorowo, and PKS Gdansk.

ZKM in Gdynia is responsible for fare regulation, the planning of transport lines, schedule planning, ticket distri-

### Table 7

<table>
<thead>
<tr>
<th><strong>Gdynia — general information</strong></th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Area</td>
<td>136 km²</td>
</tr>
<tr>
<td>Population density</td>
<td>1,844 people/km²</td>
</tr>
<tr>
<td><strong>Modal split</strong></td>
<td></td>
</tr>
<tr>
<td>Public transport — 51.8%</td>
<td></td>
</tr>
<tr>
<td>Car — 47.4%</td>
<td></td>
</tr>
<tr>
<td>Bicycle — 0.8%</td>
<td></td>
</tr>
<tr>
<td>There are no studies of pedestrian numbers in Gdynia. Pedestrians represent approximately 10% of traffic as a whole.</td>
<td></td>
</tr>
<tr>
<td>Number of cars per 1,000 inhabitants</td>
<td>350</td>
</tr>
<tr>
<td>Total length of public roads within city limits (managed by the city road management)</td>
<td>275 km</td>
</tr>
<tr>
<td>Total length of cycle paths</td>
<td>Approx. 25 km</td>
</tr>
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</table>

*Source: compiled on the basis of data from the Central Statistical Office (GUS) and the City Transport Authority (ZKM)*
bution and ticket inspection. ZKM’s functions also include contact with passengers and quality control (punctuality, non-smoking among drivers, the condition of the fleet). Punctuality is usually checked at the initial stops because of the many traffic jams (transport concerns are not responsible for accidental delays). ZKM in Gdynia also has its own traffic supervision services.

ZKM selects companies to operate by individual tender, for a period of three or four years. This period is relatively short (the optimal would be between five and seven years) but is based on the Act on Public Procurement. The winner of a tender is obliged to provide some new low-floor buses with a specific capacity, and must meet requirements regarding colours and the passenger information system. The selected company receives a global award, covering fuel purchase, employment costs, administration etc. In case of failure to meet standards set by ZKM, the award may be reduced.

The average cost of one bus-kilometre is:
- PLN 4.39 in the case of private operators;
- PLN 4.87 in the case of commune operators;
- PLN 5.33 in the case of trolleybuses;
- PLN 10.00 in the case of night buses.

It should be pointed out that the higher price in the case of commune operators is the result of trade union pressure exerted on the owner of the companies — the city. Interestingly, PKM was able to offer a tariff of PLN 3.75 per kilometre for articulated buses, due to the introduction of buses powered by CNG.

As the result of an act on VAT, ZKM in Gdynia has been transformed from a limited liability company to a company whose budget is part of the annual city budget, since under this act (from 2004) all subsidies are subject to VAT of 7 per-

<table>
<thead>
<tr>
<th>SUBURB COMMUNES</th>
<th>URBAN TRANSPORT MANAGEMENT</th>
<th>THE CITY OF GDYNIA</th>
<th>METROPOLITAN TRANSPORT ASSOCIATION OF GDANSK BAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide whole transport services</td>
<td>sets timetables and lines</td>
<td>owns</td>
<td>sells metropolitan tickets</td>
</tr>
<tr>
<td></td>
<td>sets detailed standards of services</td>
<td>pays subsidies</td>
<td>coordinates timetables</td>
</tr>
<tr>
<td></td>
<td>organises tenders for services (only for bus operators)</td>
<td>sets general goals and standards</td>
<td>supports the realisation of transport policy</td>
</tr>
<tr>
<td></td>
<td>pays for travelled kilometres</td>
<td></td>
<td>sells tickets</td>
</tr>
<tr>
<td></td>
<td>controls the quality of services</td>
<td></td>
<td>makes ticket inspections</td>
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<table>
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<tr>
<th>PASSENGERS</th>
<th>MUNICIPAL BUS CARRIER E.G. PKM</th>
<th>PRIVATE BUS CARRIER</th>
<th>MUNICIPAL TROLLEYBUS CARRIER</th>
</tr>
</thead>
<tbody>
<tr>
<td>buys tickets</td>
<td>pays subsidies</td>
<td>sets expectations</td>
<td>represents the city in association</td>
</tr>
<tr>
<td></td>
<td>sets general goals and standards</td>
<td>sign contracts</td>
<td>realises the city’s statutory duties</td>
</tr>
<tr>
<td></td>
<td>pays for travelled kilometres</td>
<td>buy services (subsidies)</td>
<td>supports the realisation of transport policy</td>
</tr>
<tr>
<td></td>
<td>controls the quality of services</td>
<td></td>
<td>sells metropolitan tickets</td>
</tr>
</tbody>
</table>

It should be pointed out that the higher price in the case of commune operators is the result of trade union pressure exerted on the owner of the companies — the city. Interestingly, PKM was able to offer a tariff of PLN 3.75 per kilometre for articulated buses, due to the introduction of buses powered by CNG.

As the result of an act on VAT, ZKM in Gdynia has been transformed from a limited liability company to a company whose budget is part of the annual city budget, since under this act (from 2004) all subsidies are subject to VAT of 7 per-
cent. The best solution would be to transform transport operators into companies based on commercial law, which would be rewarded according to their achievements — number of tickets sold, for example. This form of regulation would encourage public transport providers to carry out additional activities in order to promote and popularise their services. Today, ZKM’s maintenance costs amount to PLN 6 million, that is, around 5.5 percent of public transport finances as a whole (PLN 106,011,500).

Suburb communes, which are serviced by ZKM in Gdynia, buy transport services from ZKM. Prices are calculated according to the difference between operational costs and profits from ticket sales.

### Trends in public transport use among citizens

An important aspect of city transportation management in Gdynia are the public surveys, carried out every second year, which explore citizens’ habits and attitudes in relation to transportation. These surveys into public opinion have a significant influence in terms of the transport services provided.

The most important issues in 2006 for residents of Gdynia were: direct connections (31 percent of responses); punctuality (17 percent); and frequency (14 percent). Residents of Gdynia were satisfied with the punctuality of public transport in Gdynia (29 percent of responses). Journey comfort (11 percent), charges (9 percent) and direct connections (9 percent) received the lowest scores.

Many of Gdynia’s inhabitants choose to travel by car rather than public transport because of shorter journey times (30 percent), greater journey comfort (27 percent) and not having to wait (13 percent). These factors were ranked as more important than having to use a car for work (10 percent).

On the other hand, the following reasons were given for using public transport: the household car being used by someone else (26 percent), parking problems (16 percent), traffic jams (12 percent), and the high quality of public transport (10 percent). The average assessment of public transport was 3.18, on a scale of 1 to 4.

The majority (55 percent) of Gdynia residents claimed that the priorities and privileges for public transport were correct; 68 percent supported pedestrian traffic development; and 44 percent supported the reduction of car traffic in the city centre. Although 58 percent supported restrictions on parking cars in the city centre, only 25 percent were in favour of introducing parking fees in this area.

The surveys show that citizens are relatively satisfied with public transport services and also support the development of public transport over car traffic. However, cars are perceived as increasingly competitive, due to short journey times and greater comfort. These two factors are the main challenges to public transport, especially when an average car journey time of 20.5 minutes is compared to an average 40 minutes by bus or trolleybus.

### Network

ZKM in Gdynia operates 81 standard bus and trolleybus lines, 11 free lines, eight express lines, six night-bus lines, two special lines and two water trams. Trolleybuses operate on 14 of the 108 lines.

Standard lines are the basic element of a public transport system. In contrast to express lines, these buses pull in at each stop. Express lines connect the most important parts of the city by the shortest routes. Free lines provide access to shopping centres and are sponsored by shopping-centre owners.

Special “return to depot” lines run a few times a day. These are buses that run between the depot and terminus: they have their own schedule and they carry passengers. In other cities these buses are not indicated on the timetables and usually do not carry passengers.

Buses play a major role in public transportation: they are used by 61 percent of public transport passengers. Trolleybuses carry 28 percent of all passengers, and the Rapid Urban Railway (PKP-SKM) 11 percent.

ZKM vehicles travel 19,100,000 vehicle-kilometres a year, 16,600,000 km of this total in the Gdynia area. The average actual speed (including traffic jams) of buses and trolleybuses is 18 km/h, while the timetabled speed is 21 km/h.

Bus lines are being developed in residential areas, with the goal of making public transport available to those without cars. These lines are heavily loss-making, but they have an impact on the perception of ZKM as a comprehensive transport system that makes it possible to move throughout the city.

Apart from the city transport system subordinated to ZKM, the Rapid Urban Railway (PKP-SKM) connects the main conurbations and other cities in Pomorskie province. PKP-SKM belongs to PKP S.A. (87.62 percent) and Pomorskie province (12.38 percent). PKP-SKM is partly reimbursed by the regional self-government of Pomorskie province.
The SKM ticketing system is separate from that of the TriCity.

Regional train connections around Gdynia are operated by PKP-PR. The company has its own ticketing system, separate from PKP-SKM (with the exception of short-term promotions).

### Tariff system

ZKM offers a wide range of tickets: the basic single-journey ticket is valid for one passenger for one journey by any means of transport. Twenty-four-hour tickets are also available, and season tickets can be purchased for 10 days or one month. Public transport fares depend on:
the commune in which the journey takes place;
the type of line (standard, fast, night);
the part of the week included (working days from Monday to Friday or the whole week);
whether the ticket includes a photograph for identification;
the passenger’s rights to a concessionary fare.

Concessionary season tickets are always personalised with a photograph of the holder, which may be disadvantageous for certain families in which more than one member is entitled to a concessionary fare. Such families are not able to purchase one ticket to share between children, for example. The transport operator works on the assumption that a specific person is entitled to a concession, so a ticket should bear that person’s photograph. In total, 32 percent of residents are entitled to concessionary fares or free tickets, 9 percent of whom are aged between 16 and 75.

Tickets are sold through a network of customer service points, shops and kiosks. On buses, it is also possible to buy tickets from the driver: tickets sold on the bus are no more expensive, but passengers are obliged to buy a minimum of four tickets. This solution is convenient for passengers while at the same time giving them an incentive to use the trans-

### TABLE 8

<table>
<thead>
<tr>
<th>TYPE OF TICKET</th>
<th>NORMAL</th>
<th>HALF-FARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-journey — standard lines in the city area or commune</td>
<td>PLN 2.00</td>
<td>PLN 1.00</td>
</tr>
<tr>
<td>Single-journey — standard lines, entire route</td>
<td>PLN 3.00</td>
<td>PLN 1.50</td>
</tr>
<tr>
<td>Single-journey — fast, night or special lines in the city area or commune</td>
<td>PLN 3.00</td>
<td>PLN 1.50</td>
</tr>
<tr>
<td>Single-journey — fast or special lines, entire route</td>
<td>PLN 3.50</td>
<td>PLN 1.75</td>
</tr>
<tr>
<td>24-hour — entire route, all lines</td>
<td>PLN 9.00</td>
<td>PLN 4.50</td>
</tr>
<tr>
<td>Monthly personal ticket for standard lines in Gdynia, valid Monday to Friday</td>
<td>PLN 66.00</td>
<td>PLN 33.00</td>
</tr>
<tr>
<td>Monthly personal ticket for standard lines in Gdynia, valid for a whole week</td>
<td>PLN 76.00</td>
<td>PLN 38.00</td>
</tr>
<tr>
<td>10-day personal ticket for standard lines in Gdynia, valid for a whole week</td>
<td>PLN 33.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Monthly transferable ticket for standard lines in Gdynia, valid for a whole week</td>
<td>PLN 87.00</td>
<td>n/a</td>
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<tr>
<td>Monthly personal ticket for standard, express and night lines in Gdynia, valid Monday to Friday</td>
<td>PLN 78.00</td>
<td>PLN 39.00</td>
</tr>
<tr>
<td>Monthly personal ticket for standard, express and night lines in Gdynia, valid for a whole week</td>
<td>PLN 86.00</td>
<td>PLN 43.00</td>
</tr>
<tr>
<td>Monthly transferable ticket for standard, express and night lines in Gdynia, valid for a whole week</td>
<td>PLN 97.00</td>
<td>n/a</td>
</tr>
<tr>
<td>10-day transferable ticket for standard, express and night lines in Gdynia, valid for a whole week</td>
<td>PLN 37.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Monthly personal ticket for standard, express and night lines in Sopot, valid Monday to Friday</td>
<td>PLN 50.00</td>
<td>PLN 25.00</td>
</tr>
<tr>
<td>Monthly personal ticket for standard, express and night lines in Sopot, valid for a whole week</td>
<td>PLN 58.00</td>
<td>PLN 29.00</td>
</tr>
<tr>
<td>Monthly personal ticket for standard, express and night lines in Sopot, valid for a whole week</td>
<td>PLN 67.00</td>
<td>n/a</td>
</tr>
<tr>
<td>10-day transferable ticket for standard, express and night lines in Sopot, valid for a whole week</td>
<td>PLN 26.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Monthly personal ticket for the entire route, valid Monday to Friday</td>
<td>PLN 88.00</td>
<td>PLN 44.00</td>
</tr>
<tr>
<td>Monthly personal ticket for the entire route, valid for a whole week</td>
<td>PLN 98.00</td>
<td>PLN 49.00</td>
</tr>
<tr>
<td>Monthly transferable ticket for the entire route, valid for a whole week</td>
<td>PLN 107.00</td>
<td>n/a</td>
</tr>
<tr>
<td>10-day transferable ticket for the entire route, valid for a whole week</td>
<td>PLN 42.00</td>
<td>n/a</td>
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</table>

**Source:** The City Transport Authority (ZKM)
Trolleybus rolling stock is mostly of the old type. Only 34 vehicles are low-floor and the average age of trolleybuses is 10 years. Trolleybuses are now around 12 percent more expensive to run than buses and 80 percent more expensive to buy, at PLN 1,400,000 for one trolleybus. The construction of one kilometre of trolleybus traction costs PLN 1,500,000. However, arguments for maintaining trolleybuses in Gdynia include the following:

- trolleybus network development is connected with a reduction in bus-kilometre costs, bearing in mind that for 50 buses costs are 20 percent higher and for 75 buses around 10 percent higher, while for 100 buses the costs are even;
- according to the Polish interpretation of EU directives, a 50 percent subsidy is available through the programmes of the European Commission for the purchase of trolleybuses and trains, but not buses;
- they are definitely quieter (noise emissions for trolleybuses are limited to 50 dB, while the figure is 70 dB in the case of buses);
- they are non-polluting; and
- they contribute to the city’s unique image.

