Sustainable transport is a concept, an ideology and, in some countries, a governmental policy that consists of strengthening or replacing the current transport systems of an urban/suburban area with more fuel-efficient, spacesaving and healthy lifestyle-promoting alternatives. The term refers to any means of transport with low impact on the environment, and includes human or animal musclepowered vehicles, low-carbon fueled vehicles, any kind of vehicle using a renewable source of energy for its propulsion. The most common usage of green transport is walking. A common form of green transport vehicles are hybrid vehicles. Hybrid vehicles use an internal combustion engine combined with an electric engine. Biofuel powered vehicles use fuels derived from plant sources, such as vegetable oil, biodiesel, or bioalcohol for their propultion. Sustainable transport systems make a positive contribution to the environmental, social and economic sustainability of the communities they serve. Source: Wikipedia

Sustainable traffic investment



TRANSPORT IN THE STRATEGIC AND MAST

Over the last twenty years, the urbanisation of the Ljubljana Metropolitan Region has significantly increased the interdependence of individual settlements in the region which is reflected in increased occupational migration from dispersed residential areas to areas with high job concentrations, as well as in increased daily migration aiming at satisfying various needs, such as studying, shopping, enjoying one's leisure time and visiting healthcare centres in the capital city as well as in large municipal centres. Such a development, accompanied by an increase in prosperity, reduced the number of public passenger transport users and increased the usage of personal motor vehicles. Consequently, traffic densification has occurred in all the large settlements and on the roads linking regional centers to the capital city. Furthermore, air quality has deteriorated, external transport costs are constantly on the rise, and transport-related costs represent a heavy burden for most of the households.

This is why when designing a new transport policy, all the developments and negative trends need to be taken into account, priority measures need to be selected, while the responsibilities of supervisory bodies and the role of developers are clearly defined.

The greatest challenge facing transport planners in Ljubljana is daily migration. Solutions should not be limited to interventions into space, they need to be carried out in cooperation with the neighbouring municipalities, regions and the state. Such a Improving the capacity and increasing the standard of railway stations and train cooperation is a must when it comes to the upgrading and renovation of the existing railway network. Apart from this, the still missing parts of inner circular roads, multistorey car parks and parking lots for the residents living in the city centre, as well as for visitors to the city centre, missing bridges and underpasses under railway tracks need to be completed.

In the future, transport development will alter the ratio associated with the usage of different modes of transport. The most pressing assignment of the transport policy is that of promoting various modes of public passenger transport, while limiting personal vehicle transport. The need for car journeys needs to be diminished, citizens must be offered adequate replacement choices, travel expenses ought to be optimised, while the mobility of all the population groups should be enhanced. This will, in time, reduce the negative impact of transport on the environment. It goes without saying that a modern public passenger transport system is, by definition, comfortable, fast, efficient and economically acceptable in the eyes of all its users.

The plans comprise the following concrete measures:

- Priority treatment of public passenger transport when planning new infrastructural interventions in the city and its surroundings (road and rail transport),
- The upgrading of the railway network so that this can partly meet the daily migration demands (e.g. the construction of the second track on the Ljubliana - Jesenice railway line and the incorporation of the Jože Pučnik International Airport in the railway network, the construction of the second track on the Ljubljana – Kamnik railway line),
- Increasing the frequency of modern passenger trains into the direction of all the regions (in the direction of Grosuplie, Litija, Koper, Kamnik, Kranj and Maribor), stops,
- The introduction of high-capacity freight transport terminals and their links to the railway infrastructure,
- The introduction of an optimal intermodal stop system on the Liubliana radial roads (enabling the shift from the car to a high-capacity means of public passenger transport),

Sustainable mobility is a term that summarises what is at stake in contemporary attempts to redress the balance of costs and benefits in the approach, which conceptualised transport as a derived demand and as a informed by evidence and risk assessment and which recognises the pitfalls

ER PLANS OF THE CITY OF LJUBLJANA

• The introduction of separate lanes for road and rail public transport in the sections Traffic study area National centre of international importance affected by traffic densification, Ljubljana urban region Centre of national importance • The construction of parallel ring roads ensuring the redistribution of the urban traffic City of Ljubljana municipal area Daily number of vehicles entering/exiting Ljubljana along the radial roads, Long-distance road link of international importance • The upgrading of parking facilities, particularly those situated close to the inner ring, from nearby settlements from direction Road link of cross-border importance • The upgrading of the cycle path network and the introduction of its links to regional 100 J Long-distance rail link of international importance 1,000 cycle paths, 10,000 High-speed rail link • Further limiting of motor vehicle transport within the city centre, while extending new areas designated for pedestrians and cyclists, Maritime navigation lane Integrated public transport and settlement zone • The introduction of bicycle parking facilities, MEGA zone - proposed Port of Koper • The provision of an adequate IT support to all the system users and promotional Ljubljana Airport activities. Murska Sobota Sloveni Gradec Maribor Ravne na Koroškem Dravograd Ptuj Radovliica Velenje Trbovlje Hrastni ob Savi Ljubljana Zagorie Krško Brežice Sevnica Nova Gorica Novo Mesto 📲 Postoj**na**

