Baltic University Urban Forum
City Status Report V

5

Urban Green Structure

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Baltic University Urban Forum
Cities Status Reports

5. Urban Green Structure

BUUF City Status Reports 2003

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.

5. Greenery and parks management indicators

Based on the audio conference on April 18, 2005.

Participants Björn Malbert, Professor, Architecture, Chalmers Univ of Technol, Göteborg

Ulla Mörtberg Holmstedt, Researcher, KTH, Royal Inst of Technol, Stockholm, and Saulius Lukosius, head urban planner, Kaunas City, members of SAC

Anna Granberg, UBC office Turku, and Lars Rydén, BUP Secretariat, Uppsala University (taking minutes).

The indicators reflect the extent and quality of the green structures of the municipality, and how the built environment and greenery interact. Special emphasis is placed on the functions of the green structures and how they are accessible. Both biological and social aspects are stressed and should be reported. Some indicators are not normally part of what cities monitor, and may require additional projects perhaps in cooperation with the university. The access to a GIS map of the city is very useful for these indicator values and some software are available through the SAC. For each indicator several values are asked for and should be used to construct key indicators.

The indicator list is in harmony with both the UBC indicator project and the European common indicators, both managed by the UBC Turku Office, but even more so to be useful in the development of municipal 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. Extent – size of greenery in the municipality

Indicators:

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

- Length of interface urban-rural (large for finger city, short for stone city)

- Number of population within city borders as defined above.

- Surface area of the green structures of the city (sum of categories under 2. below)

Comments: It is important to define what constitute the city. 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. The interface urban-rural is essential for sustainability.

Green structures are defined as everything that is not hard-made and built-up, including blue surfaces (water). The total extent of the greenery in a municipality is often close to 50 % of the total surface area.

2. Categories of green structures

Indicators:

- Extent (in ha) and number of forests (minimal maintenance)

- Extent (in ha) and number of forest parks (more grasslands)

- Extent (in ha) and number of parks (dominated by grassland)

- Extent (in ha) and number of squares (plantations)

- Extent (in ha) and number of water areas (ha of lakes/rives; length of shorelines),

- Extent (in ha) and number of green edges (along streets)

- Extent (in ha) of private gardens

- Extent (in ha) of plots (municipally organised plots for cultivation of e.g. vegetables)

Comments: Knowing the categories of green structure is essential. The categories are those required by law in the Baltic States. They also reflect fairly well the biologically interesting categories.

3. Qualitative properties of green structures (ecological)

Indicators:

- Biodiversity - occurrence of red-listed species in green structures (number of species)

- Protection - number of and surface are (ha) of Protected areas

- Continuity – number and surface area (ha) of areas with considerable continuity, (especially with old trees)

- Connectivity - calculated from a simple GIS software and (barrier values has to be defined parameter values) (indicate how it was calculated)

Comments: The quality of a green structure is judged mainly on an ecological basis (biodiversity). The mentioned parameters are sometimes difficult to calculate; refer to the BUUF secretariat for assistance.

4. Functionality (social)

Indicators:

- Make a list of the social functions that the green structures provide: Use the list below

- Number of places with rest and relaxation opportunities;

- Number of places with walking and biking opportunities;

- Number of places with playground for children;

- Number of places with sport grounds;

- Number of places with cultural events;

- Number of places with gardening for household plots: opportunities for social meetings;

Comment: Environmental functionality (e.g. adsorption of emissions (e.g. storm water) and microclimate) follows from structure and need not be reported by cities. Social functionality is important to report. Here it is simply as a list of functions. There may be several more important social functions in some cities. Then please make additional comments as needed.

5. Accessibility

Indicators:

- Number and percentage of inhabitants living no less than 300 meters (walking distance) from a green structure above a certain size (indicate which).

- Number and percentage of inhabitants with a green structure in sight.

Comment: It is essential that the greenery is accessible. Number of people of 300 meters to green area, considered to be a normal walking distance, may be most easily calculated form a GIS map of the city. It would also be essential to know the percentage of people who can - visually - see a green structure from their home/work: this has been shown to be important for health. However this values is not requested. This aspect may be even more studied using a questionnaire among the inhabitants. Such a project could be taken up in cooperation with the university.

6. Maintenance

Indicators:

- Budget per inhabitant

- Percentage of extensively managed areas

- Percentage on intensively managed areas

- Percentage of areas with noise below a set level (indicate which)

Comment: There are several aspects on maintenance of greeneries. Biologically we may differ between extensively managed parks have (only cutting grass seldom, branches etc not removed) important for biodiversity (e.g. forest parks as mentioned above), and intensively managed parks, with short grass, which may be important for social reasons. Also noise level is important and should be low both for biological and social reason.