About 3 percent of buses and trolleybuses are kept in reserve, ready for departure: in the event of traffic congestion, when bus and trolleybus journey times are longer, additional rolling stock can be put into operation in order to maintain frequency rates.

Operators do not have much opportunity to obtain profits from advertising. Commercial banners are permitted on a narrow strip of a vehicle’s bodywork, normally painted white. Income from advertising amounts to 1 percent of an operator’s income.

Policy towards car traffic

The objective behind Gdynia’s 1998 transport policy and the detailed operational programmes drawn up in 2000 is the minimisation of the role of the car in transportation, to be achieved by reducing car traffic in the city and constructing a system of by-passes (Kwiatkowski Road and Janek Wisniewski Street).

There are no parking-charge zones in the city: attempts to introduce parking zones met with resistance on the part of car-owning residents. As a result, there is excessive demand for parking spaces in the city centre and many people park illegally (for example on pavements or cycle paths).

One illustration of the failure to prioritise public transport is the absence of separate bus and trolleybus lanes on main streets. Such a solution, despite its clear advantages, is considered too radical and only taken into account as a final option.
Bicycle traffic

Due to the city’s specific geographical features, bicycle traffic does not play a significant role in Gdynia. In 2007, there were 25 km of cycle paths in the city area, approximately 10 km of which crossed forest and coastal terrain. The city lacks parking places and parking racks for bicycles, and the relatively poor quality of the cycle paths is another huge problem (most of them are made from concrete bricks).

Participation in European Commission programmes

Gdynia benefits from European Commission programmes providing funds for investment in infrastructure and regional development, and also from soft skills development programmes for management and the promotion of public transport. One of the most interesting of these programmes is the YOUTH programme of the European Commission (http://ec.europa.eu/youth), which aims to promote public transport among young people.

Pro-ecological public transport development in Gdynia

The project Agglomeration Transport of the commune company Trolleybuses Communication Ltd. (PKT) in Gdynia was realised as part of the integrated Operational Programme for Regional Development. Project outputs included:

- the building of a new trolleybus depot in Gdynia;
- the building of new trolleybus routes (10.6 km);
- the building of a new trolleybus terminus in Kacze Buki; and
- the purchase of 10 new low-floor trolleybuses (Solaris Trollino 12AC).

The project budget was PLN 54 million, and the project was completed in 2006.

TELLUS – Transport and Environment Alliance for Urban Sustainability

The TELLUS project, carried out under the CIVITAS initiative, was implemented in Gdynia between 2002 and 2006. The total cost of the project was EUR 1,285,000, of which EUR 449,820 were funded by the European Union.

The aim of the project was to support new solutions in public transport and to reduce the volume of car traffic. Project funding partly financed the modernisation of Swietojanska Street, which included the installation of new trolleybus traction.

In addition to investments, project activities included the printing of posters promoting public transport and a series of transport-related classes for primary-school children.

BUSTRIP – Baltic Urban Sustainable Transport Implementation and Planning

The BUSTRIP project was implemented between 2005 and 2007 with funding from the Baltic Sea Region Interreg IIIB Neighbourhood Programme. The project focused on public transport management in cities, and in particular on putting into practice the resolutions of the Thematic Strategy on the Urban Environment, within the Sixth Community Environmental Action Plan, in relation to sustainable urban transport plans.

The EC Communication on the Thematic Strategy confirmed the preparation of a sustainable urban transport plan (SUTP) for each city as an important cornerstone in the decoupling of economic growth and transport growth in urban areas. The BUSTRIP project supports the partner cities in further developing their transport planning processes, and in preparing new sustainable urban transport plans and revising existing ones. The project led to the creation of a SUTP toolbox of techniques, drawing on all the experiences and best practices from the cities. The toolbox can also be used by other European cities.

The total cost of Gdynia’s part in the project was EUR 141,678, of which EUR 106,259 came from European Community funds.

Most important road investments

Gdynia will complete the construction of two by-passes: Kwiatkowski Road with support from the European Community (total cost approximately PLN 250 million, with 75 percent of funding from the European Regional Development Fund); and Janek Wisniewski Street (total cost PLN 52 million, with a 75 percent subsidy from the EC transport sector operational programme). Gdynia Port will cover the remaining costs of the construction of Janek Wisniewski Street. ZKM will consider the introduction of new bus lines, depending on public opinion. To date, the practice has been to introduce new bus lines on newly constructed main streets.

Most important plans

Gdynia has very ambitious transport plans for the next few years, mainly related to the development of public transport. These include the TRISTAR project (Tri-City Conurbation Intelligent Transport System). There are also plans to develop a trolleybus network with three new sections (a total length of 4.8 km) and to purchase 52 new vehicles, 33 of which would
be required as a result of the network extension. The existing trolleybus network will be modernised, including, in particular, the changing of the points. There are tentative plans to introduce a parking-charge zone in the centre of Gdynia.

The agglomeration ticket

Since the beginning of 2008, residents of the TriCity (Gdansk, Gdynia, Sopot and another 10 neighbouring communes, from Pruszcz Gdanski to Węgorowo), have been using an agglomeration ticket, which is a common ticket for all transport routes (buses, trams and trolleybuses) owned by the public transport operators MZK Węgorowo, ZKM Gdynia, ZTM Gdansk and SKM Gdansk. Passengers can choose between a single-line ticket or a metropolitan ticket, valid for 24 hours. The Baltic daily newspaper Dziennik Bałtycki has also reported that a common monthly ticket costing PLN 200 will be introduced. In order for them to join the common ticketing system it was decided that each commune would pay an annual PLN 3 for each inhabitant and PLN 2 would be funded from the regional self-government. The Metropolitan Transport Association of Gdansk Bay is responsible for ticket sales and the coordination of urban transport systems.

TRISTAR

Preparations for the TRISTAR project (Tri-City Conurbation Intelligent Transport System) started in 2007. The aim was to increase the competitiveness of public transport by imposing additional conditions on car traffic. The two-part project comprised:

- a public transport management system with the following measures:
  - geo-localisation of vehicles;
  - traffic control, with priority for public transport;
  - a real-time passenger information system; and
- a traffic management system encompassing:
  - traffic control;
  - the coordination of light signals;
  - monitoring of the number of cars entering the city centre;
  - parking management;
  - traffic information and congestion warnings (by using, among other things, traffic information signs with changeable content).

One element of the system will be the reorganisation of public transport lines in the TriCity. The total length of the lines will be reduced, as buses will no longer double trams. One disadvantage of the system will be an increase in the number of changes that passengers need to make per journey, and — in the initial stages (until the tram rolling stock in Gdansk has been replaced) — access difficulties for handicapped people and those with prams or pushchairs. The total cost of the project is estimated at PLN 200 million, half of which will come from EC funds under the Infrastructure and Environment Operational Programme.

Bicycle infrastructure development programme

In November 2006, Gdynia, Gdansk and Sopot signed an agreement to construct cycle paths in the TriCity using funds awarded from the European Union. The total cost of the project is PLN 100 million, which will finance the construction of over 130 km of new cycle paths, 37 km of which will be in Gdynia.

YOUTH – Youngsters Overhaul Today’s Urban Transport Habits

The YOUTH project is being implemented under the European programme Intelligent Energy – Europe (IEE) and will last for two years (2007–2009).

The main focus is on the promotion of environmentally friendly public transport amongst young people. Promotion activities will be carried out and young people will have the chance to make comments and put forward ideas about the functioning of the public transport system. Some competitions, with prizes, will also be organised. The total cost of the project will be approximately EUR 10,000.

Conclusions

Gdynia is the first city in Poland in which a regulated competition model for public transport (also known as the Swedish model) was followed. Although this resulted in public transport being far more economical, the implementation of regulated competition has been stopped. Trade union resistance and political pressure mean that only a fifth of the market has been liberalised. Even this level of liberalisation has had an influence on commune companies, since the public have had an opportunity to compare the costs of services. This has resulted in the prices offered by Gdynia’s commune companies being lower than in other cities.

Low costs for the company ensure coverage for public transport operations through income from ticket sales, which amounts to between 75 and 80 percent of the total costs of ZKM (the rest being made up from city subsidies). This relatively high level of cost coverage allows the city/ZKM to extend their offer (that is, establish new lines and improve frequency). Surveys undertaken every second year are extremely helpful in the designing of new lines and improving the services offered. They are also strong arguments for participation in European Union projects attracting financial support.
The biggest threat to public transport is growing competition from the private car. Without some infrastructural input — such as intelligent traffic-lights that give priority to buses, separate bus lanes or parking-charge zones in city centres — public transport may lose this competition. Operational costs will rise and public transport services may be seriously reduced.

Literature


Poznan — good public transport versus suburbanisation

Background

Poznan is one of the oldest cities in Poland: it is the fifth-largest city in the country, the fourth-largest industrial centre and the fourth-largest academic centre, being home to more than 130,000 students. Poznan is the capital of the Greater Poland voivodeship and, since the nineteenth century, has been one of the richest cities in Poland.

The structure of the city is delimited by the River Warta, which runs on a north–south axis; two rings of former Prussian fortifications (one surrounding the city centre and one six to seven kilometres from the centre); and four

<table>
<thead>
<tr>
<th>Poznan – general information</th>
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</thead>
<tbody>
<tr>
<td>Population (2006)</td>
</tr>
<tr>
<td>Area</td>
</tr>
<tr>
<td>Population density</td>
</tr>
<tr>
<td>Modal split (2000)</td>
</tr>
<tr>
<td>Public transport — 37%</td>
</tr>
<tr>
<td>Car — 53%</td>
</tr>
<tr>
<td>Bicycle — 2%</td>
</tr>
<tr>
<td>Pedestrian — 8%</td>
</tr>
<tr>
<td>Number of cars per 1,000 inhabitants</td>
</tr>
<tr>
<td>Total length of public roads under the Urban Road Management</td>
</tr>
<tr>
<td>Total length of cycle paths (2007)</td>
</tr>
</tbody>
</table>

Source: compiled on the basis of data from the Central Statistical Office, the city hall, and the Association of City Cyclists

Links

Gdynia Town Hall — www.gdynia.pl
Bus Transport Company — www.pkadynia.pl
City Transport Company — www.pkmgdynia.pl
“Gryf Kartuzy” Bus Company — www.gryfkartuzy.pl
Ornowski Travel — www.ornowski.pl
PKS Gdańsk — www.pksgdansk.pl
PKS Wejherowo — www.pksw.pl
Public Transport Management of Gdynia — www.zkmgdynia.pl
Trolleybus Transport Company — www.pktgdynia.pl
Veolia Transport Gdynia — www.veolia-transport.pl/gdynia
CIVITAS — www.civitas-initiative.org
TELLUS project — www.tellus-cities.net
BLUSTRIP project — www.bustrip-project.net
triangular areas of green park that extend from the centre to the city limits. The city is comparatively flat and, until the end of communism, a relatively tight rein was kept on urban development with the aim of creating a “city of short distances”. However, some years before the change of political system, urban policy was deregulated, resulting in suburbanisation. Since 1990, Poznan has lost more than 25,000 inhabitants. At the same time, in the surrounding communes (Poznan county), the number of inhabitants rose by around 65,000, reaching 289,832 in 2006. Suburban migration is one of the biggest transport problems in the agglomeration.

The first public transport in Poznan was the omnibus, which began operation in 1865 and connected the railway station with the city. In 1880, the first horse-drawn tram was introduced, followed in 1898 by the first electric tram line. After a few years the entire network had been electrified. The first bus line was established in 1925 for economic reasons: bus lines ran in areas where passenger streams were not sufficient to make the trams profitable. In 1930, the first trolleybus line in Poland was launched, and in the following decade Poznan boasted one of the biggest public transport networks in Poland. Some of the bus lines also served the surrounding towns.

After the Second World War, public transport was oriented towards trams, which enjoyed favour until the economic crisis in the 1980s. Plans in the 1970s focused on the development of tram lines as the main axis of urban development, beginning with the closure of the trolleybus network in 1970. It is worth noting that the 1970s also saw many investments in road infrastructure, which had a capacity several times higher than was needed. Roads, intersections, parking places etc. were planned for a motorisation level of around 200 cars per 1,000 inhabitants.

In 1991, the city transport company MPK was communalised — that is, given to the city of Poznan — and routes to neighbouring communes were discontinued. Suburban communes had to establish their own companies.

Organisation of public transport

MPK has a framework contract with the City Hall, under which it organises the structure of tram and bus lines. In the case of trams, changes in line structure (closure of lines or the establishment of new ones) require three steps:

- a proposal, with an analysis of economic impacts, passenger streams and social aspects, approved by MPK management;
- consultation with sub-city self-governments; and
- the approval of the board of supervisors of MPK.

In the case of buses, a fourth step is obligatory for all bus operators, according to Polish law — that is, approval from the city hall (previously the marshal’s office). This also applies to changes in bus schedules and is the result of certain anti-cartel rules.

As a company owned by the city, MPK has a monopoly on services within the city limits. Such a monopoly will be legal until the implementation of European law in the Polish legal system from January 1, 2009. As a result of pressure from the trade unions, the city has delayed organising a tender for bus services. Additionally, the city of Poznan (the owner of MPK) has invested primarily in the MPK bus fleet rather than trams, since in this way MPK will have better chances to win bus tenders (there are no plans for tenders for tram services), ensuring that MPK retains its monopoly. The policy of MPK and the city is to participate in tenders organised by suburban communes. Until 2007, MPK had provided services in two of them (Mosina and Mruwona Gosłina), but in summer 2007 MPK lost one tender to a private operator whose offer was far cheaper. The suburban lines have their own special tickets and are not part of a common fare system.

Since 2005, MPK has been paid PLN 6.25 per travelled bus-kilometre and PLN 11.32 per tram-kilometre. For this amount, MPK is responsible for maintaining the tram tracks, and for tram and bus stops, ticket sales, ticket inspectors and traffic supervisors, etc.

