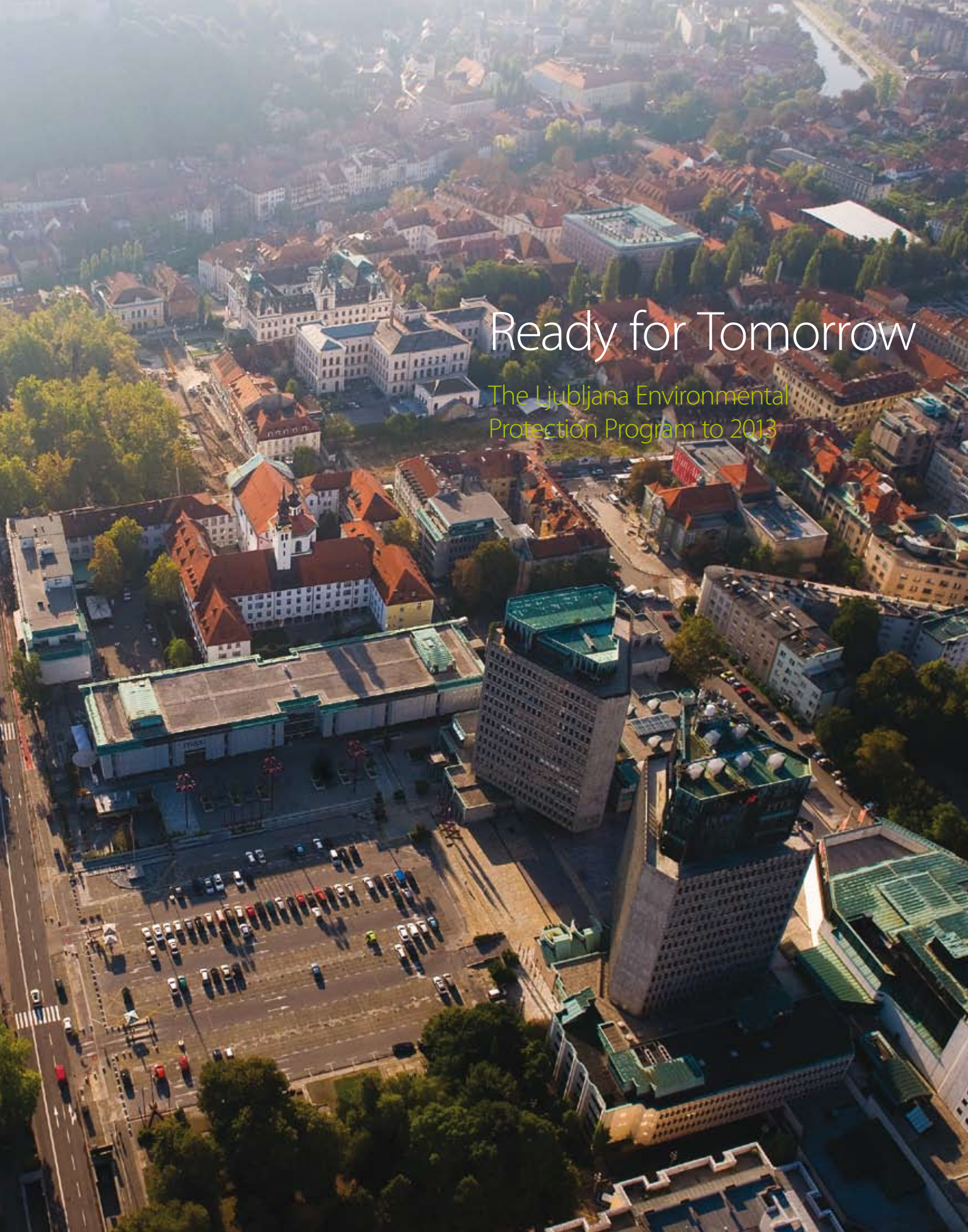

Ready for Tomorrow

The Ljubljana Environmental Protection Program to 2013

My city: colorful and healthy

This youthful European capital is facing new growth and development challenges on a daily basis. Many of them directly affect the environment; however, they also have an indirect impact on the quality of life. As a result, Ljubljana must act wisely if it wishes to make the most of its development opportunities. In this regard, the City of Ljubljana's Environmental Protection Program is a key document, a forecast of how the city will solve its main environmental issues over the long term.