GREENERY AND PARKS MANAGEMENT INDICATORS

13. Number and surface area of the green structures of the city

Number _____.	Surface area _____ha

16. Surface area and number of different types of green structures (see annex for definitions)

	Forests	**Forest-parks**	**Parks**	**Squares**	**Water areas (surface+lenght of shoreline**)	**Plots**
Exact	No_____. ha_____.	No_____. ha_____.	No_____. ha_____.	No_____. ha_____.	ha_____. km_____.	ha_____. km_____.
OR						
Estimate	No_____. ha_____.	No_____. ha_____.	No_____. ha_____.	No_____. ha_____.	ha_____. km_____.	ha_____. km_____.

17. Percentage of inhabitants with access to public green areas in the whole city.

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

18. Number and surface area of protected areas

Number of green areas in the municipality _____.	Surface of area of green structures_____ha Percentage of total city area _____%

19. Continuity of green areas in the municipality. Measured as the ratio of circumference and surface area.

__.

20. Types of recreational facilities offered by the green areas

Please, list types of facilities available:_____.	How many percentages of green areas provide recreational facilities? _____%

21. Percentage of intensively and extensively managed green areas

Exact ☐ **OR** Estimate ☐	Intensively managed_____%	Extensively managed _____%

5. Urban Green Structures

Greenery indicators

Numbers represent either exact or estimated values (Italic)

City	*Indicator #*	16	16a	16b	16c	17	17a	17b	17c	17d	17e	17f	17g	17h	17i	17j	17k	18	19			20a	20b
	Title/Values either exact or estimated (Italic)	Number of the green structures of the city	Area of the green structures of the city	Surface area and number of different types of green structures (see annex for definitions)	Total area ha	Forests area	Forests number	Forest-parks area	Forest-parks number	Parks area	Parks number	Squares area	Squares number	Water areas area	Water areas length of shoreline	Plots area	Plots	Percentage of inhabitants with access to public green areas in the whole city	Number and surface area of protected areas			Intensively and extensively managed green areas	
																			a.Number of areas	b.Surface ha	c.% of total city area	Intensively managed (%)	Extensively managed (%)
Hamburg					*230*													*40-60*	*22*	*81*		*62*	*38*
Kaliningrad			1830 (2003) 1825 (2005)															*60-80 (2003 and 2005)*		453 (2003 and 2005)	2 (2003 and 2005)		
Veliky Novgorod					2454	*0*		*0*		*68,8*		*31*				*90*		*100*		*2454*	*27,6*	*70*	*30*
Turku																		97					
Lodz		337	5846			2289				680,1	39	276,4	148	89	144,36	119	119	*>80*	5	2011	6,83	60	40

BUUF City Status Reports 2003

Nacka																							
Minsk																							
Örebro					11000													*>80*					
Uppsala		1100																		48	1,5	*70*	*30*
Tartu		28	870											131,9	25			*>80*	4	270	7	24	76
Kaunas																		*>80*					
Jelgava																							
Livani						*12,7*	*1*			*5*	*1*	*4,1*	*6*	*29*		*23,2*	*6*	*>80*					
Hällefors																							
Norrtälje			550			*300*		*150*		*80*		*20*		*14*				*>80*	*2*	*78*	*1*		*90*
Sopot		*1000*				*934*								*3*	*0,03*			100	4	705	40	*30*	*70*
Enköping		18	7															*>80*	143	1700	0,01		
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	*Natural landscape*	*Protected areas* The preservation of the species is ensured by clearly marked nature reserves; over and above that, the aim is to preserve a variety of plants by creating stepping stone biotopes. These are small areals in the middle of green areas that are not specifically sign-posted. It is not easy to create ideal living conditions for certain species, and so these areals are used by small mammals, amphibians, reptiles or insects as temporary accommodation. In such case, they function as a link biotope since they enable the animals to make a connection to other animals and plant populations that are further away. Anyone who wishes to gather information on the variety of animal and plant life can do so by consulting the red list available from the Office for the Protection of Nature. Planning, realisation and maintenance of the municipal green areas proceeds through the support of numerous environmental associations and organisations, for example the BUND, NBU or SDW.	*Parks and gardens* Hamburg is a green city. For Hamburg's population, the public green areas are extremely significant. The main areas are the area around the inner and outer Alster along the river Elbe, and the "Stadtpark", the municipal park. In addition, there are "Planten and Bloomen", the "Jehnisch-Park" and Hamburg's large cemetery, "Ohlsdorfer Friedhof". The so-called "Niendorfer Gehege" is a forested area in the city that helps to keep Hamburg's air clean. About 9% of the total area of the city consists of public green areas, while 8% of the total area is covered by water. The green areas in the city function as near-by recreation areas for citizens, who actively use them. There are many sign-posted places, where leisure activities can be pursued. Many cycle paths along the rivers Alster and Elbe provide the necessary safety of bicyclists as well as pedestrians and motorists.	*Recreational zones*