The total cost of services in 2007 was PLN 278.9 million. Income from ticket sales was PLN 132.7 million; reimbursements for concessions were PLN 58.3 million (from the city budget); and subsidies from the city budget amounted to PLN 87.9 million (net prices). Cost coverage was about 47.6 percent. Income from advertisements made up about 1.5 percent of the budget. Until 2007, there were no restrictions on advertising space: however, after complaints from passengers it was decided not to sell the profitable space on the windows. Previously, the windows had been covered with a semi-transparent film on which advertisements were printed.

The city is monitoring the punctuality of vehicles and the cleanliness of vehicles and stops in order to decide on the possible financial penalties to be imposed on MPK. Punctuality is checked at the terminus, at the beginning of the route, since MPK is not responsible for delays caused by traffic congestion. In the event of significant delays, a higher number of vehicles are put into operation: for this reason, on a normal day, MPK keeps six buses and four trams in reserve at the terminus, ready for use if required.
Behavioural trends among the public regarding transport

Comprehensive traffic surveys are carried out in Poznan with varying frequency (the latest were in 2000). The surveys cover two aspects: behavioural analysis and traffic measurement, the first being the more important. Nearly 8,000 people are questioned about journeys undertaken the previous day (direction, means of transport, duration, number of changes, possible problems, etc.) and are asked to provide certain individual data (education, job, whether they own a car or bicycle, the type of ticket they use, etc.). This provides a picture of the main journey directions, transport demand, modal split and preferences. The second element of the survey focuses on measuring the number of vehicles and the number of passengers in buses and trams, making it possible to construct a traffic flow model. Software such as EMME (a package that helps transportation planners model how people move across a transportation network under a given set of conditions) enables planners to simulate the impacts of a new tram line, street closure, road widening, etc.

These surveys concentrate on journeys undertaken but do not explain the reasons behind passenger behaviour. The biggest drawback of the surveys is they do not take into consideration public opinion regarding the quality of services, the main transport problems and solutions for the future. A route system adjusted to a journey matrix is not the key to successful public transportation. Choices between means of transport are determined by a range of factors. These topics are the subject of research but are not taken into account by transport planners. Only independent researchers explore expectations and motivations behind the choice of car, bicycle or public transport.

One of the most important reasons for loss of passengers in urban public transport is migration to the suburbs. Research carried out in 2006 shows that those who move to the suburbs tend to use a car to get to work or to take their children to school more often (69 percent; or almost 77 percent if journeys undertaken using several means of transport, including car, are included) than before (46 percent and 53 percent). More people than want to are forced to use their cars because of the very poor level of public transport on offer. Asked about their preferred means of transport for getting to work or school, independent of all conditions, only 65 percent of respondents chose the car. Public transport, as the optimal means of transport, was chosen by 22 percent of commuters, while about 21 percent of suburban residents use it at present (including public transport used during journeys undertaken by many means of transport). The poor-quality public transport on offer is not seen as a real alternative to the car or as an acceptable solution for commuters.

The reasons for suburban migration are strongly connected with transportation. The second most important reason given for moving was the level of noise in the city, and the fourth most important was air pollution (the first being the size of real estate). The three most important criteria when selecting a new home were quietness, clean air and the nearness of green spaces. However, the fourth most important factor was, ironically, easy accessibility by car. Environmental research has shown that cars are, in fact, the main reason for noise and air pollution in Poznan: thus while deteriorating living conditions in the city encourage more inhabitants to migrate to the suburbs, suburban migration is increasing congestion, and rising congestion is in turn making living conditions in the city centre worse.

Network

Within the Poznan fare system, MPK operates 19 tram lines and 54 bus lines during the day and one tram line and 21 bus lines at night. There is one express bus line ("A") and one seasonal line ("P"), both of which have higher fares.

In 1993, major changes were made to the tram system in Poznan: the number of lines was reduced from over 20 to 13, while trams began to run every 10 minutes on each line. With minor alterations, this system is still in place. Today, trams run between 04:30 and 22:30: every 10 minutes between 06:00 and 19:00; every 15 minutes before 06:00; and every 20 minutes after 19:00. On Saturdays, trams run every 15 minutes between 09:00 and 15:00; and every 20 minutes at other times. On Sundays, trams run every 20 minutes throughout the day. On three less popular lines trams run every 20 minutes throughout the day during the week and at weekends. In addition, one tram operates every 10 minutes only during peak hours in the morning (between 06:30 and 08:30).

In terms of frequency, bus lines are divided into three categories: 15 main lines, 11 basic lines and 26 supplementary lines. During peak hours (06:30 to 09:00 and 14:00 to 17:00), buses run every 12 minutes on main lines and every 15 minutes on basic lines. At other times of day frequency depends on demand, but in the middle of the day buses run at least every 20 minutes. Frequency varies on other lines: from every seven minutes on the line connecting the Poznan Fast Tram with the Morasko university campus; to every 60 minutes on certain lines to the suburbs. During the summer vacation, all trams run less often (every 12 minutes) during rush hour, and the same applies to some bus lines.

The night-bus system was also changed in the 1990s. With minor exceptions, all night buses run every 30 minutes between 23:00 and 04:30 and all start at the same time from the same place. This system makes it possible to travel anywhere in the city with only one change. Passengers have
about five minutes to change buses. The new system has raised the attractiveness of night public transport. The second key to success was the introduction of normal tariffs on night buses. Night trams also depart every 30 minutes from the same point on the route of the Poznan Fast Tram.

As a result of the development of housing estates on the outskirts of the city, bus lines have become an increasingly important part of the public transport system. Existing lines have been lengthened and new ones established. Nevertheless, the development of the bus network has not kept pace with suburbanisation (within the city limits). Bus connections to new settlements are established months, and sometimes years, after the construction of new housing.

Tram development has been very slow since the 1980s. The construction of new tram tracks to serve a high-rise residential district was completed in 1985. In 1997, after 16 years of construction work, the 6.1-km Poznan Fast Tram (PST) was finished. Trams run with an average speed (including stops) of close to 35 km/h. Although all simulation models and expert opinion suggested the need for only two trams (with a 10-minute frequency), four trams are currently in operation, with a fifth during the morning rush hours, and there are still capacity problems.

No new tram tracks were constructed for another 10 years. The new tracks that were completed in 2007 symbolised a change in traffic policy towards the tram: the focus had shifted to optimising the network and giving priority to tram lines in the city centre rather than creating new tram tracks to the new housing estates. Outside the old city centre, private cars play the most important role.

Rail connections do not play any role within the city limits: trains run with low frequency and have a separate fare system and nearly all regional trains stop at Poznan’s main station without going through the city. The same is true of regional and suburban buses.

Tariff system

The new line system introduced in 1993 increased the number of changes that passengers needed to make, forcing MPK to introduce timed tickets in 1994 that allow passengers to change between means of transport. Some years later, in the light of increasing congestion-related delays, MPK decided to introduce single bus tickets priced according to distance (number of stops) rather than time. These tickets do not permit changes between buses. The most popular single tickets are 10-minute tickets (which make up close to 70 percent of income from single tickets) and 30-minute tickets (almost 30 percent). Tickets sold according to number of stops account for just 1 percent of income. Passengers buying 10 timed tickets receive one free ticket.

The most popular season ticket is the monthly (or 30-day) personalised pass for normal and night lines. Season tickets for periods longer than one month are sold in the form of proximity cards. The biggest disadvantage of this system in Poznan is the limited number of points where it is possible to load these cards or check their validity. The procedure for obtaining the cards is also off-putting as it may take several days.

Since the 1990s, fare dodging has been a significant problem in Poznan, with between 4 and 5 percent of passengers not purchasing tickets in spite of efforts on the part of MPK to tackle the situation. Firstly, a campaign was launched highlighting that the quality of the trams and buses depends on passengers’ integrity. Then, in summer 2007, fines for travelling without a valid ticket were raised from PLN 35 to PLN 100 when paid on the spot; and from PLN 65 to PLN 195 when paid within one week of the offence.

In the 1990s, ticket inspectors were employed by a private company and were often badly behaved and abusive, frightening passengers and even beating them (even those who had committed no offence). In 2002, after the sentencing of two ticket inspectors and the City Hall as an institution “abetting crime,” the city and MPK decided to terminate their contract with the private company and to establish their own division of ticket inspectors. The number of fare dodgers has not increased, but in spite of their efficiency the image of ticket inspectors has improved.

An innovative solution introduced by MPK is a hologram on theatre and concert tickets that entitles ticket holders to travel by public transport for a period of one hour before and four hours after the start of a performance for the price of a single 10-minute ticket (at present PLN 1.30).

Public transport rolling stock

MPK is the only urban public transport operator in Poznan. The fleet comprises 314 buses, including 10 leased from another company and two lent by a shopping mall as the result of a special deal with MPK. MPK established a new line to the mall and the line is within the MPK fare system, but the buses are owned by the mall as a kind of subsidy of the new MPK line. The costs of the drivers, fuel, etc. are covered by MPK from ticket sales and city subsidies. There are also 338 trams and 215 trains.

The main bus fleet comprises 267 modern low-floor vehicles. Poznan was the first city in Poland to modernise its bus fleet. The first low-floor buses, purchased after a huge tender for 122 vehicles, were introduced in 1996. The order resulted in the winning company, MAN and Neoplan (now the Solaris Bus and Coach factory), opening two new bus factories in the suburbs of Poznan. New buses were regularly
### Table 10

**Ticket and tariff system in Poznan (as of October 31, 2007)**

<table>
<thead>
<tr>
<th>TYPE OF TICKET</th>
<th>NORMAL</th>
<th>HALF-FARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 10 minutes for normal and night tram and bus lines</td>
<td>PLN 1.30</td>
<td>PLN 0.65</td>
</tr>
<tr>
<td>Up to 30 minutes for normal and night tram and bus lines</td>
<td>PLN 2.60</td>
<td>PLN 1.30</td>
</tr>
<tr>
<td>Up to 60 minutes for normal and night tram and bus lines</td>
<td>PLN 3.90</td>
<td>PLN 1.95</td>
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<tr>
<td>Up to 90 minutes for normal and night tram and bus lines</td>
<td>PLN 5.20</td>
<td>PLN 2.60</td>
</tr>
<tr>
<td>Up to 10 minutes for express and seasonal bus lines</td>
<td>PLN 2.60</td>
<td>PLN 1.30</td>
</tr>
<tr>
<td>Up to 30 minutes for express and seasonal bus lines</td>
<td>PLN 5.20</td>
<td>PLN 2.60</td>
</tr>
<tr>
<td>Up to 60 minutes for express and seasonal bus lines</td>
<td>PLN 7.80</td>
<td>PLN 3.90</td>
</tr>
<tr>
<td>Single bus ticket for up to 10 stops for normal lines</td>
<td>PLN 1.90</td>
<td>PLN 0.95</td>
</tr>
<tr>
<td>Single bus ticket for unlimited number of stops for normal lines</td>
<td>PLN 3.20</td>
<td>PLN 1.60</td>
</tr>
<tr>
<td>Single bus ticket for up to 10 stops for express and seasonal lines</td>
<td>PLN 3.80</td>
<td>PLN 1.90</td>
</tr>
<tr>
<td>Single bus ticket for unlimited number of stops for express and seasonal lines</td>
<td>PLN 6.40</td>
<td>PLN 3.20</td>
</tr>
<tr>
<td>24-hour ticket for all lines (with the exception of seasonal lines)</td>
<td>PLN 11.40</td>
<td>PLN 5.70</td>
</tr>
<tr>
<td>7-day ticket for all lines (with the exception of seasonal lines)</td>
<td>PLN 26.00</td>
<td>PLN 13.00</td>
</tr>
<tr>
<td>Monthly or 30-day personal pass for all lines (with the exception of seasonal lines)</td>
<td>PLN 65.00</td>
<td>PLN 32.50</td>
</tr>
<tr>
<td>Monthly or 30-day transferable ticket for all lines (with the exception of seasonal lines)</td>
<td>PLN 88.00</td>
<td>PLN 44.00</td>
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<tr>
<td>Monthly or 30-day personal pass for all lines (including seasonal lines)</td>
<td>PLN 111.00</td>
<td>PLN 55.50</td>
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<tr>
<td>Monthly or 30-day transferable ticket for all lines (including seasonal lines)</td>
<td>PLN 136.00</td>
<td>PLN 68.00</td>
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<tr>
<td>Monthly or 30-day personal pass for a single route for up to 6 stops</td>
<td>PLN 21.00</td>
<td>PLN 10.50</td>
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<tr>
<td>Monthly or 30-day transferable ticket for a single route for up to 6 stops</td>
<td>PLN 26.00</td>
<td>PLN 13.00</td>
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<tr>
<td>Monthly or 30-day personal pass for a single route for up to 18 stops</td>
<td>PLN 44.00</td>
<td>PLN 22.00</td>
</tr>
<tr>
<td>Monthly or 30-day transferable ticket for a single route for up to 18 stops</td>
<td>PLN 55.00</td>
<td>PLN 27.50</td>
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<tr>
<td>Monthly or 30-day personal pass for a single express bus line</td>
<td>PLN 64.00</td>
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<tr>
<td>Monthly or 30-day transferable ticket for a single express bus line</td>
<td>PLN 77.00</td>
<td>PLN 38.50</td>
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<td>PLN 186.00</td>
<td>PLN 93.00</td>
</tr>
<tr>
<td>3-month transferable pass for all lines (with the exception of seasonal lines)</td>
<td>PLN 227.00</td>
<td>PLN 113.50</td>
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<td>3-month personal pass for a single route for up to 6 stops</td>
<td>PLN 55.00</td>
<td>PLN 27.50</td>
</tr>
<tr>
<td>3-month transferable pass for a single route for up to 6 stops</td>
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<td>PLN 33.50</td>
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<td>PLN 115.00</td>
<td>PLN 57.50</td>
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<td>3-month transferable pass for a single route for up to 18 stops</td>
<td>PLN 140.00</td>
<td>PLN 70.00</td>
</tr>
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<td>6-month personal pass for all lines (with the exception of seasonal lines)</td>
<td>PLN 323.00</td>
<td>PLN 161.50</td>
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<tr>
<td>6-month transferable pass for all lines (with the exception of seasonal lines)</td>
<td>PLN 392.00</td>
<td>PLN 196.00</td>
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<td>9-month personal pass for all lines (with the exception of seasonal lines)</td>
<td>PLN 450.00</td>
<td>PLN 225.00</td>
</tr>
<tr>
<td>9-month transferable pass for all lines (with the exception of seasonal lines)</td>
<td>PLN 555.00</td>
<td>PLN 277.50</td>
</tr>
<tr>
<td>12-month personal pass for all lines (with the exception of seasonal lines)</td>
<td>PLN 567.00</td>
<td>PLN 283.50</td>
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<tr>
<td>12-month transferable pass for all lines (with the exception of seasonal lines)</td>
<td>PLN 694.00</td>
<td>PLN 347.00</td>
</tr>
<tr>
<td>10-month (for the academic year September to June) personal pass for schoolchildren and students for all lines (with the exception of seasonal lines)</td>
<td>n/a</td>
<td>PLN 242.00</td>
</tr>
</tbody>
</table>

*Source: MPK Poznan sp. z o.o. These prices are valid from April 2, 2005. A significant rise was planned for the beginning of 2008.*
purchased by MPK or the city of Poznan over the following years, usually several each year. Monitoring has been standard since 2004 and has proved very effective in reducing the number of acts of vandalism. Air-conditioning, which maintains a temperature of 23°C inside buses during the summer months, has been fitted as standard since 2005. In the course of modernisation, older buses and trams were also fitted with monitoring devices. The old, high-floor buses are kept in reserve for use in the event of football matches or on night lines. During the day, up to 200 buses are in use and six are in reserve. At night, there are 36 buses in operation. The average age of buses in Poznan is about eight years.

