Baltic University Urban Forum
City Status Report IV

4

Traffic and Transportation

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Baltic University Urban Forum
Cities Status Reports

4. Traffic and transportation

Introduction

The city status reports in the BUUF project address ten key areas of city management, chosen at the outset of the project. These were later group in three areas of management, while integration was kept as a separate topic.

Material flows:
1. Water,
2. Energy,
3. Waste

Urban space:
4. Traffic and transport,
5. Green structures,
6. Built structures, especially brown fields

Socio-economy:
7. Education and information,
8. Economic development,
9. Urban-rural cooperation

Integration:
10. Integration of management

The areas were all discussed by the BUUF Scientific Advisory Council, which developed indicators for each of them. These indicators were later treated by the UBC Commission for the environment into a table, a short hand, for reporting indicator values. The indicator, the tables and the comments from the SAC are all found in the BUUF indicator book.

The reports

The city Status reports were/will be collected in the BUUF project at three occasions, 2004, 2005 and 2006. The reports will for each of the ten key areas, contain the following:

1. A description of the situation (collected 2004)
2. Basis indicator data (collected 2005)
3. Updating of indicator data. Comments on the choice of indicators. (2006)

The reports are edited for each area (water, energy etc) separately consisting of about 25 pages. The status descriptions consist of one page, with occasional additional pages for data diagrams etc, per city. The basic indicator data is collected in a table (one page) including all cities.

The Scientific Advisory Council members are asked to write benchmarking statements on these reports from the cities. The collected reports and benchmarking statements will be collected in a City status book from the BUUF project.

The cities
The cities have been organised in five groups according to character to make comparisons more meaningful. In each group there are representative from both "East" and "West". The list of cities then becomes as follows:

Group 1. Large port cities
1. Hamburg, Germany
2. Kaliningrad, Russia
3. Novgorod, Russia
4. Turku/Åbo, Finland

Group 2. Fairly large inland cities, metropolis issues
5. Lodz, Poland
6. Nacka, Sweden (close to Stockholm)
7. Minsk, Belarus
8. Örebro Sweden

Group 3. Medium sized inland university cities
9. Uppsala, Sweden
10. Tartu, Estonia
11. Jelgava, Latvia
12. Kaunas, Lithuania

Group 4. Small inland/coastal cities under economic restructuring
13. Livani, Latvia
14 Hällefors, Sweden
15. Norrtälje, Sweden
16. Sopot, Poland

Group 5. Small municipalities, ecovillage character
17. Enköping, Sweden
18. Tukums, Latvia
19. Kosakowo, Poland
20. Hågaby, Sweden

The data for the cites are thus listed in this order. There is also a table, which contain basic data for each of the cities.

4. Transport and traffic management indicators

Based on the audio conference on April 19, 2005.

Participants Christer Rosenström, Director for env management, Nacka City,

Magnus Nilsson, specialist on transport and traffic, Swedish Society for Nature

Conservation, SNF Stockholm, and Linas Kliucininkas, Assoc. Prof. Kaunas Univ of Technology, members of SAC. Anna Granberg, UBC office Turku, and Lars Rydén, BUP Secretariat, Uppsala University (taking minutes).

The indicators reflect more mobility functions carried out in the municipality than the structures (streets etc). The key issue is the use of fossil fuel, but other consequences of traffic should be noted. These include pollution, accidents, forced mobility, etc. The indicators reflect as well as possible the consequences of private mobility, especially car traffic, and public transport. Transport of goods is not included here, except for being included in some global values. Some indicators are not normally part of what cities monitor, and may require additional projects, for example questionnaires, perhaps in cooperation with the university. The access to a GIS map of the city is useful for some indicator values.

The indicator list is in much larger than the UBC indicator project and the European common indicators, the first indicator survey is managed by the UBC Turku Office. However it is assisting in the work for developing municipal mobility management.

Core indicators to be reported by everyone are underlined. It should be noted that much of the detail are needed to report core indicators, and they are thus close to an instruction on how to collect data for a core indicator.

1. Basic quantitative indicators

Indicators:

- Surface of the city (if defined as over a certain population density, indicate which) (km2)

- Number of population within city borders as defined above.

- Infrastructure (e.g. as surface area of roads)

- Length of biking roads (km)

- Amount of fossil fuel for transport (m3/inhabitant)

- Gasoline sales in the municipality (m3)

Comments: It is important to define what constitute the city in the urban planning context, as transport is very different in rural and urban areas. In the east this is normally not a problem as traditional city limits are in use, but in the west it may be problematic as municipalities are large and include rural areas. These cities should define a baseline of what is city and not city based on the density of population, and indicate which density they use.

Transport infrastructure is a basic parameter although only marginally informative for sustainability. Thus only length of biking roads is included in the key indicators. Squares, and other public space outside roads, streets, and paths are not included in transport infrastructure. Use of unsustainable transport is monitored as use of fossil fuel for transport. If a comment on urban sprawl can be made it is welcome.