> Koper Izola Piran

EXPERTISE ON PUBLIC TRANSPORT MANAG

Between the city and the region

Over the last decades, the everyday functioning of the City of Ljubljana has become so intertwined with that of the larger region that one can no longer look into the development of the city without simultanously considering the development of the Ljubljana region.

This is today a region of new residential areas characterised by occupational migration and intense economic interaction, such as intra-regional trade in goods and services. The Ljubljana Metropolitan Region is therefore a good approximation of a Functional Urban Area with Ljubljana as its centre.

Taking into consideration the number of workplaces, the number of school places available and the offer of its shopping and leisure centres, Ljubljana functions as the centre of an urban area with 600,000 – 700,000 residents. As many as 140,000 residents living in municipalities in the Ljubljana region commute to the City of Ljubljana every day either to work or to study. These are joined by a considerable number of commuters visiting Ljubljana on their business and shopping trips, as well as those who come to Ljubljana to spend their leisure time there.

State of affairs and reasons for the project

Fom 1990 until 2008, the number of public transport passengers in Slovenia dropped from 168 to 90 million. Judging from the data obtained during the 2002 census, as much as 63 % of residents commuted to work in their private cars, while only 21 % of the population commuted to work by using public transport. An even more drastic change has been witnessed in the number of passengers opting for intercity public transport which in the Ljubljana Metropolitan Region dropped from



294 million passengers in 1990 to merely 68 million in 2003, while the number of personal vehicles per 1,000 residents living in the Ljubljana Metropolitan Region increased from 475 to 529 between 2001 and 2008 alone.

Over the last twenty years, the range and length of journeys performed in the Ljubljana Metropolitan Region have increased exclusively because of car journeys. A vicious circle has thus been created, with traffic densification causing congestions and jams and calling for further investments into road infrastructure. Newly constructed roads then improve car-related mobility, thus attracting even more personal vehicle traffic eventually causing traffic congestions and jams. And the vicious circle is once again complete. Nowadays, it is taken for granted that personal vehicle transport is going to even further increase, even by transport experts and politicians.

The driving forces of such a development which has occurred over the last twenty years, have been an increased level of motorisation fuelled by values associated with personal freedom and material prosperity, as well as relatively cheap oil-based energy. It was these driving forces, coupled with an accelerated suburbanisation process of the rural hinterland and a dispersed urban sprawl, that motivated investments into the improvement of the road network and that created a real feedback loop.

Such an approach to traffic regulation and spatial development goes hand in hand with enormous long-term societal costs and deteriorates the quality of life for all the people living in the Ljubljana Metropolitan Region.

- Metropolitan European Growth Areas (MEGAs)
- Transnational / national FUAs
- Regional / local FUAs

The map shows the share of the active population and the number of persons living in the Ljubljana region municipalities commuting daily to the City of Ljubljana to work (Source: Institute for Spacial Policies, 2008)

GEMENT IN THE LJUBLJANA METROPOLITAN

The aim and a brief description of the project

The Public Transport Management in the Region project wishes to implement the Regional Development Programme of the Ljubljana Metropolitan Region with which the region has committed itself to establish a well-functioning conurbation where more than 80 % of residents will be living in a 300-metre radius from public areas and public transport by 2013 (the Regional Development Programme of the Ljubljana Metropolitan Region, 2007). The project contributes to the establishment of public passenger transport links which will enable the local residents and visitors to the region to opt for a time-efficient and economically attractive public passenger transport. The public passenger transport system must be practically minded in order to decrease daily migration processes (commuting to work, school, university) and the number of car journeys performed by those people whose visits to Ljubljana are dictated by its economic and political role of the capital city.

Renovated public passenger transport will increase the attractiveness of the region, transforming the region into a better place to live, get educated and work in, as well as to visit. This will, in turn, create the potential for a synergetic development impact and might result in an improved international competitiveness of the Ljubljana region.

The project, inter alia, comprises:

an agreement on sustainable transport targets in the region in relation to its neighbouring regions,

a public passenger transport plan,

proposals on how to systemically introduce public passenger transport.