The main tram fleet (245 wagons, 122 trams) are Polish Konstal 105N from the 1980s. In 1996, 10 RT6N1 trams were purchased from the Polish–Czech consortium CKD Tatara – HCP Poznan, and five years later 14 Siemens Combino were added. Tram network problems — the average age of vehicles is about 27 years — have been addressed in two ways: by the general modernisation of the Konstal 105N and by the purchase of old German Duwag GT6 and GT8 trams, which, although older than the Polish-built vehicles, are in better condition and more technologically advanced.

At the beginning of the 1990s, Poznan received aid from the Netherlands in the form of several used DAF MB200 buses and 20 Beijnes 1G, 2G and 3G trams. During the difficult years immediately following the change of political system, the city made savings by purchasing a modernised version of the old Hungarian Ikraus from the 280 series.

MPK is one of the first Polish carriers to introduce an automatic identification system for buses for use by blind and visually impaired passengers. The announcement system is activated automatically using an on-board computer that sends a message to a receiver carried by a blind or visually impaired person. Announcements are transmitted 100 metres ahead of the vehicle, enabling blind and visually impaired passengers to prepare to board the bus. Inside the bus, voice announcements indicate the names of the bus stops. The price (without subsidy) of a personal radio receiver is approximately PLN 100 and the system has been in place since 2003.

Policy towards car traffic

Although the main goal of Poznan's transport policy, developed in 1999, is sustainable development, the document does not indicate any measurement of sustainability or specify any tasks in detail. Since the word “sustainable” is ambiguous in Polish translation, the document refers rather to “balanced” or “even” development. As a result, the policy is rather car oriented and, with the exception of the old city centre, the car is privileged. The main plans for the future focus on the improvement of car traffic quality. The city does have plans for public transport and bicycle infrastructure development, but on a far smaller scale than its road development goals.

The pressure of increasing motorisation has forced the city to look for solutions other than expensive road development. In 1993, one of the first parking-charge zones in Poland was introduced in Poznan, and in 2003 it was extended to include 7,000 parking places. The zone comprises three areas with different charges: in the most expensive, the first hour costs PLN 3.00, the second hour PLN 3.60, the third PLN 4.30, and the fourth and following hours PLN 3.00. In the second category the charges are PLN 2.70, PLN 3.20, PLN 3.60 and PLN 2.70 respectively. In the cheapest area, one hour costs PLN 1.00. Surrounding the parking-charge zones in the city centre are nine “buffer parking” areas (approximately 1,200 places) where cars are guarded and parking is free of charge or not more than PLN 2.00 per hour (depending on location and time of day). These are not popular with drivers since they are situated up to a kilometre outside the city centre, with no nearby bus or tram stops. Bicycles can park for free in all these parking areas.

In 2006, the first public underground car-park was opened in Poznan with a capacity of 544 cars. It was constructed by a public-private partnership. The initial idea was to build 540 underground parking places and remove 540 parking places from the streets in the city centre. However, as a result of pressure from local politicians, only 420 parking places were removed from the streets, the balance being 120 new parking places in the historical city centre. Although the prices are similar to those in the parking-charge zones, drivers prefer parking in the streets, as close as possible to offices and shops.

The other opportunity to increase the road network capacity is the installation of intelligent traffic-lights, programmed to sense the optimal timing of green lights taking into account not only the situation on the streets around the intersection, but throughout the district. Lights are coordinated to optimise the flow of traffic, and programmed in such a way that it is not worth breaking the speed limit. In some cases, it is possible to improve capacity by about 30 percent. The first centre for traffic-light management in Poznan was established in 1974, covering some intersections in the city centre. Quite a primitive computer, compared to those available today, made it possible to select one of the fixed-time programmes. Modern intelligent lights were introduced in 1997, since which time the system has been developed further. In 2007, there were approximately 200 intersections with traffic-lights in Poznan. Around 120 of them were intelligent traffic-lights connected to the new centre for traffic-light management. At almost 50 junctions, traffic-lights give priority to public transport. In order to facilitate the coordination of the traffic-light installations connected to the
management centre, the city is divided into four coordination areas and various coordination routes. The older system, which operates on smaller streets, allows only the coordination of lights along the street, that is, linear rather than network coordination.

Intelligent traffic-lights can be an important tool for sustainable development, but they can also be used to promote a car-oriented transport policy. Political and public control is very influential and is an important tool for transport management. In Poznan, intelligent traffic-lights have been installed with two main goals in mind: to improve road capacity and car traffic in general, and to improve conditions for public transport at junctions that are particularly overcrowded with trams or buses. This clearly illustrates the focus of the policy: that is, car oriented with some respect for public transport. Those who benefit least from the intelligent traffic-lights in Poznan are usually pedestrians and cyclists.

Bicycle traffic

Before the change in political system, Poznan had only 4 km of bicycle paths. Under communism, and during the first years of the political transformation, cycling was seen as a means of transportation for those who were not able to afford public transport or private cars. As such, it had no place in the image of a prosperous, modern society. Although modern planning reserved a great deal of space for road infrastructure, investments did not take into account the needs of cyclists. A shift in attitude came with the import of modern bicycles, after which cycling became popular as a form of recreation. Regional authorities reacted very quickly, putting up signs to mark several tourist bicycle routes around Poznan. Although this also stimulated bicycle traffic in the city, the situation of cyclists within the city limits did not improve.

With the onset of the first severe traffic problems, the city council began to consider bicycles more seriously. Today, Poznan has 73 km of bicycle paths. These are constructed in three ways: by adapting wide pavements (in districts built in the 1970s and 1980s); alongside other road construction; and as separate investments.

The quality of the bicycle infrastructure is not satisfactory. The most common problems with bicycle paths are:

- the use of concrete slabs rather than asphalt as the path surface;
- curbs higher than one centimetre, and general unevenness;
- lack of separation from pedestrian traffic (in situations where this would be possible);
- paths situated on one side of a street, rather than on both sides;
- low priority for cyclists at junctions with intelligent traffic-lights, and a not very user friendly form of bicycle detection (cyclists have to stop and press a button and wait as there are no induction loops or video-detectors);
- lack of, or poor-quality bicycle racks, which do not allow cyclists to attach a lock to the frame of the bicycle; and
- lack of parking places for bicycles in new buildings (offices, housing, shopping malls etc.).

In Poland, as in other countries that are signatory to the Vienna Convention on Road Traffic, cyclists are required to use bicycle paths or lanes where they exist. Poor-quality bicycle infrastructure can therefore sometimes make cycling conditions worse than the lack of bicycle paths.

Participation in European Community programmes

Poznan’s participation in European programmes is strongly oriented towards infrastructure. Poznan participated in some programmes prior to EU accession: the first was a pilot programme on intelligent traffic-lights giving priority to trams. The main objective was to install new traffic-light systems at two major junctions located close to each other. The new system improved the capacity of the tram network and the roads. As a result of the political decision to improve conditions for car traffic and public transport, the new lights tended to worsen conditions for pedestrians and bicycle traffic. The programme, which was implemented between 1996 and 1999, was supported by Phare and Ecos/Ouverture to the amount of ECU 120,316. It was oriented towards energy efficiency and was carried out in cooperation with Poznan’s twin city Rennes (France).

The city of Poznan has also made use of other possibilities for financing transport projects. One example is its cooperation within the framework of EUREKA, the pan-European network for market-oriented, industrial research and development, between 1996 and 1998. The costs (EUR 1 million) were fully covered by a grant from the government of the Netherlands. The aim of the project was to upgrade the existing software and hardware controlling traffic-lights at 10 intersections and to install new controls at five sets of lights along one of the main arteries in Poznan. The project goals were realised, and the development of the intelligent traffic-light system is being continued by private companies chosen on the basis of a tender. Just after the end of the project, the city undertook the upgrading of 40 existing traffic-light controls.
Construction of a new tram line between Jana Pawla II and Podgorna streets

The new tram line — a 1.67 km double track, with the reconstruction of one bridge — was designed to optimise the tram network in the city centre and to cut journey time by about four minutes along this popular route. The investment was carried out by the city of Poznan and the construction work took three years (2004–2007). The total cost of the development was PLN 55.3 million, including 50 percent EU support via the Regional Development Fund.

Integrated traffic management system on Grunwaldzka Street

The main aim of the project, implemented in 2006, was to shorten journey time by about 2.5 minutes over a distance of 2.5 km along Grunwaldzka Street, and to improve traffic safety. Activities included the renewal of eight sets of traffic-lights. The new lights allow trams to signal their presence using the TRACK system in order to receive a green light as quickly as possible. The shortening of journey time has meant a cost reduction of about 10 percent over this distance. The project has also improved capacity for cars on Grunwaldzka Street.

The total cost of the project was PLN 4.55 million including 50 percent EU support from the Regional Development Fund. The investment was made by the city of Poznan.

Construction of an integrated bus station at the Osiedle Sobieskiego terminus

The new bus station has been strongly criticised. It was constructed according to the “design-build” method (where contracts for design and construction are made with a single entity and the design and construction phases overlap in order to save time). The winner of the tender did not take into account changes in the cost of the construction work and was therefore obliged to cut costs during the last stages of the project, resulting in unsatisfactory quality.

The total cost was PLN 14.5 million, including 50 percent qualified costs (PLN 7.25 million, or approximately EUR 1.76 million) of EU support from the Regional Development Fund. The investor was the city of Poznan.

Electronic timetables at termini

Electronic timetables have been installed at six main termini, showing departure times and platforms. The main aim was to increase the attractiveness of local and agglomeration public transport.

The total cost was PLN 1.54 million, including 50 percent of qualified costs covered by EU support from the Regional Development Fund (PLN 631,000, or about EUR 155,000). The investor was MPK Poznan.

Cybina Bridge linking two historical districts: Cathedral Island and Srodka

The main aim of the project was the reconstruction of an historical road connecting two old districts. The investment not only improved pedestrian and bicycle traffic (the bridge is closed to motor vehicles): it also contributed to the revitalisation of the old districts.

The total cost was PLN 9.5 million and the construction work received 75 percent financial support (PLN 7.13 million) from the EU Regional Development Fund and 10 percent support (PLN 950,000) from the national budget. The investor was the city of Poznan.

Road investments

Poznan has focused on applying for funds for investment in roads. In terms of co-funded projects, priority is given to road construction rather than public transport. Within the framework of the European Union the following investments have been carried out: the widening of Polska Street (total cost PLN 16.7 million, with PLN 10.3 million European support); the widening of Glogowska Street connecting the city with the newly built A2 motorway (total cost PLN 168 million, with PLN 70.8 million European support); the rebuilding of flyovers and bridges along national roads, within the city limits, managed by the city of Poznan (total cost PLN 106 million, with PLN 79.6 million European support).

Independently of the city, two further important investments have been carried out: the city section of the A2 motorway (13.3 km), at a cost of EUR 260 million (about PLN 965 million), with EUR 45 million support from the Phare programme; and the reconstruction and modernisation of Poznan railway junction on the E-20 European rail route. The cost of the latter investment was EUR 109 million, with EUR 77 million European support from the Instrument for Structural Policies for Pre-Accession (ISPA).

Plans for the future

The most substantial plans are concentrated on three investments: the extension of the tram line to some settlements in the Rataje district and to the huge shopping mall; the extension of the Poznan Fast Tram to the main rail station; and the construction of a third ring road by-passing the city. The first investment involves the building of a new tram depot and the sale of an old one located close to the city centre on a lucrative plot. The extension of the Poznan Fast Tram will make it possible to avoid three busy city-centre junctions and will cut the journey times of trams serving the southern districts of the city.

The most controversial investment is the third city by-pass, planned as an expressway to reduce traffic on the sec-
Lessons Learnt: Poland

Among its plans for the coming years, MPK intends to introduce real-time passenger information and purchase around 40 new low-floor trams.

Conclusions

Poznan’s experiences illustrate that modern solutions in public transport do not guarantee a sustainable transport system. Although MPK has the best bus fleet in Poland, according to the road transport inspection carried out in May 2007, and a relatively well maintained tram fleet, MPK continues to lose passengers every year. The main reason is the city’s car-oriented transport policy, and the other reason is growing suburbanisation. While there are huge delays creating public transport connections to new investments within the city limits, outside the city many new districts have no, or very infrequent, connections. Road development is in strong competition with public transport and new roads paradoxically exaggerate transport problems.

In terms of public transport, the tram system is a particularly valuable solution: the high frequency of trams, the possibility to change lines, and timed tickets make public transport very attractive and flexible enough to suit passenger needs. Although passengers prefer not to change vehicles, the solution is acceptable if services are frequent and the stops are comfortable. The night bus system is another success: all buses operate from one stop, and by allowing sufficient time for changes between buses the system is able to cover almost the entire city with a few bus lines.