2. Individual transport structures and mobility behaviour

Indicators:

- Number of cars in the city (No, No/inhabitant)
- Passenger car: kilometres per person and year
- Vehicle occupancy (inquiry or investigation)
- Average age of cars
- Commuting mode of inhabitants (walk, bike, public transport, private car) (number, %)
- Children's way to and from school (walk, bike, public transport, private car) (number, %)
- Car sharing (number of car pools or sharing arrangements)
- How much people bike (no of inhabitants using bikes regularly)

Comments: The mobility patterns of the inhabitants are of key importance for sustainability. It may be very difficult to monitor. So-called forced mobility is here monitored as commuting mode. This indicator may require questionnaires to the inhabitants. Car sharing will occur in only few instances and could be counted. Biking frequency should be reported, as it is central to sustainable mobility patterns in a city.

3. Public transport structures and mobility infrastructure

Indicators:

- Kinds of public transport available (boat, train, tram, metro, buses, microbuses. Number of vehicles for each category)
- Passenger number in public transport (number of travels per year) (best if for each kind of public transport)
- Public transport: kilometres per person (best if for each kind of public transport)
- Inhabitants living within 300 m from a public transport bus stop/train stop etc (number, %)
- Microbuses (sort of taxi) transport of people (number of travels per year)
- Buses with alternative fuels transport of people (number)
- Cars with alternative fuels (number)

Comments: Public transport is essential for improvement of sustainability. Some indicators are more qualitative and others quantitative, but often part of normal statistics.

4. Functionality of the city infrastructure

Indicators:

- Environmental zoning in the city (local regulations of traffic)

- Number of inhabitants with a good food store within close distance (1 km) (or other services, such as health centre)

- Number of inhabitants with work far away (more than 30 km, next town) (commuting)

- Number of "Park-and-ride" parking places (numbers)

- Car free or minimal car traffic streets (length km)

- Congestion (speed reduction in percent of maximum) (hrs per day with)

Comment: These are closer to planning indicators. Planning is important for sustainability, but good measures are difficult to construct. Some of these measures can be calculated using a GIS map. Commuting, very important in some cities, refer to traffic statistics or questionnaires. Congestion is becoming very difficult in many cities, especially in the east, and needs to be monitored. It is not clear what is the best indicator for congestion.

5. Environmental impact of transport

Indicators:

- Emissions from traffic of CO2, CO, SOx, NO2, PM10 (tonnes per year in the municipality)

- Noise from traffic number of inhabitants exposed to noise over a certain level (give level) during night hours (indicate which hours)

- Accidents, number of killed and seriously wounded in the city per year.

Comment: Emissions and noise indicators are requested by the EU Directives. Accidents are regularly measured, and work to reduce accidents is straightforward. The alternative, to indicate level of pollutants in the air in some streets, is not been proposed.

6. Maintenance and improvement work

Indicators:

- Inspection of cars (required by law; number of cars per year)

- Extending bike routes

- Clearing bike routes from snow (priority as compared to streets)

- Municipality owned cars with alternative fuels

Comment: The inspection of cars to maintain a maximum level of pollution is required in some countries and data should be available. The other three indicators are there to follow the improvement work in the municipality.

TRAFFIC AND TRANSPORTATION MANAGEMENT

22. Percentage of trips by motorised transport per mode in the whole city.

a) private car			**<20**	**20-40**	**40-60**	**60-80**	**80<**
Exact %: _____.	**OR**	Your estimate, %:	☐	☐	☐	☐	☐

b) public transport			**<20**	**20-40**	**40-60**	**60-80**	**80<**
Exact %: _____.	**OR**	Your estimate, %:	☐	☐	☐	☐	☐

23. Number of private cars in the municipality per household

Exact ☐ **OR** Estimate ☐	_____Cars/household

24. Percentage of daily trips taken on foot or by bike

Exact ☐ **OR** Estimate ☐	_____%

25. Number of people killed or seriously injured in traffic accidents

Exact ☐ **OR** Estimate ☐	_____Accident victims/1000 inhabitants/year

26. Percentage of inhabitants exposed to night time noise level exceeding national limit value in residential areas of the city.

Is your city collecting or planning to collect data on night-time noise levels? No ☐ No, but planning to ☐ Yes ☐	Please, indicate the national limit value used _____.