The project consists of an expertise on the establishment and management of quality public passenger transport in the Ljubljana Metropolitan Region by 2027. The study was prepared in line with sustainable mobility principles. The Ljubljana Metropolitan Region must introduce a public passenger transport system which would enable the local residents and visitors to the region to opt for a convenient mode of transport and which would offer them time-efficient and economically attractive public passenger transport services, thus improving the quality of life in the region. Based on the published expertise and the agreements adopted within the region, the following projects will be treated with priority:

Park and Ride with 38 intermodal stops with the Ljubljana Passenger Centre at its heart, complemented with intermodal stops outside the centre of the region and Park and Ride facilities situated at the radial roads leading into urban centres. Each of these three types of intermodal stops will provide services in line with standards on public passenger transport services and tertiary sector services.

Modern high-speed lines will follow Ljubljana's main transport corridors, linking all parts of the Ljubljana Metropolitan Region, as well as Slovenia. The High-Speed Line System will connect public passenger transport terminal stations which can meet a huge demand, thus ensuring the competitiveness of public transport over car journeys. In this way, personal vehicle transport would shift to public passenger transport before reaching the agglomeration. The High-Speed Line System requires that the current average journey speed of 5 km/h be increased to 24 km/h and that during peak hours public transport service be offered at 5-minute intervals. **The modernisation of the railway infrastructure** is a project of national importance and will assist the region in establishing a public transport that will be capable of long-term development, as well as meeting the targets. Railway

REGION

connections to important regional centres (Kamnik, Vrhnika, Grosuplje) play an important role as well, for they well complement other modes of public transport and relieve the region from inbound traffic from other regions.

The design and implementation of footpath and cycle path links between the city centres and regional centres will enable daily commuters to choose nonmotor over motor vehicle modes of transport. Such a system will establish links between individual settlements, towns and cities in the region, as well as between intermodal stops. Residents will thus be given an array of modes of transport to choose from, ranging from cycling and walking for the whole duration of the journey to combining different means of transport.

Policies and soft measures in support of public transport. In order for the modernisation of the public transport system project to be successful, the municipalities within the Ljubljana Metropolitan Region should jointly commit to common targets and a well-coordinated cooperation. The larger municipalities, with a high number of daily migrants (workers and students), should be the driving force behind project development as traffic regulation in smaller municipalities largely depends on traffic management in their neighbouring municipalities. Such an interdependence calls for a regular exchange of information on the implementation of individual projects and for active participation of all the municipalities in the planning of various measures to be adopted. There is a need to fully agree on what regional priorities when it comes to public transport and sustainable mobility are, for they play a crucial role in the potential increase of supply of and demand for public transport. A well-functioning public transport system in the region will attract visitors from the neighbouring regions and serve as an example of good practice and a promoter of innovative traffic regulation in the municipalities from other regions.

Public transport passengers in 1000

Private cars per 1000 inhabitants of LUR



A coordinating regional body guiding the development of public transport

will efficiently implement public transport services following various European good practice examples. There is a need for such an independent coordinating body both on the national and regional levels. By analogy with the national concept of integrated passenger transport, a regional public transport agency, responsible for the implementation of the above-mentioned systems, as well as for investments into them, needs to be established.

The Expertise on Public Transport Management project was developed by the Regional Development Agency of the Ljubljana Metropolitan Region in close cooperation with most of the Ljubljana Metropolitan Region municipalities and in continuous cooperation with the Ministry of Transport and the Ministry of Environment and Spatial Planning. The Ljubljana-based private company OMEGA consult d. o. o. prepared the Expertise on Public Transport Management between April 2008 and December 2009. The private company Oikos d. o. o. coordinated the project, while the private company Korpus d. o. o. took care of the promotion of the project. On behalf of the project developer, a project group steered the project implementation process.

The project was co-financed by the European Regional Development Fund in the amount of EUR 400,000. The project was carried out within the Operational Programme for the Strengthening of Regional Development Potentials 2007 – 2013, under the »Development of Regions« development priority and »Regional Development Programmes« priority orientation.

Sources:

Fried, B. (2009). A Message from Copenhagen: Climate Plan Must Include Walkable Urbanism. Retrieved 31 January 2010 from http://www.streetsblog. org/2009/12/09/a-message-from-copenhagen-climateplan-must-include-walkable-urbanism/

Jonathan Rose Companies. (2009). Charts and slides, Location: urban vs. suburban green. Retrieved 31 January 2010 from http://www.rose-network.com/ resources/charts-and-slides

Nordregio, ed. (2004). ESPON project 1.1.1: The role, specific situation and potentials of urban areas as nodes in a polycentric development, 2006 ESPON Programme. Esch-sur-Alzette.