Experiences with bicycle traffic prove that the quality of bicycle paths is more important than their length. Poor-quality infrastructure may be more of a disadvantage to cyclists than a lack of cycle paths.

Literature


Links

The City Hall of Poznan — www.poznan.pl
The City Transport Company — www.mpk.poznan.pl
The City Road Management — www.zdm.poznan.pl
Association of City Cyclists — www.srm.eco.pl
Poznan Transport Portal (a private initiative) — www.km.poznan.pl
LESSONS LEARNT
Local public transport in Germany

Although the level of motorisation in Germany is high — around 550 cars per 1,000 inhabitants — public transport plays an important role in the modal split in urban areas. This has been achieved by a high-quality public transport offer, comprising new vehicles, fast speeds, a wide range of attractive services, a good image and — above all — comprehensiveness. As a result, using public transport is very often a more attractive option than driving a car.

The modal share of public transport in German towns and cities is usually lower than in Polish or Czech urban areas, but the level of motorisation is also lower. Bicycle and pedestrian traffic play a higher role in Germany than in Eastern Europe. Depending on the city, between 20 and 30 percent of all trips within urban areas are completed on foot, and between 5 and 35 percent by bicycle. In general, the proportion of environmentally friendly modes of transport is higher in western federal states than in eastern ones. The behaviour of citizens of the new federal states with respect to public transport is similar to that of Poles or Czechs.

However, public transport has not always enjoyed such a privileged position in Germany. Several years before the Second World War, a huge programme of motorway construction was started, aimed at interlinking German cities. In parallel, mass motorisation took off with the launch of the Volkswagen Beetle. The idea of Volkswagen (which translates as the “People’s Car”) was to create a basic vehicle, affordable by most citizens and capable of transporting two adults and three children at a speed of 100 km/h. After the Second World War, car-oriented urban design became the standard. In 1959, architect Hans Bernhard Reichow wrote Die autogerechte Stadt — Ein Weg aus dem Verkehrs-Chaos (The car-friendly city — A way out of traffic chaos). Today, urban planners consider that the policy promoted by Reichow caused more damage to German cities than the Second World War. A radical change in transport policy in German cities occurred in 1973, as a result of the oil crisis, and since then it has been evolving towards sustainable development. The results of the policy change strongly depend on local conditions, and primarily on political determination. At the same time, federal law has changed in many respects. One of the most important ways of promoting public transport has been the change in the calculation of costs for transportation between home and work. Up to the end of 2000, the Income Tax Law favoured motorised commuters — costs were calculated not only according to distance but also according to mode of transport. In terms of tax deductions, there was no difference for commuters between the cost of using a car or using public transport, which encouraged cars over buses or bicycles. However, since 2001, tax deductions have been calculated according to distance between the place of residence and the workplace only, regardless of the means of transport.

In terms of the legal, organisational and financial requirements of public transport in Germany, a distinction must be made between passenger rail transport, meaning local and long-distance rail transport, and other forms of local public transport — buses, the underground, light rail, trams etc.

Since the reform of the railways in 1993, new legal foundations have been laid. The most important of these are the General Railways Act (Allgemeine Eisenbahngesetz — AEG) and the Regionalisation Act (Regionalisierungsgesetz — RegG). The German rail reform transferred the organisational and financial responsibilities from the federal government to the federal states. The federal states receive financial subsidies from the federal government, amounting at present to around EUR 6.7 billion per annum. The main goal of the Regionalisation Act was to improve local rail services: the federal states are able to respond more effectively and more rapidly to people’s needs than the federal government; and local self-governments can more easily put pressure on the regional government. It should be mentioned that the railway plays a very important role in local public transport and is one of the most important keys to the success of sustainable transport in Germany.

The legal basis for other forms of public transport in Germany is provided by the Passenger Transport Act...
Lessons Learnt: Germany

(PBeFG) and other laws known collectively as the Local Transport Acts (OPNV-Gesetze). Since the modification of the Local Transport Acts in 1996, communes have been responsible for local passenger transport. Communes receive special funds of over EUR 850 million per annum for the fulfilment of this task, guaranteed by the Law on the Financing of Transport in Communes (GVFG). The money can be spent on new infrastructure, vehicles, passenger information systems and other improvements, such as reducing journey times, but is not to be spent on operational costs. Financial support covers up to 75 percent, and the remainder is paid by the municipality.

The common practice is for municipalities to establish passenger transport executives, which are responsible for transport in metropolitan areas — cities, surrounding suburban communes, and sometimes large conurbations. The main tasks of these executives are the operation of a common fare system, the division of profits, scheduling, marketing, and ticket distribution. Most transport authorities/executives are companies operating on the basis of commercial law, rather than departments of regional/local authorities operating on the basis of administrative law. The shareholders are public bodies (communes and federal states), transport operators, and DB Regio AG and other rail companies. Each executive has its own characteristics and priorities as well as its own fare system.

In most cases, local public transport carriers operate as commercial law companies, owned by the state, region, commune, municipality association or private capital. Tenders for bus operators, as for regional railways, are becoming increasingly popular. The strength of the trade unions is slowing down liberalisation in the area of public transport.

In Germany, local public transport (within commune borders or up to a distance of 50 km) is taxed at the reduced VAT rate of 7 percent. Other forms of public transport are taxed at the normal VAT rate of 19 percent. The different rates, regulated by the VAT Act (UStG), result from the fact that local passenger transport by rail is seen as the provision of a public utility.

Public bodies have at their disposal two very useful tools in relation to transport demand and public transport management: spatial plans and local transport plans. German planning law successfully coordinates spatial development on all levels: federal, federal state, sub-regional (administrative district or metropolitan area) and municipal. This hierarchy allows a tight rein to be kept on suburbanisation, and makes it possible to protect areas for new transport investments, etc.

Local transport plans were introduced under the Regionalisation Act and are based on the local passenger transport-
Freiburg im Breisgau — a model city

Background

Freiburg im Breisgau (usually referred to as Freiburg) is a university city (home to almost 30,000 students) in Baden-Württemberg in south-west Germany. Surrounded by the Black Forest Mountains and located in the foothills of the Schlossberg, the relatively flat city straddles the river Dreisam. It has played an important role in the region for many centuries. Around 95,000 people are employed in the city. Around 55,000 commuters travel daily into the city to work, and some 16,000 residents commute to jobs outside the city. The city attracts around 3 million tourists a year.

The city has a relatively closed urban structure with its axes of development along the main transport corridors. The streets in the city centre are quite narrow, as determined by the city’s historical structure.

Public transport was introduced in 1891. It was based on three horse-drawn omnibus lines and met with little popularity at first. There were plans to introduce horse-drawn trams, although eventually the decision was made to establish a modern electric tram system. The first line began operation in 1901. By the First World War, five tram lines had been introduced. Between the two world wars, with the German economy in decline, only one new tram line was established, although it closed after a few years. The first two bus lines were introduced in 1925.

Trams were an important means of transport during the serious fuel shortages in the Second World War. The 1944 bombing destroyed many of the bus and tram tracks and vehicles. The first tram line was back in operation in 1945, a few months after the end of the war. The tram network was partially reconstructed and modernised, and in parallel a bus fleet and bus lines were developed. In 1969, Freiburg’s city council passed an innovative transport policy. Two years later the city decided, in contrast to national trends, to preserve and expand its tram network. In 1970, the first development plan for cycle paths was drawn up; and in 1973 the first pedestrian area was established in the old city centre. Such decisions made Freiburg the first German city to introduce the issue of sustainability in urban planning and to resist the trend towards the “car-friendly city.”

Freiburg has developed sustainable strategies for key sectors of urban life — land use, transport policy, energy, water and waste management. Transport is regarded as one of the most important areas for environmental protection strategies, including air pollution, noise emissions and greenhouse gas emissions. In 1992, the city hall set the very ambitious goal of reducing CO₂ emissions by 25 percent by 2010.

Organisation of public transport

Public transport in Freiburg is organised on two levels: city and regional. The City Transport Company (VAG Freiburg) is responsible for lines operating within the city limits. Bus routes and frequency are set by the company, on the basis of analysis. The development of the tram network is decided by the city council following public debate. The first step is an analysis of demand in specific districts of the city and the cost of potential investments; the second step is the submission of a proposal by VAG Freiburg to the city hall. The decision is made by the city council and the development is realised, on the basis of special funds, by VAG Freiburg. Decisions may also be made by all the city’s inhab-

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**Table 11**

<table>
<thead>
<tr>
<th>Freiburg — general information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
</tr>
<tr>
<td>Population density</td>
</tr>
<tr>
<td>Modal split (1999)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Number of cars per 1,000 inhabitants (2006)</td>
</tr>
<tr>
<td>Total length of public roads</td>
</tr>
<tr>
<td>Total length of cycle paths (2007)</td>
</tr>
</tbody>
</table>

*Source*: compiled on the basis of data from the city hall – Office for Inhabitants Service and Information Analysis
itants, via a referendum, as was the case with the development of the tram line to the Haslach district in 1999.

At regional level, full responsibility lies with the Regional Transport Association Ltd. (RVF). RVF is a company owned by public transport operators: the main shareholders are VAG Freiburg (33 percent), German Railways (25 percent), South Baden Buses Ltd. (a daughter company of German Railways, 20 percent) and a further 24 bus and rail companies (22 percent). RVF is controlled and financially supported by the Association of Regional Traffic (ZRF), established by counties of the Freiburg metropolitan area.

RVF is responsible for the line system, ticket sales and the organisation of regional transport. Income from ticket sales and state subventions are divided among operators by RVF. The association does not usually organise tenders for transport and new contracts are divided among the companies that are stakeholders in RVF.

As a city-owned company (or, more precisely, as a “daughter company” of the City Holding Ltd.), VAG Freiburg does not participate in tenders and has a long-term contract for transport services with the city of Freiburg. Company performance is measured according to economic and service goals. The quality of services (e.g. punctuality) is monitored by the company itself. Restructuring, based on an agreement between the city, the trade unions and the company, took place in 2005, with the main goal of improving efficiency.

Network

The public transport network in Freiburg is divided between city lines and agglomeration lines. Within the city network there are four tram lines which connect the most important city districts. Trams run every five to 10 minutes during peak times (06:30 to 19:00); every 10 to 20 minutes outside peak times (20:00 to 22:00); and every 30 minutes after 22:00. On Saturdays, trams run every seven to 10 minutes during peak hours (08:00 to 17:00); every 15 to 20 minutes outside peak hours; and every 30 minutes after 22:00. On Sundays, between 08:00 and 21:00, trams run every 15 minutes, and at other times every 20 to 30 minutes.

The city’s 21 bus lines are divided into four groups: diameter lines going from one suburb to another through the city centre; radius lines, running from the suburbs to the city centre; tangential lines connecting industrial areas with residential areas and tram lines; and complementary lines (the largest group) connecting the suburbs with tram lines. During peak times buses run every 10 to 15 minutes in the city centre, and every 15 to 30 minutes in the suburbs within the city limits. At other times during the day bus frequency depends on demand, although it is never lower than every 45 minutes and is usually every 15 to 30 minutes. At weekends the frequency is lower, at between 15 and 60 minutes depending on the line.

Public transport starts at about 04:30 or 05:00 and stops at about 00:30 on weekdays and Sundays. On Saturdays, it starts around one hour later.

Public transport at night comprises six bus lines for the city of Freiburg and surrounding areas, supported by on-call shared taxis. The night bus lines are numbered, and are also named after the planets: night connections start from one point in the city centre, and night buses run from Friday night to Sunday morning every hour between 01:30 and 04:30.

Every year trams cover 3.1 million km, and buses cover 4.2 million km. Public transport within the city limits is used by about 190,000 passengers per day. The total length of the tram network is 36.4 km, and the total length of bus lines is 272.8 km. Trams are the main form of public transport in Freiburg, carrying about 70 percent of passengers.

The agglomeration network is operated by German Railways — Regional Connections, Suburban Railway in Breisgau, the South Baden Bus Company and the South-West German Transport Company. A well-developed network of regional trains and suburban trains operates in the region, with a total of eight lines, forming the core of regional transport. This network is complemented by a network of over 100 bus lines.

The average speed of trams in Freiburg is 17.8 km/h, and of buses 25.7 km/h. The high travelling speed of the trams is achieved by giving priority to trams at junctions with traffic-lights. Bus speed is relatively high thanks to the organisation of the line system: they usually run in the suburbs rather than the city centre.

Tariff system

The main goal of the tariff system in the city of Freiburg and the agglomeration as a whole is to encourage people to use public transport. Prices for single tickets are divided into three tariff zones (city, first ring of communes, second ring of communes); 24-hour tickets are divided into only two zones (city, surrounding communes); and monthly tickets are valid for the whole area served by RVF. This tariff system encourages inhabitants of surrounding communes to buy monthly tickets, where the public transport offer is slightly worse than within the city limits, and cars are more competitive. For the second ring of communes (the third zone), a monthly ticket costs slightly more than eight single tickets for three zones (e.g. from these communes to the city centre).