			<20	**20-40**	**40-60**	**60-80**	**80<**
Exact %: _____.	**OR**	Your estimate, %:	☐	☐	☐	☐	☐

4. Traffic and transportation

Traffic indicators

Numbers represent either exact or estimated values (Italic)

City	*Indicator #*	*21*	*21a*	*21b*	*22*	*23*	*24*	*25*
	Title/Values either exact or estimated (Italic)	Percentage of trips by motorised transport per mode in the whole city.	Private car	Public transport	Number of private cars in the municipality per household	Percentage of daily trips taken on foot or by bike	Number of people killed or seriously injured in traffic accidents/1000 inhabitants/year	Percentage of inhabitants exposed to night time noise level exceeding national limit value in residential areas of the city.
Hamburg			*20-40*	*60-80*	*1,1*	*21*	*11*	*<20*
Kaliningrad			*20-40* (2003 and 2005)	*60-80* (2003); *40-60* (2005)	0,9 (2003); 1 (2005)	*30* (in 2003 and 2005)	0,3 (in 2003 and in 2005)	*20-40 (*in 2003 and in 2005)
Veliky Novgorod			*<20*	*20-40*	*0,87*	*30*	*28*	
Turku			77 (2003) 40 (2004)	20 (2003) 15 (2004)	0,78	43	1,4	*<20*
Lodz			37	63	0,93	24	0,07	
Nacka			40	50				0
Minsk								
Örebro			*40-60*	*<20*	*1,1*	*40*	*0,16*	*<20*
Uppsala			40	11 (2003); 15 (2005)	0,7 (2003); 0,8 (2005);	46 (2003); 45 (2005)	124	*<20*
Tartu			*60-80*	*20-40*	*1,7*	*53*	0,02	*<20*

Kaunas			22,5	60				
Jelgava								
Livani			*60-80*	*20-40*	*0,8 (2004)* *0,85 (2005)*	*60 (2004)* *65 (2005)*	*3 (2004)* *2 (2005)*	
Hällefors								
Norrtälje			*>80*	*<20*	*1*			
Sopot			*40-60*	*20-40*	*1,5*	*15*		*<20*
Enköping			*60-80*	*40-60*	*2*	*30*	*0,5*	*<20*
Tukums								
Kosakowo								
Hågaby								

Hamburg, Germany **Large port city 1** Total surface area of municipality 755,3 km^2 1,7 mln inhabitants The number of staff in the municipality administration - 14000	*Roads* No data	*Public transport*	*Car transport*	*Bicycle and pedestrian roads*

Kaliningrad, Russia **Large port city 2** Total surface area of municipality 223,0 km^2 425 600 inhabitants The number of staff in the municipality administration – no data	*Roads* There are 1028 streets in Kaliningrad, including 231 streets located in the small settlements within the city border. The roads comprise 12% of the total territory of Kaliningrad city. Although the condition of the considerable part of the road network in Kaliningrad is not satisfactory, the city makes significant efforts for the road renovation and maintenance. The dynamics of the repair works of the street-and-road network is presented on the chart: *Future measures* The complex measures for the development of the city road network and transportation are provided by the recently elaborated Comprehensive Plan of Kaliningrad city. Particularly, the projected length of the public transportation lines is 50 km for trams, 47 km for trolley-buses and 220 km for buses (including 200 km within the city line). The projected number of vehicles is 470 buses, 125 trolley-buses and 215 trams.	*Public transport* The public transportation system is an important element of the city functioning. The park of the public transports consists of 250 buses, 60 trams, 30 trolley-buses and 52 minivans. Three new bus routs were opened in 2003. According to the schedule approved for 2004, there are 38 bus routes, 7 tram routes and 5 bus routes operating in Kaliningrad. In 2005, there were 290 buses, 55 trams, 28 trolley-buses and 150 minibuses working for the passenger traffic in Kaliningrad. Existing traffic network has been formed 3 years ago and still being corrected. 13 new traffic-lights were placed in the streets of the city. Although all electric vehicles (trams and trolley-buses) are municipally owned, the largest share of public bus transportation is provided by private companies according to the results of annual tender. In 2003, the program for scheduling the city bus transportation was introduced. It allowed to optimize the city bus route network, to improve the manageability and to increase the responsibility of the enterprises for the organization of the public transportation. At the same time, it should be noted that the input of the motor transport into the air pollution in Kaliningrad is enormously high (85%), and there is tendency for its increasing. The zone of the high level of air pollution has been formed in the central part of the city.	*Car transport*	*Bicycle and pedestrian roads* The options for cycling in Kaliningrad are limited (there is only one section of the cycle road in the city). However, the Comprehensive Plan provides the organization of some infrastructure for cycling.