Spatial Development Strategy of Slovenia, Ministry of Environment, Ljubljana, 2004 Multimodal Transport Model for the Ljubljana Region, PNZ, Ljubljana, 2006 City of Ljubljana Spatial Plan, Ljubljana, 2002 Applied Territorial Research, ESPON, 2006

FOR A CLEANER AND BETTER TRANSPORT

The CIVITAS Initiative (City-VITAlity-Sustainability) is a European Commission initiative which was launched in 2002. This initiative, financed through Research Framework Programmes, gives space to city demonstration projects and is coordinated by the Directorate-General for Energy and Transport.

The aim of the initiative is that of testing innovative urban transport strategies contributing to the implementation of European policies on transport, efficient energy use, alternative resources in transport and environment protection. The demonstration projects implement integrated packages of technology and transport policy measures.

The key elements of CIVITAS:

- The projects are coordinated by cities and are developed for the cities.
- The cities have a central role in public private partnerships.
- Political commitment is a basic requirement for the implementation of the measures envisaged by individual projects.
- The cities function as living laboratories for learning, teaching and evaluating.

The cities participating in the CIVITAS I, CIVITAS II and CIVITAS PLUS Initiatives

Areas of action:

- 1. alternative fuels and clean, energy efficient vehicles
- 2. collective passenger transport services and intermodality
- 3. demand management
- 4. influencing mobility behaviour
- 5. safe and reliable mobility for all
- 6. innovative transport services
- 7. freight delivery
- 8. the use of telematics in transport

Mobilising Citizens for Vital Cities

The CIVITAS-ELAN project sees intense cooperation between the cities of Ljubljana (Slovenia), Gent (Belgium), Zagreb (Croatia), Brno (the Czech Republic) and Porto (Portugal) which agreed to proactively respond to sustainable mobility challenges. Ljubljana features both as a leading city and the project coordinator. As many as 37 partners are involved in the project, with Ljubljana working with 9 local project partners, Gent and Zagreb with 6 local partners each, Porto with 7 and Brno with 1 local partner. The project is also supported by the following three partners : Rupprecht Consult – Forschung & Beratung GmbH, Tritel and FGM AMOR – Austrian Mobility Research.

Key actions and measures

The aim of the project is to develop a more sustainable, cleaner and a more energy-efficient transport in the five project cities. Much attention is dedicated to the development of public transport, cycling and walking, alternative energy resources and the use of information technology in transport, accessibility for all, as well as to soft measures. This project is about the involvement of citizens in mobility planning activities, for it also wishes to bring about a change in journey habits. The CIVITAS-ELAN project will not solve all the transport-related problems in the five partner cities. Yet, it is an important milestone on our path to sustainable mobility.

The measures implemented in all the five partner cities: 1. the greening of city administration vehicle fleets 2. the involvement of citizens in mobility planning 3. the improvement of traffic safety

4. the management of freight delivery

Transport activity is a major user of non-renewable energy resources. In the EU, the transport sector is responsible for 31% of energy consumption. Most of the above mentioned environmental problems are related to road transport, which is the dominant mode of transport in the EU. Road transport accounts for about 84% of CO2 emissions from transport. In addition to the indirect health impact from noise and air pollution, transport activity is responsible for serious injuries and death through traffic accidents. Accidents occur mainly in road transport. In the EU, about 42,000 people are killed in road accidents every year. The direct costs of car accidents are estimated at €45 billion annually. If all indirect costs (such as medical costs) are taken into consideration, this figure rises to €160 billion. Source; EU Commission The 2001 Transport White Paper

2008 - 2012

The measures implemented in the City of Ljubljana

1. Integrated high-quality mobility corridor. A high speed bus lane will be introduced in the following streets: Barjanska cesta, Slovenska cesta and Dunajska cesta. The Ljubljana public passenger transport will thus become more efficient and reliable, intermodal stops will be better connected as well as better managed, buses will be given priority over other vehicles at intersections along the corridor, and bus stops will become more easily accessible to passengers with reduced mobility.

2. The Urbana city card. This smart card makes public passenger transport easier to use, faster and more flexible. It lays the foundation for a different arrangement of city bus lines and will eventually allow for modal shift within the Ljubljana public passenger transport.

3. The construction of additional Park and Ride parking facilities at the end of Barjanska cesta, as well as in the vicinity of the Stožice Sport Center. These will be linked to the city centre by public transport. The price of public transport services will be included in the parking fee.