There is no price difference between personalised and transferable tickets, which encourages families who might normally commute by car to use public transport more often.
TABLE 12

Ticket and tariff system in Freiburg (as of December 1, 2007)

<table>
<thead>
<tr>
<th>TYPE OF TICKET</th>
<th>NORMAL</th>
<th>CHILDREN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single ticket within one zone for daily trams, buses and regional trains</td>
<td>EUR 2.00</td>
<td>EUR 1.20</td>
</tr>
<tr>
<td>Single ticket within two zones for daily trams, buses and regional trains</td>
<td>EUR 3.40</td>
<td>EUR 2.10</td>
</tr>
<tr>
<td>Single ticket within all three zones for daily trams, buses and regional trains</td>
<td>EUR 4.80</td>
<td>EUR 3.00</td>
</tr>
<tr>
<td>Ticket for eight single trips within one zone (“2x4 FahrtenKarte”) for daily trams, buses and regional trains</td>
<td>EUR 15.00</td>
<td>EUR 8.00</td>
</tr>
<tr>
<td>Ticket for eight single trips within two zones (“2x4 FahrtenKarte”) for daily trams, buses and regional trains</td>
<td>EUR 25.40</td>
<td>EUR 14.30</td>
</tr>
<tr>
<td>Ticket for eight single trips within all three zones (“2x4 FahrtenKarte”) for daily trams, buses and regional trains</td>
<td>EUR 34.00</td>
<td>EUR 19.20</td>
</tr>
<tr>
<td>Point card (“PunkteKarte”) with 20 points. Single ticket within one zone = three points, two zones = five points, three zones = seven points. For daily trams, buses and regional trains</td>
<td>EUR 12.50</td>
<td>n/a</td>
</tr>
<tr>
<td>Single ticket for night buses</td>
<td>EUR 4.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Single ticket for night buses — special offer for holders of 24-hour, monthly or yearly passes and for students of certain Freiburg institutes of higher education</td>
<td>EUR 2.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Additional fare for a trip with a night shared taxi from bus stops to home (in limited areas)</td>
<td>EUR 1.00</td>
<td>n/a</td>
</tr>
<tr>
<td>24-hour ticket within one zone for daily trams, buses and regional trains (one adult and up to four children)</td>
<td>EUR 5.00</td>
<td>n/a</td>
</tr>
<tr>
<td>24-hour ticket within all zones for daily trams, buses and regional trains (one person and up to four children)</td>
<td>EUR 10.00</td>
<td>n/a</td>
</tr>
<tr>
<td>24-hour ticket within one zone for daily trams, buses and regional trains (up to five persons)</td>
<td>EUR 8.00</td>
<td>n/a</td>
</tr>
<tr>
<td>24-hour ticket within all zones for daily trams, buses and regional trains (up to five persons)</td>
<td>EUR 16.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Monthly ticket within all zones for daily trams, buses and regional trains, bought at a sales point</td>
<td>EUR 44.00</td>
<td>EUR 16.50 (before school age)</td>
</tr>
<tr>
<td>Monthly ticket within all zones for daily trams, buses and regional trains, bought by subscription</td>
<td>EUR 38.50</td>
<td>n/a</td>
</tr>
<tr>
<td>“Fanta5” monthly pass for schoolchildren, apprentices and students within all zones for daytime trams, buses and regional trains during weekdays after 14:00 and on Saturdays, Sundays or holidays throughout southern Baden-Württemberg</td>
<td>EUR 33.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Monthly ticket for young people below 25 years of age (not apprentices) within all zones for daily trams, buses and regional trains</td>
<td>EUR 39.50</td>
<td>n/a</td>
</tr>
<tr>
<td>Yearly pass within all zones for daily trams, buses and regional trains</td>
<td>EUR 440.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Semester ticket (including semester holidays), i.e., full six months within all zones for daily trams, buses and regional trains</td>
<td>EUR 69.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Schoolchildren’s semester holidays (six weeks in the summer) throughout Baden-Württemberg for trams, buses and regional trains</td>
<td>n/a</td>
<td>EUR 26.00</td>
</tr>
</tbody>
</table>

*Source: RVF Freiburg GmbH, as of December 1, 2007*
It is more economical to buy a monthly pass than several single tickets for incidental trips to the city centre. The other incentive offered by RVF is the possibility for one adult passenger to be accompanied by up to four children (below 14 years of age) or four dogs free of charge on Sundays and holidays. All such offers make public transport very competitive on days when there is no congestion.

When purchasing a yearly ticket, two months are given free. In addition, monthly tickets can be purchased by special subscription with a reduction of 12.5 percent. Tickets are sent to passengers every month: postage is covered by RVF and customers pay by standing order.

RVF also has special offers for children and young people. Children up to seven years of age are eligible for special tickets costing 37.5 percent of the normal ticket price. Pupils, apprentices and students can buy so-called Fanta5 tickets, which are valid for the whole day on the entire RVF network, and after 14:00 on weekdays and all day on Saturdays, Sundays and holidays (including semester holidays) on the entire networks of four neighbouring tariff associations. Young people below the age of 26 who are not studying are also eligible for concessionary fares. Students at Freiburg universities are eligible for a special semester ticket. All these concessionary tickets are personalised.

There are special fares for night buses in Freiburg: a single ticket costs EUR 4.00, although holders of yearly, monthly and 24-hour passes, as well as students of certain Freiburg institutes of higher education, pay only EUR 2.00. RVF also offers special night-time assistance: on request, buses make stops other than the normal bus stops. In addition, those who wish to continue their journey by shared taxi can inform the driver when they board the bus: the driver will order the taxi by radio to meet the passenger directly at the requested stop. A trip within the taxi areas costs only an additional EUR 1.00.

Reduced monthly or yearly passes are also available for certain regional and special buses (e.g. to popular resorts). In addition to RVF’s offer, regional or state-wide special offers are available from German Railways (DB) and the government of Baden-Württemberg (covering regional trains and local public transport). In addition, there are special regional offers aimed at children and students (e.g. “Fanta5”).

Long-term tickets, especially monthly passes, are the most popular. Passengers using long-term tickets represented about 86 percent of Freiburg’s public transport customers.

The proportion of RVF’s income from ticket sales, state subsidies for schoolchildren’s tickets and income from advertising is 82.5 percent. The remaining costs are covered by the income of the communal holding, which is the owner of VAG Freiburg. The communal holding runs certain profitable branches (e.g. energy delivery) and can subsidise its daughter company VAG Freiburg.

Rolling stock

The Freiburg Transport Company has a modern fleet of trams and buses. The tram fleet comprises 56 trams, including 46 low-floor vehicles. The average age of the fleet is around nine years. The main types of tram are the GT8Z and GT8N Duewag, also known as “Typ Freiburg,” and the Siemens Combino. The trams have a relatively large capacity: the Combino trams and GT8Z and GT8N vehicles have a similar capacity of around 82 seats and 253 standing places.

The bus fleet comprises Mercedes Benz vehicles — 43 articulated buses, 30 normal-length buses and three minibuses. The average age of the bus fleet is around four years.

Compared to other German cities, vandalism is a relatively small problem. There is no monitoring system in the vehicles, although after some acts of violence VAG Freiburg decided to make initial tests with monitoring. In the near future, new vehicles will probably be fitted with video-monitoring equipment. New buses have air-conditioning fitted as standard.

The promotion of public transport and public participation

Advertising has a significant influence on transport behaviour, meaning that public transport must be “trendy.” In the 1950s and ‘60s in Germany (as in the 1990s in Central and Eastern Europe), it was commonly thought that public transport was for poor people who could not afford to buy or maintain a car, while bicycles were for the poorest who could not even afford a tram ticket. Although attitudes have changed since then it is still important to convince citizens about the wide-ranging advantages of public transport. Freiburg’s campaigns concentrate on two aspects: the creation of sound attitudes among children and the young (age groups most fascinated by motorisation); and a comparison between public transport and car traffic, addressed to adults.

Educational materials and webpages such as ZittySorfer and Fanta5 have been created for children, providing information in a modern way about timetables, special offers for children, and attractions located close to bus and tram stops (e.g. playgrounds, sports facilities). Campaigns aimed at adults usually make use of posters and advertisements on buses or trams, which convey in a simple way the most important messages about public transport in Freiburg.

Additionally, there is a special portal in Freiburg dedicated to elderly and handicapped people. The webpage provides details of facilities for disabled people and obstacles they may encounter and is designed to improve the mobility of disabled persons.

Public participation in mass transit management has an important role: it allows offers to be adjusted and ensures...
that major maintenance problems and everyday non-measurable difficulties are made known. It is also a way of listening to new ideas. To this end, a Passengers’ Advisory Council was established in 1999, which is independent from the company and the city council. It has only an advisory capacity and members are chosen from among interested VAG Freiburg customers.

Policy towards car traffic

The city’s policy towards car traffic concentrates on the reduction of the role of individual motorisation in the city and the improvement of traffic safety. This general aim comprises many tasks: the creation of parking-charge zones in the old city centre and some of the city’s main streets; and traffic calming throughout the street network with the exception of main streets. Traffic should be directed onto arterials not through the city as a whole.

In the city centre, parking has to be paid for in three zones, to which different prices apply. In the first zone, the minimum price is EUR 0.50 (for 14 minutes). Each additional EUR 0.10 gives about two minutes 44 seconds parking (average EUR 2.20/hr). In the second zone the minimum price is EUR 0.40 for 15 minutes and EUR 0.10 for each additional three minutes 45 seconds (average EUR 1.60/hr). In the third zone, the minimum price is EUR 0.10 for 10 minutes (average EUR 0.60 /hr). A flat-rate ticket is available only in the second and third zones and costs, respectively, EUR 8.00/24hr and EUR 3.00/24hr. The parking-charge zones, along with the 16 multi-storey car-parks, are part of the integrated parking management system.

One innovation with respect to car usage in Freiburg is car sharing, which offers people access to a vehicle without ownership. It is also called the “car-share club” or “city car club.” Members of the club pay a fixed cost for membership in the club and later for the number of kilometres travelled and the period for which the car is rented. Membership in car-share clubs allows access to a car in situations when it is required, without the need to purchase a private vehicle. This solution contributes to reducing the importance of the car in city traffic.

Bicycle traffic

Bicycle transport plays a very important role in Freiburg. Each statistical inhabitant makes about 1.1 bicycle trips a day, which means that about 211,000 trips are made each day. The importance of bicycle traffic in the modal share has been growing: in 1982 it was only 15 percent, while in 1999 it was about 28 percent of all journeys made by inhabitants of Freiburg. The modal split in terms of journeys made in the city centre is around 45 to 55 percent, which means that bicycles dominate transport in the city centre.

The network of bicycle lanes and paths in Freiburg is about 195 km long. Most of them — nearly 166 km — are paths or lanes located along roads and streets. Nearly 30 km are located away from roads, in parks or “home zones”, for example. Bicycle paths through green areas are treated as alternatives to main bicycle paths along roadways because they are not as safe (they are located in often deserted areas, may not be clearly marked and are not lit at night, for example).

This network is complemented by zones of streets with a speed limit of 30 km/h or “home zones” (about 220 km), and by forest or access roads on which car traffic is very limited and slow (about 130 km). Altogether, there are more than 500 km of bicycle friendly infrastructure and streets.

The system of bicycle paths is divided into three main groups:

- main bicycle paths, which ensure safe, fast and trouble-free connections between main districts and the city centre;
- bicycle lanes along streets on less important routes (also of high quality, but priority is rarely given to cyclists); and
- routes restricted to certain periods of the day (for example, cyclists are permitted to use pedestrian streets outside shopping hours).

In the city centre there are between 500 and 600 public parking places for bicycles and a further 3,000 in other parts of the city. According to state law, every new investment (house, shop, office etc.) has to include bicycle parking spaces. Detailed standards for every area and kind of activity are established by the city. These bicycle parking places have to be located inside or close to the building, on a private plot. Outside the historic city centre and in locations not served by public transport, bicycle parking places must be ensured by developers or private investors. The possibility to park a bicycle close to home, workplace, shops etc. is one of the most important factors stimulating bicycle usage. Additionally, close to the main rail station the German Mobility Club operates a parking area for about 1,000 bicycles along with a cafe/meeting point and a bicycle service and rental point. Books and information about sustainable mobility can also be purchased here.

The city focuses on the following aspects:

- removing gaps in the bicycle network;
- improving the quality of older bicycle paths and lanes (e.g. changing surfaces to asphalt);
- separating bicycle and pedestrian transport on more frequently used routes;
- improving bicycle network safety in hotspots (places with a higher number of accidents);
LESSONS LEARNT: GERMANY

• developing bicycle parking places in the city centre and a Bike&Ride system;
• opening one-way streets for bicycle traffic in the opposite direction; and
• developing and improving bicycle signposts.

The lack of parking places has become the main problem in terms of bicycle traffic. Some councillors had the idea of establishing a parking-charge zone for cyclists, but the city hall found other solutions: new parking places have been arranged outside the historical city centre, and on Saturdays and market days a special stationary bus has been made available on which people can store their shopping bags free of charge before returning to their bicycles or to the tram. The bus service, which is paid for by the market traders, makes shopping easier and encourages inhabitants without their own vehicles to go shopping in the city centre.

In Freiburg, bicycles cannot be carried on city buses or trams. A limited number of bicycles can be taken on regional trains after 09:00 on weekdays and at any time at the weekend; and after 19:30 on weekdays there is no limit on the number of bicycles. The price for carrying a bicycle is the same as that of an adult ticket for the relevant zone.

Key to success — a way to sustainable mobility

Main transport policy goals

In the 1970s, the most important means of transport in Freiburg was the car. In 1976, 60 percent of non-pedestrian journeys were done by car; the proportion of public transport was about 22 percent; and the modal share of bicycles was 18 percent. In 1989 the proportions were 48 percent, 25 percent and 27 percent respectively. The most recent general traffic research carried out in 1999 showed that the proportion of cars was only 37 percent, with 25 percent public transport and 38 percent bicycle journeys. During the last quarter of a century the total number of journeys made by Freiburg inhabitants has grown from 385,000 up to 555,000 journeys a day, although the sustainable transport policy has contributed to a fall in the total number of car journeys from 231,000 to 207,000 journeys a day.

The remarkable changes in Freiburg’s modal split have been achieved as a result of the following activities:

• developing public transport;
• developing bicycle infrastructure;
• traffic calming;
• integrating individual motorisation with other means of transport;
• rationing parking spaces; and
• integrating transport planning and urban development.

These activities are oriented towards the sustainable development of the city, which has the following aims:

• improving the quality of life;
• reducing pollution;
• strengthening the role of Freiburg as a regional centre and a city of creative and innovative industry;
• keeping Freiburg a “city of short distances”; and
• preserving the unique image of the city.

The high quality of urban life is regarded by the city council as one of the most important arguments for attracting advanced technology industry and services such as biotechnology and electronics. Limitations on cars do not trigger protests from business owners.

Public transport

In 1984 the Freiburg “Environmental Protection Card” was introduced. This was a cheap monthly ticket without any limit on the number of journeys. Tickets were transferable and were also valid outside the city limits. Significantly, the introduction of a cheap monthly pass did not cause any long-term troubles for the municipal transport company. The lower income resulting from cheaper tickets was made up by higher demand.