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 **ADDITIONAL DATA IN APPENDIX,** **Figure 1-3.**	*Natural landscape* Forests of greening zone. Green zone of the city extends for 30 kilometers and occupies 32913 hectares. Nowadays, the level of forestry in the Kaliningrad region is about 17% (for instance, in Lithuania it is 34%). For sustainable development of the region, the area of forests should be doubled.	*Protected areas* In the Kaliningrad region, it is planed to protect 10-15 % of the natural areas in order to guarantee sustainable development and preservation of biodiversity. There are specially protected natural areas such as the Park of the regional eco-biological center, arboretum of the zoo, the monuments of nature, represented by some old and unique trees. There are also protected natural areas, which were newly planned, such as complex reserve "Pregolskij" (in the south-west part Kaliningrad, on the left bank of the river Pregol) and complex landscape reserve in the coastal zone of Kaliningrad gulf, in the flood-lands of river Pregol.	*Parks and gardens* Modern greening of Kaliningrad covers public gardens, parts, boulevard, gardens and naturally greened landscapes, such as forest-parks and town-forests. The amount of green plantations is 6,8 square m per capita that is 3 times less than the normative greening of the urban areas. Some running projects: Germany, Lithuania, Poland and Sweden are going to contribute to greening of some parks, public-gardens of the partner-cities (this action is organized to prepare the city for celebration of the 750-years anniversary of Kaliningrad-Königsberg). There is Life-project financed by The EU Commission aiming to involve consultants on the strategic development of the parks in Kaliningrad. In the Comprehensive plan, at the first stage, the area of greening will be 520 hectares, and to the end of planed period in 2015, it will increase up to 1010 hectares. It is planed the farther development of line-circle system of greening areas of Kaliningrad with creation of the integral landscape-architectural complex, consisting of 3 greening belts. In 2005, for the first time during last decades the public gardens were repaired and the green structures were equipped with modern amenities. There were organized new flower beds and about 700 trees, 40 thousand bushes, 183,5 thousand annual flowers were planted (pic. 5.1.) This is several times more than during all the forthcoming years. More than 500 dangerous and felt trees were removed, 487 trees more were dehorned. In 2006, more than 30 thousand bushes about a thousand of saplings will be planted. Special lattices for the rootage airing will be set in the tree-holes surrounding the stems. It is planned to buy the tree-planting machine for the new municipal public enterprise "Accomplishment and Ecology" for 4,5 mln. RUR. The cities – partners accomplished 5 small public gardens (304 thousand Euro) as a present for Kaliningrad for the 750-th anniversary which was celebrated in July 2005.	*Recreational zone* The top-priority objects are to be greened: Area of Max Ashman-part; Aqua-sport national park with the center of tourist services in Pribreznj settlement; Historical-landscape part on the base of the forest tract in Leningradskj district; Sport hydro-park in the valley of Pregol; Historical- picturesque part along the Mullen river, connected to the country-side part around Chisty pond; Park zones along greened brooks. Reconstruction of the big recreational zone with vast green structures around the Verkhnee ("Upper") Lake is being prepared. The expert conclusion for the investments' basing is already ready. The project documentation will be soon prepared (by June). Expected value of the works is 780 mln. RUR and 200 mln. RUR of them must be received from the federal budget this year.

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	*Natural landscape* There is a special registered zone, which includes flood-lands of the lake Ilmen and rives Volkhov and Maly Volkhovets. No buildings can be built there unless they are connected with historic monuments or nature preserving programs.	*Protected areas*	*Parks and gardens* The greenery planting of general use contains: Central park on the Sophia side with all zones of active and quiet recreation; City park in the Western planning district, with all zones of active, quiet recreation and sport and organized on the basis on low forest and existing young park near the river Vereza; City park with sport centre, on the Trade side near the river Volkhov; Park in the Kolmovo living district, being organized on the reclamation of ponds in the flood-lands of the river Pitba; Green planting of boulevard type, river side embankments along the river Volkhov, alternate with meadow and park zones around Kolmovo and Derevianitsky bridges;	*Recreational zones* Special attention is paid to the central Kremlin zone, which needs clearing. Trees of little value are planned to be replaced by new decorative ones, which will let visitors admire the historical views. The greenery planting of general use also contains: - Sport zone by the rowing canal in the flood-lands of Neglitsky lake; - Park with sport zone in Donetsky district; - Boulevards of parterre type along the ditches in the historical part on the city; - System of boulevards on the main pedestrian connections between living districts and main city objects of public purpose, recreation and sport.

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	*Natural landscape* 36% of the Turku area is built area and 58% are other areas, which include forest and agricultural areas. A planning of new nature protection areas began in year 2005. By the end of year 2006, the total area of nature protection areas will increase by 300 hectares. Turku Forestry Programme 2001-2011 also plays important role in greenery management as City of Turku owns more than 5000 hectares of forests.	*Protected areas* 6 % of the Turku area is protected land.	*Parks and gardens* 97% of the population in Turku has access within walking distance to a green area (300 meters as the crow flies). The results are based on the GIS analysis conducted by the Environmental and City Planning Department. If you examine green areas greater than 0,5 ha in size, 95% of the population lives at the same distance from these areas. The City of Turku has put lots of effort on greenery planning during the past few years. In year 2001, Greenery Department began to develop a new method for creating a greenery programme for the city. Eastern Turku worked as a pilot area for the development of the method and later The Turku Greenery Programme 2002-2011 was done. Citizens participation was the driving force of the planning process. In year 2005, a new soft-GIS tool was taken into use for getting feedback from citizens.	*Recreational zones* In year 2005, City Planning department started to develop a "green plan" as part of the new Master Plan of the city. Purpose of the green plan is to guarantee that there are enough green areas for both recreational and nature conservation purposes.