Large port city 3 **Novgorod, Russia** Total surface area of municipality 89 km^2 223 000 inhabitants The number of staff in the municipality administration – 500	*Roads* Total length of city roads is 387 km., Novgorod has 6 bridges, including viaducts, 1 subway crossing , 42 traffic lights objects.	*Public transport* Novgorod the Great has bus and trolley-bus public transport. There are 38 bus routs, 5 trolley-bus routs and 5 lines of rout taxies. Auto transport municipal enterprise of Novgorod has 218 buses, including 20 minivans, which work as rout taxies and 36 trolley-buses on its balance. There are 4 big taxi companies having over 600 cars. This sphere of business has been recently developed very fast on the basis of competition. The State inspection of transport in Novgorod the Great has registered more than 40 000 cars and 11 000 trucks. The main activities on fulfilling the main tasks of public transport are the following: Introducing the 6^{th} trolley-bus line (to Volkhovsky settlement); Enlargement of the territory of municipal transport enterprise and enlargement of its repairing zone; Introducing a new trolley-bus line along Kochetova street in 2007.	*Car transport*	*Bicycle and pedestrian roads*

Turku/Åbo, Finland **Large part city 4** Total surface area of municipality 306,4 km^2 175 000 inhabitants The number of staff in the municipality administration – 13695 **ADITIONAL DATA IN APPENDIX, Figure 1.**	*Roads*	*Public transport* 92% of the population live in the vicinity of public transport routes, which can be considered as a quite good result. Therefore, accessibility is not an obstacle to public transport use – yet only approximately 15 per cent of journeys in Turku are made by coach or bus. In year 2004, only 0.33 trips/resident/day were made by using public transportation in Turku and the rate is decreasing. At the same time, the number of registered cars is increasing.	*Car transport* One of the visions of Turku Local Agenda 21 is that at the year 2020 a maximum of one out of third trips within the City area are undertaken by private cars. At the end of 2004, Turku had 71736 registered automobiles, about 410 automobiles per 1000 residents. After the recession years, in the beginning of the 1990s, the number of automobiles has been steadily rising in Turku. The on-going urban sprawl development in Turku has undoubtedly had a serious negative impact on traffic modes. Continuous reconstruction of new out-of-the-city shopping centers and the automobile tax revision, which went into effect in 2003, may also have had an effect on the growth of the automobile base in the past two years.	*Bicycle and pedestrian roads*

Lodz, Poland **Large inland cities 1** Total surface area of municipality 294,4 km^2 770 800 inhabitants The number of staff in the municipality administration - 1935	*Roads* Łód boasts 23,5 km of cycling routes. As a rule, cycling routes are built as a part of replacement or new investment projects. Construction of cycling routes is based on a proposed concept, which stipulates that an integrated communication system will be created for this kind of means of transport.	*Public transport* According to the transport policy guidelines accepted by the Municipal Council in 1997, the city's primary means of public transport is a tram, while a bus plays a supplementary role. Łód 's tramway system exemplifies the strategy of dense network development. The tramways' aggregate length is 235 km, with 419 tram stops and terminals. At the moment, there are 14 tramlines and 3 outgoing lines joining the city with the neighbouring towns. On the major lines, the rush-hour service frequency is below 2 minutes. The city's major transport service provider is the MPK - Łód (a public transport company exclusively owned by the City), which services all urban lines and one suburban line. Additionally, some bus lines are serviced by private transport service providers and the State Vehicle Transport company. The suburban lines are serviced by companies, whose co-owners are the municipalities serviced thereby. One fundamental obstacle of Łód 's tramway system is the high proportion of tramways (31 %), built in the driveways of narrow streets, that causes blocks for vehicle traffic.. In order to streamline public transport, it is planned to launch the Łód Regional Tramways on the main axis of passenger traffic: Pabianice – Łód – Ozorków. The projected length of this route is 28 km. Łód has 58 bus lines, 8 of which are serviced at night. The bus lines are 776 km in length. Ten bus lines lead beyond the city limits. Within the city area, there are 1250 bus stops. In 2003, the number of public transport users dropped by 36% as compared to 1994.	*Car transport*	*Bicycle and pedestrian roads*

Nacka, Sweden **Large inland city 2** Total surface area of municipality 95,4 km^2 78 000 inhabitants The number of staff in the municipality administration – no data	*Roads* Nacka is putting effort on creating a bicycle network in the city with unified sign system. There is a biking map in the internet. These are only two out of several good ways to encourage bicycling that city of Nacka is doing. The project "cykla I Nacka" aims to create a better environment and to promote health among it citizens.	*Public transport* Nacka has 19 parks and ride sites in the municipality. They connect with buses and trains mainly to Stockholm. Since Stockholm is going to collect traffic tolls since January 2006, and since cars from Nacka will need to pay for entering to Stockholm, the good public transportation system will be extended.	*Car transport*	*Bicycle and pedestrian roads*