4. Hybrid city buses. In June 2009, a presentation of hybrid city buses produced by Van Hool and Solaris was organised on the regular line of the city bus service No. 6 and in 2010 the MAN's hybrid bus was tested. After testing hybrid and other alternative fuels buses, Ljubljana will decide which new technology to choose for its PT operator's fleet and implement it.

5. Demand responsive services. The City of Ljubljana wishes to develop flexible public transport services responsive to the needs of passengers with reduced mobility and to the needs of those travelling in low density areas. On-call public transport services have already been introduced in the pedestrian zone. In this way, passengers can be transported to the closest city bus stop.

6. The introduction of displays with estimated time of bus arrivals. The displays will be installed at 33 bus stops and 2 Park and Ride parking facilities at the both ends of the corridor. The passengers will thus receive easy to read and accurate real time information about the arrival of their bus.

7. Improved safety and security for seniors and other passengers travelling with city buses. As many as 53 security cameras have been installed in the Ljubljana city buses, 16 city buses boast video surveillance systems for reverse driving assistance, while 4 buses have also been equipped with frontal traffic monitoring systems.

8. A comprehensive cycling strategy. A series of measures aims at promoting cycling within the city. Special lanes designated for cyclists, safe bicycle parking facilities and a flexible and affordable bicycle rental system will thus be introduced. The constitutional meeting of the Ljubljana Cycling Platform was held in June 2009, with further activities planned for the project life-time.

9. Reduced speed zones. In certain parts of the city centre, the speed limit will be reduced to 30 km/h.

10. The greening of the public fleet. At least 1 out of 10 vehicles in the City Administration public fleet should be a clean vehicle. Ljubljana has already achieved this objective when opting for the lease of hybrid cars (instead of their purchase) during its first green public procurement. The six Toyota Prius hybrid cars are used by city inspectors. On top of these, the public enterprise Snaga (waste management, cleaning of public surfaces, etc.) has been using electric scooters and vehicles, while public transport services in the pedestrian zones are currently provided by two Kavalir (Gentleman) electric vehicles.

11. The use of pure plant oil for vehicle propulsion. Three vehicles in the fleet of the Agricultural Engineering Department with the Agricultural Institute of Slovenia are

Transport policy: "the city of short journeys": the synergy of various measures, such as the expansion of areas designated for pedestrians and cyclists, the introduction of bicycle parking facilities with bicycle rentals and for safe parking, a parking model (with stimulative and dissuading measures), Park and Ride terminals / intermodal stops at the beginning of radial roads, the reconstruction of radial roads with the introduction of separate fast bus lanes, the introduction of the congestion charge, the Ljubljana city card, the introduction of intermodality (bringing together bicycles, buses and trains), the promotion of further expansion of the city at radial roads and/or along public transport lines

fuelled by plant oil. Converted diesel engines have been used for plant-oil-fuelled vehicle propulsion. The engines are equipped with electronically controlled heating devices which enable plant oil to achieve the same characteristics (viscosity) as mineral diesel fuel, thus ensuring their smooth operation in all working conditions.

12. The preparation of a modern Sustainable Urban Transport Plan. The plan will be prepared within a participatory process involving citizens and stakeholders. Two large employers (the City of Ljubljana and the Ministry of Foreign Affairs) will prepare their travel plans.

13. Safe routes to school. The measure sees the participation of 46 primary schools and 4 special education institutions.

14. Integrated freight policy development.

15. The presentation and promotion of car sharing and car pooling associated with a more rational car use. These practices see the participation of two or more individuals using or owning the same car. Consequently, individual users have lesser financial expenses. Furthermore, car use is associated with less environmental, infrastructural and other costs caused by traffic congestions and exhaust gases.

16. Implementation of a sustainable congestion charging scheme for motor vehicles • The Jožef Stefan Institute, entering the city centre once the public passenger transport has been improved and other modes of transport (cycling, walking) and their impact has been studied. Congestion charges have already been introduced in several European cities (such as London and Stockholm) to tackle traffic jams as one of the main culprits of environmental pollution and a reduced quality of living in the cities.

Contacts:

CIVITAS-ELAN Project Coordinator: Zdenka Šimonovič (zdenka.simonovic@ljubljana.si) Ljubljana Site Coordinator: Vladimir Babić (vlado.babic@ljubljana.si) Ljubljana Site Dissemination Manager: *Vita Kontić* (vita.kontic@ljubljana.si) Ljubljana Site Evaluation Manager: Branko Kontić (branko.kontic@ijs.si)

CIVITAS ELAN partners:

The City of Ljubliana, the project and local site coordinator, and the following 9 local project partners:

- Ljubljanski potniški promet (Ljubljana Public Passenger Transport),
- Telargo,
- The Urban Planning Institute of the Republic of Slovenia,
- The Faculty of Social Sciences with the University of Ljubljana,
- The Institute of Traffic and Transport Liubliana,
- The Agricultural Institute of Slovenia,
- The Regional Environmental Centre for Central and Eastern Europe,
- Slovene Railways.