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	*Natural landscape* The city's major tasks in the area of greenery protection are: to conserve the municipal forests, springs and river valleys, to enrich and to enlarge forest areas.	*Protected areas* Changes in the natural environmental abiotic elements, which on a larger scale began in the late 19th century, have significantly altered the local flora. The ecosystems' natural spatial variability was affected by anthropogenic factors. Łód 's indigenous flora includes 1130 plant species. Protected and rare species can be found in the reserves, such as the „Polesie Konstantynowskie" or the „Łagiewnicki Forest", with the former boasting such an unusual species as ivy. Within the area of the city, 262 trees are recognised as natural monuments. The aggregate forest area in Łód amounts to 2378 ha, from which the City owns 1673 ha, and private individuals own 472 ha. All of the local forests have been classified as protective forests, the largest of them is the Łagiewnicki Forest (1200ha), which is one of the Europe's largest municipal forest. Together with its surrounding area, it constitutes a part of the Łód Heights Landscape Park.	*Parks and gardens* Most of the municipal parks were created at the end of 19th century and at the beginning of 20th century. Private factory`s owners have invested capital to change the forest areas into splendid gardens surrounding their palaces and villas, or into public parks.	*Recreational zones*

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	*Natural landscape*	*Protected area* Nacka has 16 nature protected areas within the municipality limits. Nacka is doing some really proactive work in the field of nature conservation, for example, co-operation with the local people to harvest hay in the summer.	*Parks and gardens*	*Recreational zones*

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	*Natural landscape*	*Protected areas* Digital maps of nature reserves and Nature 2000 areas in the urban landscape. These areas have special value for the biodiversity. (See *Grönstruktur karta, arbetsmaterial 040525*). Digital maps of forests and the surroundings of the urban area. Updated once a year. (See *Grönstruktur karta, arbetsmaterial 040525*). Several surveys of the flora and fauna are carried out in the urban landscape, but no comprehensive report is available.	*Parks and gardens* The amount of public park area is about 20 % of the urban area, which equals about 90 m^2 per person. Digital maps of parks and other urban green spaces as well as valuable green cores surrounding the city. The information is updated once a year. (See *Grönstruktur karta, arbetsmaterial 040525*) New goals and new indicators that have to be used are included in the environmental program (*Örebro miljömål remissversion 2004-03-25*, Green structure, page 56-57).	*Recreational zones*

Uppsala, Sweden **Meadium sized univer-sity cities 1** Total surface area of municipality 2189 km^2 182 076 inhabitants The number of staff in the municipality administration – 5 688	*Natural landscape* The open landscapes around densely populated areas with their great natural and cultural value create an identity that is highly valuable to the city. In Uppsala, there are excellent opportunities for going from the centre of the city via parks and green corridors to nearby woods.	*Protected areas* To guarantee an access to the large zones of nature, the area of Lunsen and Hågadalen – Nåsten are protected as green areas. This is done by establishing a nature reserve. There is also an ongoing discussion about preserving the areas of Stadsskogen, along the Fyris River and around the ridge between Röbo and Kungshögarna including the nearby landscape for the future. This is done to provide a good accessibility to recreational areas, while safeguarding biodiversity as the city grows.	*Parks and gardens* The city forest and the area along the Fyris River as well as the forest areas of Hågadalen – Nåsten and Lunsen are examples of outdoor areas of great recreational value for the entire city's population. Uppsala's forests and parks form a largely connected green network that stretches throughout the entire city. Parks and green areas or adjacent to residential areas are of great importance to public health and to the daily life of the city. These green corridors are complemented by the large forested areas near the city. When a sizeable construction project is to be undertaken, the need for parks and gardening plots as well as for walkways and woodlands must be considered. This is accomplished by improving the accessibility and the quality of areas already now. In a growing city, it is important that there is a room for private gardening and sports. Sport arenas are quite well spread-out through the city so that children and young people can get to their activities of their own accord. There are several areas with allotment garden cottages near the city where people can rent or buy a small piece of land for gardening. These green areas contribute to the city's green corridors. To get accessibility to these areas, the existing footpaths and bicycle lanes are renovated. Today, the city is divided into two parts with the river Fyris as a barrier. Some bridges – mostly for traffic by car – cross the river, but there are plans for building new bridges to make better connection between the city's eastern (with few green areas) and western sides.	*Recreational zones*