The second key to the success of public transport in Freiburg was the extension of the tram network. The city decided to put the emphasis on the tram network rather than improving the bus system (e.g. introducing bus lanes and priority for buses). Today, all traffic-lights at junctions with trams give priority to the trams, while only some intersections with bus traffic give priority to buses. Not only do trams have better transportation parameters (e.g. capacity), they also have a much better image being modern, clean and fast.

Important innovations at regional level have been the introduction of a flat-rate monthly pass valid in all zones for all means of transport, and the construction of Park&Ride and Bike&Ride facilities. The improvement of regional train and bus lines was the next, but no less significant, step.

Urban planning

The concept of a “city of short distances” has many implications for urban and transport planning, the most important being the limitation of areas intended for housing. The city opens up new areas only when existing areas are completely built up and the demand for new houses has grown. Before the new area is opened for construction work,
the city undertakes an analysis of environmental impacts, transport needs, needs for new services, the profitability of new investments, people’s expectations of their living area, etc. A tender is then announced for a project for the new urban districts, which must take into account a reduction in energy demand, the independence of transport from individual motorisation, the proximity of green areas and playgrounds, the establishment of services in a district centre, and some workplaces. City inhabitants, NGOs, investors and potential residents participate throughout the planning process.

Since public transport requires a minimum number of potential users in order to be economically viable, new districts are developed close to existing or planned public transportation lines. Minimum numbers of inhabitants living within walking distance of public transport stops have been calculated for German cities: a minimum of 1,000 to 1,500 people within walking distance (300 m) of a bus stop; a minimum of 3,000 people within walking distance (400 m) of a tram stop; and a minimum of 4,000 people within walking distance (500 m) of a light regional rail station. The division between “home zones” and parking places makes public transport more accessible: tram stops along the main axis of the district are usually closer than parking places. It is worth underlining that people can drive to their house in certain cases — for example with shopping — but may not park at their house. The district is accessible by car but traffic organisation significantly discourages driving through the district.

A very important goal in spatial planning is the mixed use of new spaces (abandoning the old approach with its division between various forms of activity). New districts have residential areas, green spaces, public services, shops, some workplaces and sports facilities. This significantly reduces demand for transport — people’s needs are met within the district. In addition, various types of accommodation make possible “housing careers” within a single district, where there are apartments for single people, families with children, and elderly people. These are all complementary functions of the districts.

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**TABLE 13**

Guidelines for public transport development in Freiburg

<table>
<thead>
<tr>
<th>MODE OF TRANSPORT</th>
<th>ACCEPTABLE WALKING DISTANCE TO STOP</th>
<th>THE NUMBER OF INHABITANTS WITHIN WALKING DISTANCE BASED ON 40 APARTMENTS PER HECTARE</th>
<th>THE NUMBER OF INHABITANTS WITHIN WALKING DISTANCE BASED ON 70 APARTMENTS PER HECTARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>bus</td>
<td>300 m</td>
<td>1,476</td>
<td>2,583</td>
</tr>
<tr>
<td>tram</td>
<td>400 m</td>
<td>2,623</td>
<td>4,591</td>
</tr>
<tr>
<td>light regional rail</td>
<td>500 m</td>
<td>4,100</td>
<td>7,174</td>
</tr>
</tbody>
</table>

Bicycle and pedestrian traffic

The reason for the success of bicycle traffic is the high quality of the infrastructure that has been established since the 1970s, and the bicycle parking facilities at homes and journey destinations (shops, schools, offices etc.). An important factor in maintaining a high level of pedestrian journeys was the introduction of wide pedestrian zones in the city centre; the introduction of district centres in new districts; and a “walk-able” city design (e.g. wide pavements, separated bicycle and pedestrian traffic, and areas suitable for handicapped people and children).

Plans for the future

The plans for the future focus on the development of regional, transboundary connections with cities in France and Switzerland. These projects are supported by the European Union. Additionally, there are plans to extend the tramway network in directions of regional importance (e.g. through city limits and within city limits). These regional projects are supported by the state and the surrounding counties. The city also has its own plans focusing on the optimisation of the tram network within the city centre, including a new line to the university campus. Other plans focus on improving travel quality (e.g. video monitoring, new trams).

Conclusions

The example of Freiburg shows that public transport must represent a better alternative — that is, be more flexible, cheaper and quicker — than individual motorisation. It is not possible to have good public transport without the integration of urban and transport planning. The concept of a “city of short distances” plays a significant role. Modern car-free districts like Vauban have a huge modal share of public transport, and there is enormous respect among society for this kind of solution.

Factors that have a significant impact on the popularity of public transport are:

- a cheap and easily understood tariff system promoting long-term tickets;
- modern vehicles and other infrastructure (e.g. stops, passenger information systems);
- the introduction of tram and bus lines in former pedestrian areas;
- priority for trams at intersections;
- high travel speeds of trams and buses;
- obstacle-free vehicles and infrastructure;
- high frequency;
- integration with regional transport; and
- promotion, advertising and public participation.

Non-motorised traffic is a very important element in sustainable mobility. Pedestrians — as well as cyclists — need attractive and comfortable infrastructure. Easily accessible pedestrian zones and bicycle paths can breathe new life into old districts and make the city centre a very attractive place for shopping, meeting, and cultural events.

Literature


Links

The City of Freiburg — stadtverwaltung.freiburg.de
Breisgau-S-Bahn — www.breisgau-s-bahn.de
Friends of Freiburg’s Trams — www.fifts.de
Passengers’ Advisory Council — www.fahrgastbeiratfreiburg.de
A page with information for children about public transport in Freiburg — www.zittysoerfer.de
Page with transport offers for the young — www.fanta5.com
Freiburg Tariff Association — www.rvf.de
Internet portal for full access to the city — www.freiburg-fuer-alle.de
Bicycle taxi — www.fahrradtaxi-freiburg.de
Mobility centre and bicycle station — www.mobile-freiburg.de
German Transport Club — Freiburg Division — www.vcd.org/freiburg
The five different cities described in the case studies represent different systems of public transport and illustrate successes and problems in Central European cities. Four of the cities only recently embarked on the path of socioeconomic changes, while the case study on Freiburg introduces a different situation. In the 1960s this German city adopted, in contrast to worldwide tendencies, the path of sustainable development. In the literature, the city is used as a model city for sustainable mobility. The integration of urban planning and transport development; the city’s easy, smart and affordable tariff system; and plans for the immediate future in Freiburg have been an inspiration for traffic engineers from other cities for about 40 years. However, in some fields certain cities now have better solutions than those applied in Freiburg — for example, transport management and economics in Gdynia.

The main lesson to be learnt from these case studies is to prevent the disintegration of the public transport system. Cities must take the initiative and cannot afford to wait and do nothing. Public transport should be improved in such a way that travel standards increase in order to provide a good alternative to car usage. The services on offer cannot be addressed only to the poorest social group. While the social role of public transport is obviously very important, the target group should be very wide. The achievement of this goal is relatively difficult, but, as shown by the examples of Freiburg and — on a smaller scale — Olomouc, it is possible.

There are many ways to achieve success, although the most important are: cheap fares; the promotion of long-term tickets; the integration of different modes of transport and different operators in one metropolitan area ticket system; high frequency (optimum every five to 15 minutes on main lines); a comprehensive offer including night buses and services in low-density areas; and good possibilities to change between lines. Integrated urban planning and transport development should ensure that tram or bus stops are closer than parking places for private cars. Safety aspects are also very important: video monitoring is becoming the usual practice inside vehicles and at stops. Vehicles should be comfortable and clean.

The social aspects of public transport are mostly related to the inclusion of people with various disabilities. All the cities described have, for some years, set goals to make public transport free of obstacles. Firstly, low-floor vehicles have been introduced, although it is worth mentioning that most cities made the decision some years after the introduction of low-floor technology in mass production, which took place at the beginning of the 1990s. This was followed by the new design of platforms in order to adjust them to the height of the vehicles. In Freiburg, the city decided to reconstruct those streets where the trams run down the centre of the street with no separate tram stops. Trams remained in the middle of the road, but the level of the road was raised to match the level of the tram track, making the whole roadway a platform accessible by handicapped people. Cars are obliged to stop to give priority to passengers alighting from the trams. Low-floor vehicles also bring benefits for other passengers: passenger exchange at stops is shorter, and elderly people or passengers with prams have easier access. Recent activities to improve access for disabled people have focused on visually impaired or blind people. In this respect, a good example is the city of Poznan, where a special system of vehicle identification has been introduced.

Buses powered by alternative fuels (e.g. CNG, bioethanol) are currently being planned or tested. Engines and fuels are becoming increasingly efficient and the technology cheaper. The use of such fuels could soon become usual practice in public transport. Out of the five cities presented, only Gdynia has buses powered by CNG and the first results, both economic and ecological, are encouraging.

Sustainable mobility cannot be limited to the improvement of public transport alone. Bicycle and pedestrian traffic also play a very important role. After the fall of communism, cars became a status symbol among the Czechs and Poles, as in the countries of South Eastern Europe. Bicycles and public transport in general were considered as transportation for the poor. However, attitudes are now changing. Today, a well-designed bicycle infrastructure is extremely important: smooth surfaces (e.g. asphalt), smooth curbs, safety lanes, priority at intersections, and the possibility to store bicycles safely and conveniently at home and at the office. Experience shows that poor infrastructure can discourage bicycle traffic...
even more than a lack of infrastructure. Pedestrians need wide pavements and pedestrian zones, ensuring safety on the streets. Pedestrian zones have become very popular as shopping areas and meeting places, that is, part of the urban lifestyle.

It is clear that more funding should be directed to the improvement of public transport than to road construction. The effects of improved road infrastructure are very quickly overtaken by the rising number of car trips being made, which have a negative impact on modal share. Similarly, uncontrolled suburbanisation leads to an increase in the number of trips made by car. New road investments should rather be concentrated only on optimising a city's by-pass system. Intelligent traffic-lights also play a significant role. They can be an important tool in giving priority to public transport and in helping to achieve sustainable mobility. However, it is unfortunately also easy to change priorities and set out car-oriented programmes.

City residents are usually opposed to measures designed to promote sustainable mobility, such as parking-charge zones, traffic calming, and priorities for public transport or bicycle paths rather than new parking places. However, at the same time they protest against traffic noise and pollution. Decision makers have a significant and responsible role in explaining and communicating the goals of the transport policy and in advertising public transport. Improvements for cars are short-term solutions that usually create more problems.

To summarise, it is important for SEE cities to start with the development of a good transport policy integrated with urban planning, to implement it consistently and to update it periodically. The policy should have ambitious goals consistent with the principles of sustainable urban mobility and should be oriented towards long-term goals since short-term effects may not be immediately visible. During this stage, of course, cooperation and understanding among all decision makers and stakeholders are vital. The creation of one separate unit with clear responsibility for transport planning and management (city transport authority, metropolitan transport authority) can significantly improve the whole process and can mitigate problems arising from coordination and cooperation difficulties among relevant transport stakeholders.

A combination of different measures should certainly be

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**TABLE 14**

**Key messages from the public transport case studies**

- Prevent the disintegration of public transport and promote its image.
- Cities must take the initiative – with local authorities playing an important role.
- Create a good transport strategy and transport plan with ambitious goals consistent with the principles of sustainable urban mobility and strive toward long-term improvement since short-term gains are not always possible.
- Consider creating a transport authority to take responsibility for organising the public transport system.
- Integrate public transport planning with urban planning – e.g. make tram/bus stops easier to reach than car-parking spaces.
- Open the transport operator market to private firms, as competition can contribute to the improvement of public transport services.
- Give priority to public transport both in terms of investment plans and physically on the roads.
- Improve the standard of public transport so that it meets the needs of a wide group of citizens and becomes a good alternative to the car.
- Introduce a good transport fare system: inexpensive and simple tickets, long-term pass options, integration of different modes of transport and different operators in one area-wide ticket system.
- Create a good network and timetable that make it easy to transfer between different transport modes, and have lines that offer comprehensive coverage, including low-density zones and night-time services.
- Keep vehicles clean and safe by introducing a monitoring system and regular cleaning service.
- Pay attention to people with reduced mobility and provide better accessibility to public transport.
- Along with public transport improvements, promote and invest in cycling and walking, introduce parking-charge zones and traffic calming and introduce Park&Ride and Bike&Ride facilities.
- Look for innovative financing solutions by persuading the city that this public service has to be subsidised (or just paid for under the service contract between the city and the operator) and by seeking co-financing from EU funds and other donors.
- Be active in different European transport projects and initiatives, which is a way not only to find additional funding but to network with other cities, exchange experiences and learn from others’ mistakes.
undertaken, that is, necessary investments in the revitalisation of the city infrastructure, meaning both roads and public transport infrastructure. This should be accompanied by transport demand management measures (e.g. restrictions on car use, parking charges, Park&Ride schemes etc.). Public transport should be given priority both in terms of investment plans and physically on the roads (separate lanes, traffic-lights etc.). Services should be designed in accordance with citizens’ needs and expectations, thus their opinions must be taken into account — only then will these services become a real alternative to car use. Here, a good, straightforward, integrated tariff system can play a very significant role in attracting citizens. Involvement and cooperation among all stakeholders at all stages of project planning, implementation, investments and operation are crucial. Citizens should be kept well informed about planned improvements and their expected consequences, as well as about the negative impacts of car use.

It must be kept in mind that public transport is a public service: it has to satisfy its clients, but it is not a commercial activity and certainly needs financial support from the budget of the local authority or central government. In particular, reduced fares for various social groups must be subsidised from the local/central budget. However, the financing of public transport system improvements could come partly from the EU. This is the usual source of co-funding of public transport investments in all EU member states.

We believe that the selected case studies represent good, informative examples of public transport systems and that they (or at least elements of them) are transferable. We hope that lessons learnt from these case studies will be useful to local stakeholders in SEE and that they can draw on these experiences to build their own achievements.
Next steps and recommendations
Summary of transport problems

Urban mobility challenges at EU level

The EC has paid close attention to the problem of increased traffic in towns and city centres and recently launched a consultation on a possible European strategy to tackle issues related to urban transport and traffic. Urban mobility should enable the economic development of towns and cities, improving the quality of life of inhabitants and protecting the environment. In its recent green paper on urban transport, the EC identified the following problems as needing to be addressed in an integrated way:

- **Increasing congestion, which has an adverse impact on all aspects of life in the cities.** The major challenge is to reduce the negative impacts of congestion whilst ensuring that urban areas continue to do well economically.