The booklet Ready for Tomorrow describes the process of creating this program over several years and sheds light on the main environmental issues of an urban center. It presents the most important steps to be taken by 2013 and key efforts towards sustainable mobility, increased energy efficiency, drinking-water conservation, and the protection of green spaces.

A healthy environment is the foundation of a pleasant city life. The long-term decisions described in this booklet promise that Ljubljana will remain colorful – and green.

Ljubljana's main environmental challenges include:

- *Air pollution*
- *Climate change*
- *Threatened sources of drinking water*
- *Exhausted natural resources*
- *A degraded natural environment*
- *Soil contamination*

: Creating the environmental protection program

Gathering Suggestions and Forming Concepts

Every modern city strategically plans all the activities that influence the environment in any way. This ensures that environmental needs are taken into consideration within spatial, economic, and social development. The principles of sustainable development, integrity, cooperation, and prevention have left their mark on the basic features of the Environmental Protection Program, laying out a responsible path to the city's future.

At the end of 2006, Ljubljana had 267,386 people living in 102,646 households.

The challenges before us are large and complex, and therefore a wide variety of individuals worked together to find solutions; they went through various stages in order to define the areas that must be given highest priority. The program that was created is a pilot project that will serve as an example for all other Slovenian municipalities.

Planning a city's approaches to protecting its environmental interests is a demanding and long-term process. About 700 people were involved in the Ljubljana program – a range of experts, opinion leaders, and the general public. They all sought to capture the issues of a city that wants to develop dynamically, but still preserve a high quality of life for all of its residents. The first steps were taken in 2004. They primarily originated from the demands of Slovenian legislation and the national environmental protection program. In various stages, those responsible for environmental protection within the City of Ljubljana worked with the representatives of public utility services, experts, members of NGOs, and various segments of the public; in a series of thematic workshops, they outlined the main environmental issues. In 2005, the Ministry of the Environment issued guidelines for municipal programs and, with them, a new view of the creation of an Environmental Protection Program for Ljubljana. As a result, in 2006 a special taskforce and experts updated the 2004 draft and reexamined the list of key issues.

Financial resources are always limited, so of course it would have been impossible to effectively address all of the challenges by 2013; the initial selection had to be narrowed down. The new, shortened list features challenges that have the most adverse impact on our health and quality of life, represent higher risk, and entail economic loss.

Through 2013, the city of Ljubljana will focus on achieving progress in these four areas:

- *Establishing a system of sustainable mobility (p. 9)*
- *Ensuring energy efficiency and increasing the use of renewable resources (p. 11)*
- *Ensuring a clean long-term drinking-water supply (p. 13)*
- *Introducing natural and green-space protection (p. 15)*

How well the city implements its vision will be monitored using indicators formulated specifically for this purpose. Each task and each set measure is defined in detail, leaving no doubt about the coordinators, potential partners, execution deadlines, estimated costs, and potential sources of financing.

The Environmental Protection Program goals are highly ambitious but also achievable. It will be possible to complete them in the given timeframe, and they will bring about a noticeable improvement of life in this dynamic European city.

: The state of the environment in Ljubljana

How can we know how well we actually live?

Data on its air, soil, and water quality are very informative about the state of a community's environment. Threats to drinking-water sources, the disappearance of green spaces, and air pollution are pressing problems that directly affect the quality of life. Industry and corporations still exert significant pressure on the environment, but currently the greatest challenge for the environment, the city, and its residents is traffic.

{ The air we breathe in Ljubljana today is significantly better than in past decades.

AIR

Winter smog used to be the main source of air pollution in Ljubljana, but it has been almost entirely curbed with planned measures such as the introduction of district heating. As a result, the average amount of sulfur dioxide air pollution is currently extremely low, and the air we breathe in Ljubljana is significantly better than in past decades. However, we are faced with a new challenge: traffic pollution. Nitrogen dioxide, carbon monoxide, volatile organic compounds, and solid-particle emissions are a concern due to the increased use of gasoline- and diesel-powered vehicles. As a result, in 2006 the nitrogen dioxide levels in some locations were almost double the maximum annual concentration limit. Poorly ventilated road corridors are the most polluted. Special attention must also be given to inhalable particulate (PM_{10}) air pollution. The data show that this is gradually falling, but nonetheless in 2009 over 100 incidents of exceeding daily threshold levels were recorded.