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	*Natural landscape* The green areas, including agricultural lands, cover an area of 8329 ha that is 53 % of the total area of the city. The Kaunas green areas together with the Nemunas and the Neris rivers and small rivulets form a green framework. It plays a significant role as a factor mitigating a negative impact of urban environment and increasing an attractiveness and healthiness of the city. The main functions of the Kaunas city green areas are ecological compensation, open air recreation and, finally, the urban composition.	*Protected areas*	*Parks and gardens* The Kaunas green areas are developed to natural areas, inserted into extended city structure – forests, later transformed into forest parks and groves, as well as planted green areas, which were developed as a result of planning activities. These green areas, such as parks and public gardens have got several functions. There are mostly the outlying areas, located in new residential districts. The most significant examples of the Kaunas green areas are: *The Jiesia Landscape Reserve*. It is established in order to preserve unique landscape of the Jiesia rivulet: rock exposures, chalk clods, erosive extremely steep slopes. The area of the Jiesia Reserve covers 382 ha, 150 ha of them belongs to Kaunas Municipality at the moment. *The Azuolynas Oak Wood*. It is a unique park, where 250 – 300 years old oaks are growing. Some of them are replanted now. The areas of Azuolynas park covers 98,9 ha. *The Panemune Forest Park.* This park is planted by old pine-trees. Planted fir-trees alleys are connected to the main resting places at Nemunas beach. The area of Panemune Forest park is 293.2 ha. Other valuable green areas of Kaunas City are Kleboniskis, Romainiai and Lampedziai pine woods, the Botanical Garden, and the new parks: Draugystes, Kalnieciu and Dainavos.	*Recreational zone*

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	*Natural landscape* The total area of Livani town is 465 ha. 9,6% or 45ha of Livani town territory are covered by urban green structures – they include parks, small public gardens, squares, allotments (cabbage-patches), one lake and a part of a forest. 2,9 ha are occupied by Livani Lake, which is very popular place for the inhabitants during summers. In total, in Livani district, there are 7 lakes and 11 small rivers. Quality of water is good for industrial use and recreation. In the town, there are also 2 rivers of national importance: the Dubna and the Daugava. The rivers can be considered as green corridors in the town. The rivers and their banks/surroundings are attractive for local inhabitants and tourist recreation. *Forest.* In addition, Livani has a part of forest in the town's territory (12,7ha). It is a nice place where the new designed biking route will go through.	*Protected areas*	*Parks and gardens* Parks, small public gardens and squares occupy 9,1 ha, they are used by the town's inhabitants as meeting and recreation places. There are mostly lime-trees and poplars growing in the parks and squares, and some fir-trees, pines as well. Different plants and flowers are grown, too. Parks are well planned and used by local inhabitants and tourists. A comparatively large territory of the town is occupied by allotments (cabbage-patches) – 20,3ha. Some years ago, in order to improve the attractiveness of the town, the municipality architect decided to keep to the tendency to decrease the areas of allotments in the town and to move them to the town's surroundings instead. The problem is that many inhabitants use to their small gardens, which, in many cases, are almost the only source of food for them due to the bad economic situation after the breakdown of industries in Livani. An example can be mentioned here: the peninsula between the river Dubna and the river Daugava, where a new Latgale Art and Craft centre is built now, was previously used as pure allotments (cabbage-patches) area. Several gardens are still left there. It is envisaged in the general town's territorial plan that a tourism and recreation area should be developed on this peninsula, which means that many of the small garden owners will have to leave their allotments. That is why, many conflicts between the municipality and the inhabitants have happened.	*Recreational zone*

Hällefors, Sweden **Small city economic restructuring 2**	*Natural landscape*	*Protected areas* The municipality's area is 1000 km2, and 8 % of that area are currently protected. Due to high biodiversity, all this areas are protected.	*Parks and gardens* In the project "SUPERBS", we study our park strategy. We are convinced that parks in living areas are a human need. With our park strategy we accepted a negative movement from the areas. Because the investments in the green structure, people do not want to move from their apartments	*Recreational zones*

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 **ADDITIONAL INFORMATION IN APENDIX**	*Natural landscape*	*Protected areas* Within 2,5 km from the centre of town, there are two nature reserves that are very appreciated as recreation areas. You can easily reach these nature reserves by walk, bike or local bus. The municipality of Norrtälje has established these two nature reserves and is also responsible for the management. In the city of Norrtälje, there is a path of health. The municipality of Norrtälje gives objectives for building in documents, such as the comprehensive plan.	*Parks and gardens* The city of Norrtälje is surrounded by countryside, arable land and woody land and the nearness to nature is apparent. There are several smaller parks in the city of Norrtälje and one bigger park. A small river also flows through the city, and along the river, there is a path for cycling and walks.	*Recreational zones*