Minsk, Belarus **Large inland city 3**	No data			

Örebro, Sweden **Large inland city 4** Total surface area of municipality 1380 km^2 126 288 inhabitants The number of staff in the municipality administration – 14 000	*Roads*	*Public transport* Number of cars, heavy traffic and bicycles are counted on selected streets throughout the city and presented on maps. (*Trafiken i Örebro 2002*). • Traffic accidents are reported to the police and presented on maps and in diagrams. (*Trafiken i Örebro 2002*). • An investigation of the habit of travelling is done among the citizens every 10 years. The latest investigation was done in 2000, and it presents the figures on how we travel (walking, biking, by car or public transport) and why. (*Resvaneundersökning 2000*). • Figures on air pollution, pollution from municipal public transport and air traffic are included in the annual environmental report (See *Örebro kommuns miljöbokslut 2001*, page 5-7). • A brief summary on traffic flows, travelling habits and measures is included in the annual environmental report to improve the infrastructure (See *Örebro kommuns miljöbokslut 2001*, page 34-36). New goals and new indicators, which have to be used, are included in the environmental program. See *Örebro miljömål remissversion 2004-03-25*, pollution from traffic page 15, traffic flows, travelling habits and accidents page 59.	*Car transport*	*Bicycle and pedestrian roads*

Uppsala, Sweden **Meadium sized university cities 1** Total surface area of municipality 2189 km^2 182 076 inhabitants The number of staff in the municipality administration – 5 688	*Roads* A new motorway, E 4, is now built outside the city and it means that the inner city is going to be relieved of traffic. Commuter travel to and from workplaces in Uppsala and Stockholm is already high and is expected to increase in the future. These places have special demands on rail connections both within the county borders and beyond. New commuter stations will make new houses feasible in good commuter locations, which would also promote a greater freedom of choice in housing and place of work.	*Public transport* Traffic planning is going hand in hand with plans for new housing. The network of major routes has been strengthened up semi-centrally and, in the suburbs, through traffic in the inner city can be moved to the fringe areas. The central parts of the city can be prioritised for better accessibility by public transport and bicycles. More housing in the present central area of the city would also make an increased use of bicycles and transport. The bus system is complemented with park-and-ride facilities in the city's fringe areas, where commuters could park their cars and quickly take a bus into the city. This lessens the burden of traffic on the city's central streets. Bus traffic is given priority in areas where present accessibility is to limited. To coordinate different types of transport is an important issue in a sustainable traffic system. For this reason, a new travel centre is planned in the place where already today the county's bus traffic and regional and national rail systems are connected. The city's bus traffic will also in the future be in junction with the other transport systems. Regional travel is to be improved in the next year towards northern parts and central Stockholm. This will be accomplished partly by building a new commuter train station in Bergsbrunna.	*Car transport* Car traffic has been increased over the last few decades due to the way how the city was built. Sparsely built-up city with long distances between the city centre, the residential areas and the places of work leads to an intensive use of cars. Today's through traffic passes through the central areas of the city, creating congestion in the inner city. Car traffic in the inner city creates environmental problems such as noise, pollution and exhaust fumes, and it also blocks the way for public transport. Various measures and investments in public transport and bicycle lanes are needed to hold back increases in automobile traffic in the future.	*Bicycle and pedestrian roads*

Tartu, Estonia **Medium sized university city 2** Total surface area of municipality 38,8 km^2 100 148 inhabitants The number of staff in the municipality administration – 290	No data			

Jelgava, Latvia **Medium sized university city 3** Total surface area of municipality 60,32 km^2 66 088 inhabitants The number of staff in the municipality administration – no data	No data			

Kaunas, Lithuania **Medium sized university city 4** Total surface area of municipality 157 km^2 368 917 inhabitants The number of staff in the municipality administration – no data	*Roads* The total length of streets is 937 km. Railway with length of 17 km is used rather occasionally. Length of bicycle routes is 33 km, length of pedestrian routes is 4,5 km at present. There are 8 car transport bridges, 1 railway bridge and 1 pedestrian bridge across Nemunas and Neris rivers. There are five categories of streets in Kaunas City: - *The priority routes of the city importance*. Total length – 43,2 km, width – 4-8 lanes. These streets join city districts together and connect the city to the main inner roads. The streets are used for speed traffic. There is provided two-level crossings and pedestrian passes in the future for that type of streets. The traffic volumes are 2000 –3000 cars per hour. The priority routes are developed well in the northern part of the city, less developed in the southern part. Therefore, , the most investments in transport infrastructure are concentrated in the southern part of Kaunas. - *The public streets of city importance*. Total length – 118,9 km, width – 4-6 lanes. The public streets are less important as a transport routes, but significant as zones, where commercial and public buildings are concentrated. These streets are used for public transport, for bicycle and pedestrian traffic. - *The local streets*. Total length –774,9 km, width – 2 lanes. The local streets, as everywhere else, form main urban network in Kaunas. There are different parameters, usually used as approach streets to the public and, sometimes, to the priority streets.	*Public transport*	*Car transport*	*Bicycle and pedestrian roads* In Kaunas City, there are three types of bicycle routes, which total length is 58,1 km. The first type is main routes, which are 15,6 km in length. They join the City Centre with other city districts, as well as main city districts together. The second type is secondary routes, which are 12,5 km in length. They join secondary city districts together, as well as suburbs with the city districts. Third type is recreational routes, which are 30 km in length. They are situated in the natural areas – parks, forests, at the waterfronts. The most popular bicycle way is the one leading from Panemune district to the city centre along Nemunas River. The existing network of pedestrian ways is well developed in the central part, the Old Town and the New Town districts. The main ways lead along Vilniaus and Laisves alleys, pedestrian streets and perpendicular to them Daukanto street. Total length of main pedestrian routes is 10,53 km.