THE CIVITAS INITIATIVE IS CO-FINANCED BY THE EUBOPEAN UNION

SUSTAINABLE TRAFFIC INVESTMENT Ljubljana City presentation on MIPIM 2010

Sponsored by:

Art Director: Janez Koželj Video: Jernej Vidmar Text: Ivan Stanič, Zdenka Šimonovič, Janez Koželj Photographers: Barbara Jakše Jeršič, Miha Fras, Miklavž Paternoster, Dunja Wedam, Ambient Graphic Designers: Mojca Bizjak, Maja Licul, Zadruga Published by: MOL, Municipality of Ljubljana Printed by: Tiskarna Januš Volume: 1000 copies Stand construction: K.R.E.S. Agency, Ljubljana Contact: Zoran Janković, Mayor of the City of Ljubljana, zoran.iankovic@liubliana.si







THE SUSTAINABLE MOBILITY APPROACH

The new approach to transport problems and the revitalisation of public space is based on the following assumptions:

- There is a direct link between the quality of public life in the city and areas closed to moving and stationary motor vehicle traffic.
- Walking is the only truly natural mode of movement in the city. Furthermore, it promotes urban living in public spaces.
- Road and road network expansions further increase and attract inbound motor vehicle traffic in the city.
- People prefer not to drive into the cities where there are no parking possibilities.
- An efficient and comfortable public transport should replace rather than merely complement car journeys.
- Only if freight transshipment and delivery are differently organised, the number and duration of delivery and cargo vehicle journeys within the city will be reduced.
- It is high time for transport engineers to start regulating the development of the city by giving priority to pedestrians and cyclists over cars.
- In the future, the city transport policy ought to promote walking and cycling in combination with different types of public transport.
- Congestion charges represent the most appropriate financial resource for public transport and best improve walking and cycling conditions.

Transport crisis indicators:

- Poor traffic flow capacity affected by traffic congestions and jams,
- Poor air quality due to pollution and noise pollution,
- Bad parking conditions at intermodal terminals,
- Poor quality of public spaces,
- Poor pedestrian infrastructure, poor signalling system and crosswalks, low safety,

The city of short journeys: the synergy of various measures, such as the expansion of areas designated for pedestrians and cyclists, the introduction of bicycle parking facilities with bicycle rentals and for safe parking, a parking model with stimulative and dissuading measures, Park and Ride terminals at the beginning of radial roads, the reconstruction of radial roads with the introduction of separate fast bus lanes, the introduction of the congestion charge, the Ljubljana city card, the introduction of intermodality bringing together bicycles, buses and trains, the promotion of further expansion of the city at radial roads and/or along public transport lines.

- Poor cycling infrastructure and short, narrow, non-connencetd cycle paths without priority over vehicles at crossing, poor safety,
- Poor public bus infrastructure, slow and irregular service, congestions and fares,
- Poor rail transport infrastructure, inappropriate timetable, uncomfortable trains, a small number of train stops),
- Poor planning of mixed-use residential areas along public transport lines.

Measures aiming at reducing traffic in the City of Ljubljana:

- The introduction and expansion of public transport lines with fast bus lanes. These lines will be connected to Park and Ride terminals along the highway ring and in the broader city region.
- The introduction of links between cycle paths and fast public transport lines. The construction of cycle paths measuring 2 metres in width along all the radial roads leading to Park and Ride terminals. The upgrading of the cycling network along all the remaining roads, if necessary to the detriment of motor vehicle traffic, particularly in the city centre and in residential areas.
- Bicycle parking lots at Park and Ride facilities and at public transport stations, indoor bicycle parking facilities in office buildings and in multi-storey car parks.
- Limited parking areas in the city centre, reducing car journeys while expanding the public transport network.
- Increasing the parking capacity of Park and Ride facilities to 40,000 parking spaces along the highway ring and on the outer city boundaries.
- The reduction of personal vehicle transport in the very city centre by 70 %, in the larger city centre by 40 % and on the outskirts by 10 %.
- The construction of new multi-storey car parks in the city centre for local residents at a 1 : 1 ratio exchange.

Organisational measures:

- The Ljubljana city card,
- High parking fees for visitors to the city centre,
- Low parking fees at Park and Ride terminals
- Congestion charges in specially designated areas,
- Emission-related motor vehicle transport permits in specially designated areas.