SOIL

Ljubljana has three typical surface types: agricultural and water-protection areas, urban areas, and forest areas. The condition of agricultural land exhibits excessive levels of phosphorous and low levels of residual nitrate nitrogen. More economical production and fertilization on agricultural land has increased the soil potassium levels; however, in certain protected areas or greenhouses there have been cases of fertilization with nitrogen. On the other hand, the urban and suburban soil was thoroughly inspected only a few years ago. The focus was on the content of potentially dangerous inorganic and organic substances from traffic, industrial, and farming emissions. The findings showed that the soil was most often polluted with lead, but nowhere critically. The condition of the forest soil has yet to be determined, and so this represents a future priority.

WATER

The groundwater in the Ljubljana Basin and the Ljubljana Marsh is the city's only source of drinking water. Drinking-water supplies are primarily threatened by nitrates, pesticides and their degradation byproducts, volatile halogenated hydrocarbons, and chrome. The uncontrolled sewer system and direct discharges of the city's wastewater threaten all watercourses. Despite the dispersed pollution of the water sources, careful quality monitoring and continuous provision of adequate treatment ensure that the water we drink in Ljubljana is still exceptionally good.

THE NATURAL ENVIRONMENT

All vital types of habitats are now under the constant threat of intensive farming, gravel extraction, afforestation, fertilization, land drainage, and construction. As a result, we have only succeeded in preserving small areas of wetlands, extensive dry meadows, wetland meadows, transitional mires, and low marsh surfaces. Floodplain oak and hornbeam forest is endangered as well, but it has been preserved at the edges of the Ljubljana Marsh. A large proportion of natural areas have been successfully protected from environmental pressures. In the framework of NATURA 2000, the Ljubljana Marsh, Mt. Šmarna, and the area along the Sava River and Rašica Hill were all categorized as ecologically significant natural areas, and the Ljubljana Marsh Landscape Park was formally established in 2008.

: Main pressures on the environment

Causes and Effects

One can say that the environment of an urban center is always under great stress. The ever-increasing number of people means more infrastructure, more pressure, and more waste. Moreover, Ljubljana faces three additional issues: illegal dumping and the underdeveloped sewer network threaten drinking-water supplies, whereas traffic poses many direct risks to residents.

If all the illegal dump sites in the city were combined, they would cover an area the size of 18 football fields.

WASTE
A number of projects focus on waste. The most ambitious one is the planned construction of a regional center for solid waste. The project encompasses the construction of waste-treatment facilities, a treatment plant for leachate, and the completion of the new landfill. Ljubljana residents have been separating their waste for a number of years; since 2007, the city has stepped up construction of the underground system for separate waste collection and development of a system of waste-collection and recycling centers. It has been working hard to rehabilitate and prevent the use of the more than 1,500 illegal dumps that were registered in the last survey (2006). Their combined area was nearly 130,000 m^2, or more than 18 football fields. More than 13% of the recovered waste was hazardous.

WASTEWATER
The technical deficiencies of the sewer system result in intrusions of wastewater into drinking-water supplies. Modernizing the sewer system is thus a priority task for the city, which plans to adapt the sewer network to the type of settlement. A number of buildings are still not connected to the sewer network; the substitute septic tank system is inadequate and it allows wastewater to find its way into the groundwater. The sewer system directs wastewater from urban and suburban areas to overloaded treatment plants and from there into the Ljubljanica and Sava rivers.

NOISE
High traffic entails high noise levels. As many as one in five residents live in highly exposed areas. There is even more noise near main roads and railroads, production sites, bars and restaurants, and event venues. Exclusively residential areas, new and well-planned urban housing, and recreational areas at the edges of the city are under less pressure. The city has gained better oversight and more opportunities for noise-level management with an effective analysis of the situation and a general map of noise levels for the entire municipality.

RADIATION
Ljubljana started to actively monitor electromagnetic radiation loads in 2005. The city now has more than three hundred cell phone base transceiver stations and many high-frequency sources of electromagnetic radiation, such as radio and television transmitters. However, measurements have shown that the average exposure to base-station radiation in Slovenia is more than one hundred times lower than the maximum permissible level.

City of Ljubljana
Strategic Environmental Goals

1: Establishing a sustainable mobility system

Steps, leaps, and bounds

With increasing traffic congestion, this vibrant European capital has been experiencing traffic jams, poor traffic-flow capacity on roads, and pollution. More than 120,000 people commute into Ljubljana daily, most of them in their own cars, while traffic pressure is also on the rise due to truck transport. The City Administration measures will increase mobility, reduce noise and greenhouse-gas emissions, and ensure air quality.