Livani, Latvia, **Small cities economic restructuring 1** Total surface area of municipality 306,06 km^2 9 500 inhabitants The number of staff in the municipality administration - 40	*Roads* Total length of Livani town roads is 33,7km. The streets and roads occupy 8% of the town's territory. In Livani, 85 % of the roads have asphalt covering, 15% of the roads are with splinter covering. Technical conditions of the roads are evaluated yearly, and asphalt covering is reconstructed according to the reconstruction plan and the available funding from the municipality's Roads Fund. The Roads Fund resources are allocated to municipality as an earmarked subsidy from the State every year. The federal road Riga – Daugavpils (in town borders called Rigas street) is crossing Livani town in the length of 4,12 km. Bridge across the Dubna river, flowing through the town, was rebuilt in 2003 according to EU standards. The construction of the bridge was fully financed by Latvian state. Currently, the bridge is the only place, where proper bikeways are constructed along the passenger roads increasing the safety of cyclists in the town. These bikeways will be an integral part of a bikeway network designed in 2004 – 2005 years in Livani. Streets in Riga have very intensive traffic (especially transit traffic) – around 4000 cars are crossing Livani town per day. The road width and utilities are not appropriate for so intensive traffic and truck traffic, particularly. This exposes to danger to car drivers, pedestrians, cyclists and causes a problem to manage the town's communication systems. For several years, the leaders of Livani municipality have negotiated with the state authorities regarding the construction of beltway (bypass) around the town. Unfortunately, there are still several obstacles for the initiation of the beltway construction.	*Public transport* Public transport system is in good quality level and it meets the standards of passengers. In Livani, public transport is buses between cities/towns, shuttle buses and trains. About 50 buses serve the passengers daily. The train station provides transit traffic of goods and passengers, local traffic of passengers and serves also town's and district's industrial enterprises. In train station, there are 5 railway tracks, int.al. 1 main is railway track and 20 railway points. Overall length of railway tracks is 2500 m in train station. 48 goods trains and 12 passengers trains run through Livani train station daily. In average, 350 passengers are departing from Livani train station. Another type of public transport is a ferry from Livani to the other bank of the Daugava river – Dignaja. The ferry is working in summer season. This is a direct way from Latgale region to Zemgale region.	*Car transport*	*Bicycle and pedestrian roads*

Hällefors, Sweden **Small city economic restructuring 2**	*Roads* The main roads throw the municipality are owned and maintained by the state department "Vägverket". Roads are in rather good conditions. Our main roods are located about 50-80 km from the big highways. The streets in the villages belong to the municipality, which is responsible for maintenance and operation of the streets. In the villages Grythyttan and Hällefors, there are a foot path and a space for bicycling. *Railway transports* A lot of cargo passes our municipality. The state department for railways invested 2002 50 000 000 Euro in new tracks and electric equipments. Cargo from the north goes through the municipality to the harbour of Gothenburg. Last year they also start public transport on the railway. They closed the public transport in the end of 1970.	*Public transports* We have a really good bus transport system in the municipality. We can take a bus to bigger travel centres around us. Hällefors is a little municipality and it has a lot of people from the countryside. We have to develop a smarter transport system for transporting people to Hällefors and to Grythyttan. Today, people from the countryside need one or two cars per family and this is not sustainable.	*Car transport*	*Bicycle and pedestrian roads*

Norrtälje, Sweden **Small cities economic restructuring 3** Total surface area of municipality 5700 km^2 16311 inhabitants The number of staff in the municipality administration – no data	*Roads*	*Public transport* The transport system must be socially economic efficient and available; it must give transport quality for business life and be safe for the public use. It also has to be safe for the environment and help the regional development. There is also an important aspect of equality, due to how the genders use the transportation system. It is needed to continue the development of bus lines across and around the county. A combination of bus and boat trips should also be possible both in the archipelago and on land. Prioritised roads are "Västra vägen", (a road through Norrtälje city), the road 77 and the roads to and from Hallstavik. In Hallstavik, there is one of the largest paper mills in Europe, therefore, communications are extremely valuable. Communications in the archipelago are also important. The harbours of the municipality, Kappellskär, Grisslehamn and Hallstavik are strategically significant and need to be developed.	*Car transport*	*Bicycle and pedestrian roads*