Sopot, Poland, **Small city economic restructu-ring 4** Total surface area of municipality 17,31 km^2 39 587 inhabitants The number of staff in the municipality administration - 197 **Additional data in appendix**	*Natural landscape* The areas around Sopot are diverse. There are (geologically) mainly glacial, river and sea origin. The upper and the lower terrace, which are divided by the cliff, formtwo distinguishable areas. In total, Sopot has 28 recognized natural monuments, including 26 trees, 1 erratic boulder and 1 narrow road. 78 permanently nesting bird species and 41 temporarily nesting bird species have been registered. The most common bird is gull (common gull, black-headed gull, herring gull and black-legged kittiwake). The forests are inhabited by boars, roe, deer, hares and foxes. In the clean waters of the upper course of the Swelina stream, lives planarian. Underwater research, which was carrying out during the shooting of the film "Life of the Bay" (extra funds were provided by the Municipal Fund of Environmental Protection and Water Management of the City Hall of Sopot), confirmed the fact that there were many protected fish species under the Sopot pier. The western part of Sopot belongs to the Tri-City Landscape Park, one of the most unique natural parks in Europe. Due to its seaside location and the neighbourhood of forested moraine hills, the city has a very good climate. *Natural and semi-natural green areas.* There are preserved fragments of unique vegetation in the urban areas of the city. These are completely natural or semi-natural fragments of forest ecosystems situated in the eastern and northern parts of the town. The diverse topography of the Sopot area is associated with extraordinary affluence of habitats. The most important are sections of the Sopot slope covered by beeches, oaks, dry ground forests and riverside flora along the Swelina stream, riverside flora in the north-eastern end of town, the	*Protected areas*	*Parks and gardens* Parks and forests occupy more than half of the area belonging to Sopot city. In the city, streets and squares, environmentally protected 100-year-old trees (e.g. common beech, white poplar, black poplar, pedunculate elm, white horse chestnut, black pine and eastern white pine, pedunculate oak, black oak and European larch) can be seen. There are also more exotic plants, such as Douglas fir, arborvitae, Japanese cedar, Canadian hemlock, ginkgo, London plane, tulip tree, or sweet chestnut. Trees, such as sea lime-grass, sedge, and buckthorn grow on beach dunes, and, in the forest, there are magnificent Pomeranian beeches, oaks, birches, horse chestnuts, pines, spruces, and even larches and yews. *Urban green areas.* Since its foundation, Sopot has been a place for recreation, entertainment and rehabilitation. This character has contributed to the creation of gardens and parks in the city. Changing environmental conditions, such as air pollution caused by increasing traffic and development of heating and power industry as well as use of sodium chloride for winter snow clearing, shortens old trees' life span. Moreover, some trees have to be removed to make space for development and transport investments. *Parks and lawns (50 ha).* Parks are maintained on a basic level. Dried and hazardous trees are removed, and the losses are replaced with trees of the same species. *Cemeteries (18.62 ha)* a) Municipal Cemetery - 13 ha b) Catholic Cemetery - 5 ha c) Jewish Cemetery- 0.32 ha d) War Memorial Cemetery - 0.30 ha *Allotments (44 ha)* These areas (mostly wiemirowska Valley) should be redeveloped into municipal green areas in order to create a park available to public or they should be assigned for	*Recreational zones* Playgrounds in Sopot are renovated and equipped successfully depending on the financial resources. Tri-City's first integrative playground was built in Sopot. In this playgrounds, both healthy and disabled children can play together. The playground will be equipped with special sets of toys imported from Denmark and adapted to the needs of the disabled children.

	wiemirowska valley and the small areas of municipal forests. Within the city, there are one nature reserve Zaj cze Wzgórze (11.74 ha), one archeological reserve Grodzisko, 31 nature monuments and environmentally protected area, Swelina Ravine (an erosional slit, 1.48 ha). The geographical position, topography and specific conditions of habitat have led to formation of regional microclimate. There are also numerous examples of rare species, which were introduced by people and which have adapted in the city. One can see such species as tulip poplar, ginkgoes, trees-of-heaven, wing nuts, yews, and bald cypresses, which usually grow in house gardens. *Forest* (900 ha) Classification and description of green areas determining the unique character of the city: *Sopot Slope and ravines* This particularly exposed to erosion area is overgrown with beeches and oaks. *Seaside dune areas (7 ha)* These areas require regular maintenance (introduction and repair and maintenance of existing fences, restoration of dune vegetation, etc.). Much works have been carried out by the city in consort with Maritime Office.		residential development. In 2000, the allotments in Łokietka Street were destroyed in order to prepare the land for the construction of a sports arena. Green areas neighboring to the public services' buildings (educational, health care, administrative and recreational functions) These areas have played extremely important role already at the investment stage. However, the further use of these areas, ends frequently in its degradation, with the exception of Provincial Hospital of Tuberculosis and Pulmonary Diseases in Stawowie, which authorities have acted to save the hospital park since 1994. Green areas around housing estates, holiday centers, lodging-houses, hotels and service facilities The care taken of these areas varies depending on the financial situation of the users. Some positive examples are Zong Hua Hotel, Grand Hotel, BART, Villa Hestia, Mickiewicz Housing Estate. Despite numerous shortcomings in maintenance of city's green areas, their condition in Sopot is satisfactory. The city assigns considerably big funds for improvement and maintenance of these areas every year.	