Strategic Spatial Plan of the City of Ljubljana **Public transport** City of Ljubljana boundary Continental rivers Public transport routes: High-speed railway track Main railway track (inter-city and regional routes) Regional railway track Lowered railway track courses in tunnels or cut-and-cover tunnels Main routes of city passenger public transport (bus or tram on dedicated lanes) Other Routes of city bus transport Inter-city and regional bus routes Bus routes in tunnels Areas with minibus service (e.g. shuttle) Circular shipping route on the Ljubljanica River • Passenger railway station • Passenger railway stop Bus or tram depot Heliport Public parking »park and ride« (P+R) Passenger centre Ljubljana – main railway and bus station Source: City of Ljubljana, 2009; UIRS, 2009; FGG-PTI, 2009, LUZ, 2009.



THE NEW TRANSPORTATION POLICY

Basic premises

Mobility and individuality are most definitely the signs of our time. On the one hand, the freedom of choice granted through the freedom of movement opens the window of opportunity and of new life projects. On the other hand, however, mobility and individuality have dictated a most dramatic transformation in city development, clearly observable in untamed decentralisation, fragmentation and dispersed settlements, not to mention a constant increase of personal vehicles roaming the city and causing more and more greenhouse gas emissions, a greater presence of solid particles in the air, as well as noise pollution – all to the detriment of local residents and their health and the global climate.

Motor vehicle transport, which is still on the rise, is more and more difficult to manage, for it, directly and indicrectly, results in the entropy of the urban system and affects its functioning. Due to traffic congestions and jams, not only negative climatic conditions may be observed, but also mobility is being reduced and accessibility is turning into a challenge.

State of affairs

Slovenia has been seeing a 3.5 % annual increase in road traffic, with more than 83 % of passenger kilometres performed in personal vehicles. The increase in transit traffic, which coincided with EU membership, caused a 70 % increase in road traffic in Slovenia. Every day, road traffic produces approximately 140 tonnes of carbon monoxide emissions, 100 kilograms of lead emissions, more than 10,000 tonnes of carbon dioxide emissions, 70 tonnes of nitric oxide emissions and 4 tonnes of sulphur dioxide emissions. In 2003, external transport costs, calculated against various greenhouse gas emission scenarios, were estimated at 6.6 – 9.4 % of GDP, i.e. ranging between 1.7





and 2.3 billion euros. Commuters from the greater Ljubljana area alone perform almost 350,000 journeys a day. Public transport is used in a mere 9 per cent of them. In all the large Slovene towns, emissions have regularly exceeded ceiling values, while nitric oxide emissions from heavy goods vehicles on the Ljubljana ring increased by 50 % between 2000 and 2004.

The City of Ljubljana, in its wish to abide by binding mitigating measures related to mandatory noise pollution and emission monitoring, will be obliged to introduce various traffic regimes. Thus, due to exceeded emission ceilings, motor vehicle transport in the most heavily burdened areas will be limited and passive measures for the protection of exposed buildings will be implemented. Otherwise, citizen lawsuits because of overburdened environment may be filed.

Targets

In early 2007, the European Union has committed itself to reduce emissions by 20 % from 1990 levels by 2020 and to potentially reduce them by 30 % should other developed countries opt for such an undertaking.

As a signatory to the Kyoto Protocol, Slovenia committed itself to reduce its greenhouse gas emissions from 1986 levels by 8 % between 2008 and 2012. The City of Ljubljana hence adopted the Operational Programme for the Reduction of Greenhouse Gas Emissions introducing various measures in its quest to reach environmental targets, such as the improvement of air quality through a reduction of greenhouse gas emissions of 8 % by 2012, the reduction of noise pollution and/or the reduction of the number of Ljubljaners exposed to excessive noise, the creation of a quality living environment associated with less health risks, and the obtainment of an efficient, energy-saving user- and environment-friendly mobility.

The city card

Urbana is the smart Ljubljana city card functioning as a storedvalue card allowing cash-free payments of all the services offered by the City of Ljubljana to its residents and visitors. Initially, the Urbana city card can be used to pay for:

- journeys with the Ljubljana city buses,
- parking fees within the City of Ljubljana (at all the parking areas managed by the public enterprise LPT in charge of Ljubljana's parking facilities and open-air markets, as well as in white parking zones equipped with parking ticket dispensers),

Transportation strategies Modal split

Striking a balance between different modes of transport is no longer an option. From now on, absolute priority must be given to alternative modes of transport, such as walking, cycling and public transport. Measures promoting higher car occupancy levels need to be introduced. There is also a need for carpool stations, intermodal stations situated at radial road entry points, congestion charges, as well as for the promotion of public transport.