Sopot, Poland, **Small city economic restructuring 4** Total surface area of municipality 17,31 km^2 39 587 inhabitants The number of staff in the municipality administration - 197	*Roads* No complex transport analyses have been carried out in Sopot since year 1974. Currently, due to changing traffic behaviour and habits, it is difficult to specify the features of transport within the city limits and transit. Based on the analyses carried out in Gdansk and Gdynia, traffic intensity in Sopot can be estimated as follows: - approximately 350 000 of travels are carried out within the city limits every day (37 % constitute travels of Sopot residents); - approximately 192 000 inhabitants come to Sopot every day (69 % go through the city); - approximately 60 % of the all travels within the city end up in the Dolny Sopot area, where about 33 % of city residents live. *Future measures.* Substantial part (85%) of travels within Sopot constitutes commuting. Any changes in the existing transport system would not significantly reduce the traffic intensity. Nevertheless, the four proposals of changes in traffic system have been discussed by the city council. The proposals are presented at the official city website, where it is possible to vote for the most appropriate option.	*Public transport* Approximately 95 000 inhabitants use public transport system (distant and local buses and railway system) and approximately 97 000 inhabitants drive cars;	*Car transport*	*Bicycle and pedestrian roads*

Enköping, Sweden **Small ecovillage city 1** Total surface area of municipality 1 184 km^2 38 211 inhabitants The number of staff in the municipality administration – 2 087	*Roads* On the subject of traffic and transportation, we are working hard towards the goal of the "zero-vision", and, this year, there hadn't been any accidents with person injured. Special projects the last years are: Västerleden This area has been rebuilt in three different steps. It was started in 2002 and finished in 2004. Before the rebuilding, it was a broad and straight main street approximately 1 km long. The highest allowed speed was 50 km/h and the amount of traffic was approximately 4400 vehicles/day and night. After the rebuilding, no accidents with person injured have happened and the speed has been significantly reduced on the street. Salnecke area In this area, there has been a dialog project, in which people leaving in the area, have been involved. The inhabitants have had the possibility to affect the solutions to reduce the speed in that area. On the main street, the municipality has built a walking passage to the stop for the school transport. It has been narrowed, so cars can not meet and is has also built a bit higher to reduce the speed. In local streets of the living areas, the inhabitants themselves have made simple obstacles in the shape of bumps for speed reducing.	*Public transport*	*Car transport*	*Bicycle and pedestrian roads*

Tukums, Latvia **Small eco-village city 2**	*Roads* Total length of Tukums town roads is ~100km. 45km of the roads in Livani have asphalt covering, 55km are with splinter covering. Every year an evaluation of roads technical conditions is done and asphalt covering is reconstructed according to the reconstruction plan and available funding from the municipality's Roads Fund. The Roads Fund resources are allocated to municipality as an earmarked subsidy from the State every year. Most dense road network is in the town center, where are only few one-way streets. At the moment, we have no proper bikeways in the town. However, the construction of bikeways has been included in detailed urban plans. In addition, the town has to consider transit traffic beltways for relieving the town center form this transport. The town has no problem with parking areas, however, as amount of private cars is increasing, new parking areas has to be planned for the future.	*Public transport* Public transport system is in good quality level and meets the standards of passengers. Public means of transport in Tukums are inner buses and buses between cities/towns, also shuttle buses and trains. About 50 buses are serving the passengers daily. The train station provides goods' and passengers' transit traffic, local passenger's traffic and serves also town's and district's industrial enterprises.	*Car transport*	*Bicycle and pedestrian roads*