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	*Natural landscape*	*Protected areas*	*Parks and gardens* For nearly ten years, we have made several parks in Enköping. Today people come from the different arias to stroll in the resplendent parks, which have made the town famous. Today we have 18 different lager and smaller parks, and more parks are planned in a special park vision for the future. There are a variation of perennial plants, bulbs, grasses, exotic trees and shrubs in the parks.	*Recreational zones* There are also generous oases for a play, a picnic or a moment of thought in quiet surroundings.

Tukums, Latvia **Small eco-village city 2**	*Natural landscape* The total area of Tukums town is 1370ha. 16% or 219ha of Tukums town territory are covered by urban green structures – they include town woods, parks, small public gardens, squares, allotments (cabbage-patches). 47% (103ha) from green structures are forests, public green spaces are 43ha, it is 20% of green structures, but green lines are 73 ha (33%). *Lakes and rivers* Small river Slocene flows through the town, and a long time ago there used to be a town lake, but now whole area is overgrown and one part is used for railroads. According to the development program and the urban plan, town council plans to reconstruct the lake and the area around it to create a new recreation area for inhabitants and tourists. To realize that idea, town has a lack of finance resources, and private initiative is expected so far.	*Protected areas*	*Parks and gardens* Parks, small public gardens and squares occupy 219ha, most of them are used by the town's inhabitants as meeting and recreation places. There are mostly lime-trees and poplars growing in the parks and squares, and some fir-trees, pines as well. Different plants and flowers are grown, too. Quantity of green areas is quite big, but in the same time not all of them can be used as recreation areas. In the center of the town, there are small size green squares, while parks are outside form the center and they are not often used by citizens. Nowadays, town council takes care of all squares and makes reconstruction works, but town council has to work out a development program for green urban structures in town, to provide center with "green corridors".	*Recreational zones*

Kosakowo, Poland **Small eco-village city 3**	*Natural landscape*	*Protected areas* North-eastern parts of the municipality belong to the Seafront Landscape Park (Nadmorski Park Krajobrazowy). Particularly valuable parts of this area, such as "Mechelinskie Laki" park and adjacent to Kosakowo municipality "Beka" ornithological park (Puck municipality), are strictly preserved. "Mechelinskie Laki" park covers the area of 113.47 ha. Vast mud and meadow areas are ecotopes for the valuable species of water birds (including 9 rare species) and for halophilic organisms (organisms that flourish in a salty environment). There are approximately 200 floral species (including 20 endangered and rare species) in the park. The park has a scientific centre for birds' migration and a view point. Seafront Landscape Park belongs to the group of environmentally protected areas in the Baltic Sea Region (Convention on the Protection of the Marine Environment of the Baltic Sea Region, Helsinki 1992, which came into force in year 2000). With the regard to its ornithological values, the municipality is designated as a part of the European system of environmentally protected areas "NATURA 2000". The system is currently being in a planning phase. The environmentally protected areas include: 1. coastal area – the rules for any activities and investments within this area are established by the Marine Council; 2. protected forest areas together with a forest complex Lasy Oliwsko-Darzlubskie – the leading policy in these areas is the preservation of forest areas, which practically excludes possibilities of introducing another types of development; particularly protected unique tree species occurring in the municipality (one maple, two ashes and linden avenue – 40 species).	*Parks and gardens* Activities introducing green areas in urban structures include: public green areas are implemented in the local master plan and introduced in newly built single-family housing districts (the most common type of housing in the municipality); public green areas are introduced into existing urban structures. Attempts are made to improve the existing green public areas, for example, there are plans to build a public playing yard nearby a small lake in Kosakowo village.	*Recreational zones*

Hågaby, Sweden **Small eco-village city 4**	*Natural landscape* Hågaby is surrounded by rich landscapes. The core landscape is composed by the Nåsten forest and framed by the river banks of the Håga river. The Nåsten forest consists of both dry open, light deciduous boundary zones facing the agricultural fields and also darker inner areas with coniferous species as a dominated biotope. Part of the forest contains valuable wetlands since it forms diverse and species rich habitats for animals and plants. Since 1998, the Nåsten forest is a protected area. An open landscape is dominated by two agricultural valleys (Hågadalen) and several open fields and hills that have been grazed for a very long time. The landscape around Håga mound from the bronse age is the most popular site in the area and may be the host for hundreds of companies and single persons looking for calm relaxation in a magnificent landscape during weekends.	*Protected areas*	*Parks and gardens* The community has two unusually rich supplementing green structures. The first one is the former institutional framework greenery and the second one consists of the family gardens. The institutional green structure consists of a noble leaved trees park by the school – also with 80 years old fruit tree gardens around the smaller cultural houses. It also consists of several alleys along the main road and the inner street, of solitary magnificent trees and of flowering bush patches all over the community. The reason for this unusually rich framework greenery is that the main green assets were mainly a care institution (1923-1996). *115 family gardens* The diversity of gardens in private houses, in tenants owned houses and in residential houses is unusually rich. It is the latter part, which is the unusual situation – normally rented apartments have only limited garden areas, but, in Hågaby, one basic idea of the site was to give room for substantial outdoor spaces attached to all apartments.	*Recreational zones*

APPENDIX

Kaliningrad, Russia

Figure1. Flower beds in Kaliningrad.