Public passenger transport

In terms of comfort, accessibility and punctuality, public passenger transport needs to improve to the point of representing a proper competition against car journeys. Ceilings for travel expense reimbursement equalling the reimbursement of an equivalent public transport ticket ought to be introduced.

Urban traffic

Urban traffic densification can only be addressed through public passenger transport solutions. Traffic signs need to be more efficient and special highcapacity corridors for fast public transport need to be introduced. All the Ljubljana else in the system. We can therefore conclude that, in order to be efficient, traffic city buses ought to be hybrid and natural-gas fuelled.

Delivery traffic

Efficient freight delivery calls for joint deliveries so that the number and duration of journeys performed by delivery and cargo vehicles may be reduced. The city centre ought to provide a sufficient number of delivery points in the city centre, as well as of logistic centres for freight transshipment and consolidated shipments on the outskirts of the city.

• the services of the Liubliana Castle cable lift and

• the fees for the services of the Ljubljana Metropolitan Library. Later on, the Urbana city card will allow payments of museum and cultural event tickets, visits to sport institutions, and will even function as a tourist city card. The possibilities of its use are

Town planning

Housing, town planning and transport policies ought to be interrelated. Densely populated urban areas ought to be public-passenger-transport dependent. City centres are in need of renovation. This process should be enhanced by limited motor vehicle transport and the introduction of expanded areas designated for pedestrians and cyclists. There is a need for the decentralisation of public services.

Education

It is important that kindergartens and schools promote a healthy lifestyle. People have different notions of prosperity. Sadly, this is often associated with increased mobility. The awareness of how much time is really spent during car journeys in comparison with public transport, cycling and walking, therefore, needs to be established.

Integrated traffic management

Traffic control only becomes truly efficient if all the stakeholders, strategies and measures are brought together into a synergetic and co-dependent system. If only partial measures are attempted, with an aim to solve what seems to be the most burning transport-related issue, the partial solution causes a functional or environmental disturbance somewhere management needs to be comprehensive and systemic.

This is the aspect that represents a continous challenge, for the City of Ljubljana, the Ljubljana region and Slovenia have not yet developed the know-how necessary for a synergetic management of complex systems and have not yet managed either to coordinate comprehensive solutions or to implement them with consistency. The current crisis, affecting transport, the environment and the economy, is a unique opportunity for us to gain experience in the strategic management of large systems, with the cooperation and support of many a stakeholder interested in reaching our common goals.

counting passengers and monitoring passenger flows, which, in

The Civitas elan traffic corridor project The main and thematic streets of the city

Update of the Sustainable Urban Transport Plan brings together broad range of stakeholders, promotes integrated sustainable solutions and highlights mobility management.





 Intersecting roads rearranged into streets with limited motor vehicle transport on the principle of shared traffic space.



• The new alleys and street furniture in the extended areas designated for pedestrians and cyclists along the main street corridor increase the attractiveness and comfort of the public space.



• The middle part of the main Slovenska Street rearranged entirely for public transport, pedestrians and bicyclists.

 Separate bus lanes guarantee smooth and reliable public transport also during peak hours.



- Fast-line hybrid buses will have an area designated for bicycles.
- Displays for bus shelters give way to journey planning with timetable in mind.



 New traffic signalization and crossing design will give the priority to city buses, cyclists as well as pedestrians.



• Park&Ride terminals on the both junctions of the main street to the highway will equipped with the cycle parking for the people combining cycling with the public transport. Squares and embankments of the Old City Joint project of the City and public companies.

Communal infrastructure investments and pedestriation of public spaces activate the economic and social regeneration of the historic town centre. The Three Bridges and Prešeren Square



Limited or eliminated motor traffic makes public spaces more attractive, comfortable and safer.



Ciril Metodov Suare







Renewal of historic pavements and street furniture reinforces the spirit of place.

New arrangement of reconquered public domain extends the continuous pedestrian area.

Flexible public transport on demand within car-free pedestrian areas provides good access to all people.



Cable Lift to the Castle Hill

Breg River Bank



New arranged public spaces attract new visitors and new residents into city centre.

New arranged public spaces extend the use and stimulate the outdoor city life on the streets and squares.

Krakovo Dike

Renewal of avenues and parks meet new needs of the people.

New public green spaces improve the climate and environmental conditions within the old city.



New footbridges enlarge the network of footpaths and cycle lanes.

Špica Park





Trnovo Quai

Renovation of river banks extends the public space and improve access to the water element.