- **Air and noise pollution caused by the predominance of oil as a transport fuel, which generates CO₂, air pollution and noise.** Transport appears as one of the most difficult sectors to manage in terms of CO₂ emissions. Despite progress in car technology, the growth in traffic means that cities are a significant source of CO₂ emissions, which contribute to climate change.

- **Increase in freight and passenger flow.** This results in a lack of space, since there are substantial limits to the development of the infrastructure needed to cope with this increase.

- **Accessibility for all, including persons with reduced mobility.** Urban infrastructure, including roads, cycle paths etc., but also trains, buses and public spaces, parking, bus stops, terminals, etc., should be of a high quality and satisfy the needs of all citizens. The design of public transport vehicles must ensure accessibility for handicapped people and parents with small children. In order to be attractive, public transport has to be not only accessible but also frequent, quick, reliable, and comfortable.

- **Safety and security of transport.** The risk of being killed in a road accident is six times higher for cyclists and pedestrians than for car users. Very often, the victims are women, children and elderly citizens. Social safety can be improved with video monitoring, for example.

- **Limited financial resources available for public transport infrastructure investments.** Substantial financing of various kinds is needed in order to invest in infrastructure and passenger interchanges, the maintenance and operation of networks, fleet renewal and maintenance, and public awareness and communication campaigns. For the most part, the responsibility for such investment lies with the local authorities.

These problems are experienced at local level, but their impact is also felt on a wider scale in the form of climate change/global warming, increased health problems, bottlenecks in the logistics chain, etc.

Challenges in the SEE region

The analysis of transport-related problems in the SEE region presented in the section "Needs and priorities for public transport in SEE cities" shows that all the above-mentioned problems are encountered in the SEE cities covered in this book. The findings from the research and interviews were confirmed by the participants of the regional meeting organised by the REC with the support of the Ministry of Spatial Planning, Housing and the Environment of the Netherlands, held on June 21–22, 2007 in Budapest.

In general, participants and other stakeholders agreed that in SEE countries the car-based lifestyle dominates. Due to the significant increase in the number of cars, congestion and air pollution afflict most cities in the region. The major problems are the low priority given to public transport, the lack of municipal/governmental funding for services provided to groups with social privileges (discounted tickets), and the lack of funds for improvements to public transport. On the other hand, stricter enforcement of environmental regulations is needed.

There are some good recommendations from projects initiated with the support of IFIs, but they need to be followed up with action. In addition, there is no education or awareness raising of citizens and there is a need to build the capacities of local au-
Next steps

Actions addressing urban mobility challenges must certainly be taken at the local level, but as the EC underlines in its green paper "Towards a new culture for urban mobility": "Local authorities cannot face all these issues on their own; there is a need for cooperation and coordination at European level. The vital issue of urban mobility needs to be addressed as part of a collective effort at all levels: local, regional, national and European. The European Union must play a leading role in order to focus attention on this issue."

The EC tries to spread the message that in order to address urban mobility challenges, new urban polices must be designed. To be effective they need to be based on an integrated approach combining technological innovation; the development of clean, safe and intelligent transport systems; economic incentives; and amendments to legislation.

Promoting sustainable alternatives to the car is very important in fighting increasing congestion. Other activities mitigating congestion problems can be:

- introducing congestion charging where necessary and applicable;
- influencing travel behaviour and linking it to urban planning — e.g. including mobility planning in the permitting procedure for new developers; and
- improving freight logistics by reducing the negative impacts of long-distance freight transport passing through urban areas through planning and technical measures. Freight logistics and passenger logistics should be integrated in one logistics plan.

Concerning the problems related to air emissions and noise, the following actions are recommended:

- making use of new technologies, clean and energy efficient vehicle technologies and alternative fuels, such as biofuels, hydrogen and fuel cells;
- setting harmonised minimum performance standards for the operation of vehicles;
- introducing green public procurement rules and criteria — encouraging authorities to purchase clean and efficient vehicles by including environmental criteria (in addition to the vehicle price) in procurement procedures. This could be supported by a joint green strategy giving incentives for private companies to purchase cleaner vehicles;
- promoting eco-driving and the introduction of electronic driving support; and
- imposing traffic restrictions where necessary (e.g. downtown, residential areas).

Issues related to the lack of space and the increase of passenger and freight flows could be mitigated by more extensive use of intelligent transport systems and smart charging systems. User-friendly, adequate and interoperable multimodal trip information should be provided to passengers in order to stimulate better mobility for citizens by giving them the option to choose travel time and route.

In order to address the issues related to accessibility for people with reduced mobility, the collective transport systems should be adjusted to meet their needs. More demand-responsive services (tele-bus, common taxi etc.) should be provided.

In the process of improving the public transport systems services the role of transport authorities is very important — a good definition of service requirements and selection criteria are needed while tendering and while preparing service contracts between the municipality (or any other competent authority) and the transport operators. Transport operators should also invest in their staff to in-
The first step is to develop a good sustainable transport policy to guide developments, then a transport strategy describing how to achieve goals, and finally a sustainable transport plan/programme spelling out implementation steps in more detail. Policy and strategy at the city level should be linked to national strategy and urban planning measures. Strategies should cover parking issues, mobility for disabled people, and environmentally friendly modes of transport. Transport plans should be integrated with urban planning and implemented jointly. Strategies and plans are crucial in identifying priorities in urban transport and activities to improve urban mobility. A good sustainable transport strategy is also needed at the national level, as it should provide a framework for local strategies and plans. Sustainable urban transport plans for cities are recommended by the EC and are very often a prerequisite to receiving support from the EU and independent financial institutions (IFIs). The creation of sustainable transport policies, strategies and plans should be accompanied by better enforcement of regulations, especially environmental ones (e.g. limiting import of the second-hand cars) and stricter use of economic instruments to improve the environmental performance of urban transport. Overall, a sound and stable legal framework should be set up to stimulate the development of public transport.

- A good parking policy that pays special attention to paid parking and parking restrictions in the city centre is a key to successful mobility management. It should be implemented as early as possible. Parking revenues should be used as a financing source for public transport investments. The SEE region already has some good examples that could be adapted to other cities.

- A proper organisational and institutional framework is essential. The different transport-related responsibilities and competencies should be clearly defined and delegated among the appropriate bodies. The decentralisation process should be completed and all responsibilities should be given away to local authorities (for example setting up transport tariffs in the city). The creation of a public transport authority fully responsible for public transport organisation in the city and/or region can help and has proven to be successful in many cities in CEE. The relations between transport authority and the transport operator (transport company providing the service) should be well defined, formalised and regulated through good public service contracts between the authority and operator. Such contracts should ensure proper compensation for the service provided (especially in regard to discounted tickets) and give incentives for further operation improvements. Public authorities and transport operators are both involved in the provision of public transport services. The EC and IFIs are encouraging cities and transport operators to cooperate within such contracts, which are based on the idea that public transport is a public service for which the city pays (and the users pay) based on the quality of service pro-
Regional cooperation between cities and suburban settlements should be encouraged and implemented. Cities in the SEE region have poor connections with their suburban agglomerations and commuters have few alternatives to private cars. One good idea is the establishment of a regional transport authority, especially in metropolitan areas where commuter traffic between city centres and outlying settlements is significant. Establishing a common regional transport strategy, networks and tariff integration may be difficult, but creating a regional transport authority and/or a transport and tariff association will certainly facilitate the process. Regions should pursue common ticketing systems, network integration and common travel information. The older EU countries, and even some new members, have shown how such initiatives can succeed.

Cities should find ways to involve central governments in the process of public transport improvements, for example by getting their support in strategic and pilot urban projects, by persuading them to help support necessary legislative changes, and by getting them to guarantee municipal loans.

In order to improve cooperation and coordination between different public transport actors, capacity building for local and government authorities is needed. There is a need for better understanding among decision makers of the importance of public transport for quality of life and sustainable development.

Cities must take the initiative to get more deeply involved in public transport.

Investment in public transport should be prioritised over car-oriented spending. Necessary investments in public transport infrastructure and rolling stock should be planned and implemented. In the short term, refurbishments of existing rolling stock, or the purchase of second-hand rolling stock, should be considered. In the long term, investment in modern equipment and infrastructure should be planned. Attention should be given to public transport not only in terms of investment but also in terms of dedicating more space to public transport and giving it priority on the streets, for example by creating separate lanes for buses and trolleybuses and improving the interoperability between different modes of transport. It is very important to decrease average travelling times in public transport, which requires a shift away from car-oriented policies.

Taking mobility into consideration in urban planning is vital and is the current trend in all European cities. Transport problems must be foreseen and mitigated during the planning stage. A good example is the planning of new developments along existing transport routes in Freiburg in the Vauban district of Germany (see the “Lessons learnt” section of this book). This ran counter to the usual order of things in which developments are built first and mobility issues are tackled later.

Privatising the transport market — that is, opening up operating tasks to competitive bidding — could bring about further improvements in the quality of transport services, so attracting more citizens to use public transport. In some cities, such solutions have become necessary since the public transport companies cannot cover the whole urban area. Of course, tendered operating arrangements must be spelled out in detailed contracts in order to ensure service quality and fair remuneration for operators.

The financing of public transport needs to be better managed. All public transport actors must recognise that public transport is a public service and cannot be self-financing. The service must be paid for by users while also being supported by the authority responsible for providing the service. Faced with scarce financial resources, cities must find better ways to finance urgent improvements to neglected infrastructure and rolling stock and to create new services. Measures to increase fare revenues and generate additional revenues must be identified. A proper mix of local revenues (from parking charges and local taxes), national and international funding (better absorption of EU funds and IFI support) must be identified and put in place.

Transport should become a client-oriented service, where the opinions, expectations and needs of clients/citizens must be taken into consideration when improving services and when planning new services. Public surveys are a very good means of collecting feedback on passenger needs. Customer-oriented tools such as good passenger information systems; clean, safe and punctual vehicles; transport routes adjusted to current needs of citizens; improved accessibility for persons with reduced mobility; integrated networks and ticketing systems, etc. help to make public transport an attractive option, thus decreasing the number of cars in cities.
NEXT STEPS AND RECOMMENDATIONS: SUMMARY OF TRANSPORT PROBLEMS

- Public transport has a very poor image that needs urgent improvement. Firstly, market research should be carried out to identify options for improvement. Research results can help in planning for new investments and can help in discussions with politicians and authorities. The image of public transport can be improved through advertising campaigns and by nurturing relationships with mass media. There have been initiatives along these lines in the SEE region supported with EU funding and these should be followed and replicated in other cities.

- The internal management and operation of public transport companies must improve. Companies have to learn how to operate in new conditions, how to reduce costs, and how to downsize and increase efficiency and revenues. Companies must find better ways to cope with scarce public funds and how to continuously increase efficiency (e.g. outsourcing non-core business or new services).

- Cities in SEE should pay more attention to the environmental aspects of transport. Better enforcement of the polluter pays principle and other environmental regulations (SEA, EIA procedures, limitation of second-hand cars with poor environmental performance, phase-out of leaded petrol, etc.) is needed. Environmentally friendly modes of transport, such as cycling, should be promoted, not only in smaller and medium-sized cities, where this solution is more generally accepted, but also in larger cities following the example of London, Paris, Copenhagen, etc. When preparing investment plans, attention should be paid to cleaner technologies, including clean fuels. New vehicles and retrofits are both options.

- Stakeholders should be included at every stage of planning, decision making and implementation. More attention should be paid to public opinion and at the same time the public should be informed about problems and difficulties as well as plans to improve the situation. This should go hand in hand with more intensive awareness-raising campaigns among politicians, decision makers, civil servants, other public transport actors and citizens themselves. More information should be provided with respect to mobility problems and solutions. There should be more open dialogue among all public transport actors in order to achieve better cooperation, consensus and understanding.

- There are already examples of good sustainable transport initiatives within SEE and we believe that closer cooperation and experience exchange between SEE cities is needed. Learning from others’ experience is a key to success. Additionally, lessons learnt from cities in CEE (currently EU new member states) should be taken into consideration when planning improvements. Greater involvement in European projects (e.g. the CIVITAS initiative, financed under the EU 7th Framework Programme for Research and Development and already available for some SEE countries) could foster experience exchange, but could also be a source of additional funding for public transport investments.

The participants of the regional meeting, as well as the consultations with local stakeholders, indicated that the cooperation of all public transport actors is needed along with more financial resources in order to improve the quality of public transport and to offer a good alternative to the car. Further cooperation to foster sustainable public transport policies and solutions in the region is needed. There is also a need for experience exchange with cities more advanced in applying sustainable transport policies and measures, with special focus on medium-sized and small cities from among the countries that recently joined the EU. Further financial support to help implement sustainable transport policies and measures is still vital.

Endnotes
1. The challenges described in this section are summarised from the EC green paper on urban transport “Towards a new culture for urban mobility”, available at http://ec.europa.eu/transport/clean/green_paper_urban_transport/index_en.htm
2. These actions are drawn from the EC green paper on urban transport. For the full text of the paper see weblink in note 1.
THE REGIONAL ENVIRONMENTAL CENTER FOR CENTRAL AND EASTERN EUROPE (REC) is a non-partisan, non-advocacy, not-for-profit international organisation with a mission to assist in solving environmental problems in Central and Eastern Europe (CEE). The REC fulfils this mission by promoting cooperation among non-governmental organisations, governments, businesses and other environmental stakeholders, and by supporting the free exchange of information and public participation in environmental decision making.

The REC was established in 1990 by the United States, the European Commission and Hungary. Today, the REC is legally based on a charter signed by the governments of 29 countries and the European Commission, and on an international agreement with the government of Hungary. The REC has its head office in Szentendre, Hungary, and country offices and field offices in 17 beneficiary countries, which are: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, the former Yugoslav Republic of Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia and Turkey.

Recent donors are the European Commission and the governments of Austria, the Czech Republic, Croatia, Estonia, Finland, the former Yugoslav Republic of Macedonia, Germany, Hungary, Italy, Japan, Latvia, Lithuania, the Netherlands, Norway, Poland, Slovakia, Slovenia, Sweden, Switzerland, Turkey, the United Kingdom, and the United States, as well as other inter-governmental and private institutions.