Figure 2. Citizens participate the city subbotniks in Kaliningrad.

Reconstruction of 2 public amusement parks started in 2005: the Central Park and the Yunost' ("Youth Age") Park (pic. 5.3). The complex developmental works were carried out using both municipal budget and investments. This year (2006) the reconstruction is to be continued.

Figure 3. Model of the Yunost' Park.

Kaunas, Lituania

Table. Amount of green areas in Kaunas.

No.	A category of green areas	Area, ha	% of total city area
1.	Agriculture land use	2750	12.96
2.	Forest land use	2870	18.26
3.	Conservation land use; of which:	35	0.22
3.1.	Natural monuments;	0.2	
3.2.	Archaelogical areas:	10	0.06
3.3.	Closed cemeteries	25	0.16
4.	The lands of miscellaneous purpose, of which:	2647	16.84
4.1.	Parks;	928	5.90
4.2.	Public gardens;	69	0.43
4.3.	The slopes of the valleys;	1020	6.49
4.4.	The green corridors;	142	0.90
4.5.	The recreational areas;	250	1.59
4.6.	Other areas	238	1.51
	Total area	8329	53.00

Source: The Kaunas City Master Plan, City of Kaunas, 2003

Norrtälje, Sweden

Future measures
The comprehensive plan proclaims that the city and the nature should act together. The city has good opportunities, rich nature and recreation areas in all directions. The objectives for the planning are to create good and safe paths for cycling and walk. The areas of great value (hot spots) for the green urban structure must be taken into consideration during planning.

There are some strategies for urban green structures in the general planning for ÖP2015.
These are:

- The cultural, historical and architectural inheritance from buildings and settlements, places and landscapes with special values are protected and developed;
- The nature and recreation areas close to housing areas and with good accessibility are protected so that the need of play areas, recreation, local cultivating and healthy local climate can be satisfied for everybody;
- Existing plant and animal populations in the district of Norrtälje should be protected and maintained so their existence and genetic variation in their natural habitats are preserved. Animals and plants should be able to survive in vigorous populations under natural conditions.

SOPOT Poland, Additional data

Forest.

Classification and description of green areas determining the unique character of the city:

forests (900 ha)

a) state owned 715 ha

b) municipal 184 ha

c) privately owned 1 ha

State owned forests are the buffer zone for the Tri-City Landscape Park. The existing recreation sites and in-forest car parks are in relatively poor condition.

Condition of the municipal forests is similar to those of the state owned forests (little money is invested in recreational areas). The following phenomena have been observed on the border of urban areas: progressing soil degradation and development of erosive processes (due to penetration of the forest peripheral zone). In 1995, the municipal forests were included within the boundaries of the Tri-City Landscape Park.

In privately owned forests, it is still necessary to perform artificial reforestation to reduce the negative impact of private owners' deforestation activities.

For the first time during 20 years, the condition of so-called Karlikowski Forest was examined. This old green area, forming part of the coastal crowberry forest, has been thoroughly cleaned. Cleaning involved selective cutting of those tree and shrub species that are foreign to this habitat. All trees were dendrologically inspected, their crowns were groomed, and ill, dried and dying elements were removed, and wounds were protected. The wooden protective fencing alongside the roads was repaired. The city authorities plan for this area is to plant Scotch pines and set up a forest nursery.

The state owned and municipal forest areas also serve as public recreation parks with marked tourist trails and walking paths. However, such tourist facilities as benches, dustbins, shelters, cycling paths and fitness trails should be introduced. Carefully planned recreation areas presented on outdoor information boards would result in reduction in degradation of public forests in Sopot.

Sopot Slope and ravines

This particularly exposed to erosion area is overgrown with beeches and oaks. In the sector between 3 Maja Street and Goyki Street, removal of dried trees, relieving cuts, placing anti-erosion palisades and planting new beeches and oaks have been carried out. . Losses of vegetation on the Sopot slope are restored every year. The planted species are usually pedunculate oak and European beech. 300 trees were planted in 1999.

Seaside dune areas (7 ha)

These areas require regular maintenance (introduction and repair and maintenance of existing fences, restoration of dune vegetation, etc.). Much works have been carried out by the city in consort with Maritime Office. At the end of 1998 and at the beginning of 1999, maple offshoots on the dunes were trimmed for the first time during 15 years. These actions have had a considerable impact on the densification of maple trees and on the cleanness of the dunes. As a result of these works, the sea has become more visible from the city. Removal of offshoots and dried plants from the dunes was performed along the section covering the beach area from Grand Hotel to the border with Gda sk. Since 2000, cleaning and trimming of offshoots was started on the dunes covering the beach area from the Gdynia border to the Gda sk border. This works are performed every spring.


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