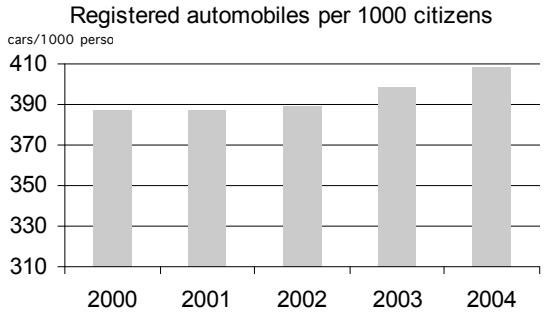
Kosakowo, Poland **Small eco-village city 3**	*Roads* Due to peripheral location of Kosakowo municipality, there is a lack of direct connections to the main road system in the region. Municipal road network has only local status and it does not play important role in regional and national road system. The most important road development within the municipality will be the part of the planned "Red Road" (northern beltway of the Tri-City agglomeration). The new investment is supposed to improve transit capacity and to improve connections among the cities in the region. Four options for the future investment within the Kosakowo municipality have been proposed in the preliminary study plan. The differences refer to distances to water intake Rumia-Janowo and to municipality borders. The most sustainable option will be chosen after discussions. According to the directives of local master plan, the municipality is also planning to build a new road connection from Kosakowo to Gdynia. Density of the road system is consistent to municipality's current development level. However, the technical condition of most of the roads is poor and many of them require modernization. No transit connections run within the municipality, and heavy transport is limited to local deliveries and gravel transportation from Puck municipality to Gdynia. The most extensively used roads are the routes Pogorze – Kosakowo – Pierwoszyno – Mosty - Rewa and the county road Kosakowo – Debogorze -Kazimierz. Local traffic is very small. *Railway transport.* There is no public railway transport in the municipality. The two railway tracks transporting liquid fuels are localized along the county road 10127 between Kazimierz and Debogorze. The tracks are connected to the regional railway system in Gdynia Cisowa.	*Public transport* Despite the fact that 68% of municipality families own cars, 58% of residents use public bus transport. Public bus transport system connects Kosakowo municipality with Gdynia city (Srodmiescie, Redlowo, Chylonia) and with Rumia city. The bus routes run along the county roads: Rewa – Kosakowo – Pogórze – Gdynia, Kosakowo – D bogórze – Kaziemierz – Rumia and towards the municipal cemetery. Additional bus routes are being activated during summer periods. The capacity of the existing public bus transport fulfils the current transport requirements. Pull-out bus stops, which have been built during the last few years, have improved the traffic flow within the municipality.	*Car transport*	*Bicycle and pedestrian roads* One- and two-side foot paths have recently been built along the county roads and the regional 101 road where the new investments have been developed. No bicycle paths exist in Kosakowo, however, there are a lot of existing foot paths of the recreational character. According to the directives of local master plan, the municipality is planning the development of a local bicycle path system in the areas of Moscie Blota and in the Suchy Dwor forests. The regional plans to build an international bicycle path (Hanseatic Bicycle Path R-10) running along the Baltic Sea coast have also been taken into account in the local master plan. Local parking places are situated nearby the Municipality Council building (not enough capacity) and nearby the municipal cemetery.

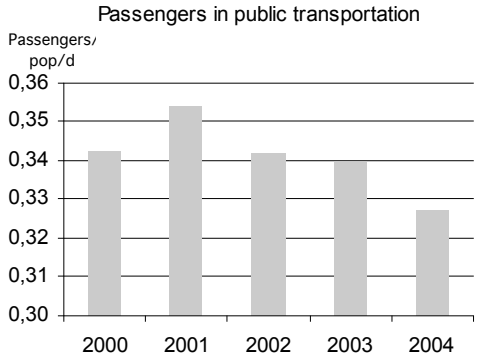
Hågaby, Sweden **Small eco-village city 4**	*Roads* The area is equipped with an advanced and affluent road and path infrastructure. Most of the road maintenance measures are concentrated to the main feeder road – Hågavägen. This road, with 30 km/h speed limit, is the main entrance road for the bus and for the cars in the area. Speed limitation has also been provided with road bumps at 6 strategic places where the bike and pedestrian network are crossing this main road. For 350 people whereof 110 are children, it is essential that the main road is considered as a modestly dangerous place for major traffic flows. The number of bus movements is about 120 per day, bicycle movements are between 100 and 500 per day depending on the season and the number of car movements is about 300 per day, which is a fairly low traffic flow. The inner street is a mixed use street with extremely low speed for cars (<5 km/ hour). No through traffic is possible, and it is considered to be safe even for small children to walk along this village street. There are also many bicyclists using this street and a large number of pedestrians, walking to their homes, to the shop, to the school and to the small workplaces in the centre. During weekends, there is a considerable extra traffic on both the main road and the village street with leisure people using the infrastructure. *Means of transportation.* The community has a combined transportation system with about 100 private cars, 400 bicycles, one city line bus and a substantial number of informally arranged car-sharing cars.	*Public transport* The city bus has 20 or 30 minute service to the city, which takes about 18 minutes. Most households or at least some of the members of the households use the bus, but still during winter, cars dominate as a vehicle. During summer, the bike traffic totally dominates in the area and it is also substantial within a radius of 5 km (the city centre).	*Car transport* Informal car sharing is widespread although not quantified. Mostly, it works so that neighbours form pairs of cooperation. In some cases, there is a network of neighbours potentially willing to let their car out for short trips. The formal car-sharing system may be expanded since 2006 year.	*Bicycle and pedestrian roads* The bicycle and pedestrian network is unusually affluent for small residential areas outside the city boundary. Apart from the main road and street, there is a diverse system of paved park pathways and also a large number of indigenous vegetation small-scale pathways. Hågaby is also the focal point for a high number of leisure pathways and trails into forests, the valley and between small settlement areas around it. This is a friendly and attractive surrounding landscape, since the number of leisure pathways is practically uncountable, but there are seven main entrances to the leisure landscapes around Hågaby village.

APPENDIX

TURKU

Figure 1. Registered automobiles and passengers in public transportation in the City of Turku.



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