Even 50 m from the road, nitric oxide concentrations still surpass the maximum limit.

SHARE OF PUBLIC TRANSPORT TO BE INCREASED TO 30%
The public transport network will be adapted to the settlement. We have already introduced the single Urbana city transport card, allowing rapid, handy, and cashless payment of bus fares and 90 minutes of free transfers after boarding. Rail traffic will be introduced within the city limits and a program of suburban rail lines will be outlined. Separate lanes and right-of-way at intersections will be arranged for public transport. A pilot project for a P&R system will be conducted on the corridor encompassing Dunajska, Slovenska, and Barjanska streets. City Administration employees will set an example of sustainable mobility by using public transport, cycling, and walking.

SHARE OF NON-MOTORIZED TRAFFIC TO BE INCREASED BY 20%
The city center has been closed to traffic, and pedestrian and cycling zones have been expanded in order to increase their safety in traffic. Secure storage facilities will be introduced so that bicycles will be safer as well. In addition to connecting the cycling network and introducing a web portal for cyclists, the City of Ljubljana has named a cycling coordinator.

NEED FOR MOTORIZED MOBILITY TO BE DIMINISHED
Residential areas will have stores and connections with public transport, cycling lanes, and footpaths. Tourist cycling lanes will be introduced as well. Finally, the City Administration will move to a new single location.

LONG-DISTANCE ROAD TRANSPORT TRAFFIC AND FREIGHT TRANSPORT LINES TO BE REDUCED BY 20%
In a joint effort with the Ministry of Transport, locations of transport centers will be recorded in spatial planning. Transport will be diverted around Ljubljana, freight will be transferred to the railways, and the city center will limit freight traffic. An operative program of traffic emission reductions will be conducted.

City of Ljubljana
Strategic Environmental Goals

2: Ensuring energy efficiency and the use of renewable resources

A city with no losses

How can a city be more energy efficient? Ljubljana is developing a local energy concept that will turn buildings into energy-efficient structures and offer residents a safe and reliable supply of energy services. Traffic will have to lower its appetite for primary energy sources; public transport will become cleaner, friendlier, and more accessible. Renewable energy sources will be at the forefront.

{ Over the years, electricity and gas consumption have increased; however, water consumption has decreased.

ENERGY EFFICIENCY OF BUILDINGS IN THE MUNICIPALITY TO BE INCREASED
All public or administrative buildings and housing will receive an energy overhaul; the basis for all improvements in order to increase efficiency will be the energy balance, data from the building survey, and various accessible databases.

NEW CONSTRUCTION ENERGY EFFICIENCY TO BE ENSURED
The spatial development strategy has defined standards for new buildings. Municipality and Public Housing Fund housing will set an example, along with the city administration building itself. A register of buildings owned by the City of Ljubljana has been drawn up and subsidies for above-standard solutions are being considered.

LARGER BUILDINGS TO BE CONNECTED TO THE CENTRAL COOLING SYSTEM
A new city administration office building will be built as part of the pilot project. As part of the energy concept, the district heating system will be expanded (i.e., the water-heating network and gas network). The heat from the hot water and gas network will be used to cool the city administration buildings.

SHARE OF RENEWABLE ENERGY SOURCES TO BE INCREASED TO 12%
The use of renewable energy resources for transport will increase, with cleaner fuels used for public transport, delivery vehicles, and all other public vehicles. A demonstration project on renewable energy sources will take place: the construction of a solar power plant and spatial planning of an energy-efficient neighborhood. Special measures will be taken for efficient energy use in cultural heritage buildings. The city will educate developers, architects, and clients.

City of Ljubljana
Strategic Environmental Goals

3: Ensuring a long-term natural drinking-water supply

Carefully, drop by drop

Our drinking water originates in the groundwater of the Ljubljana Basin and the Ljubljana Marsh. The city's activities put tremendous pressure on the soil and water reservoirs below it. The water-supply systems have multiple technical deficiencies, but the water that is pumped at five water stations and sent to our taps to fill our glasses remains clean. In the future, we intend to carefully safeguard groundwater from pollution and maintain the privilege of clean drinking water in every home.

{ Ljubljana's tap water does not need to be industrially purified.

QUALITY OF DRINKING-WATER SOURCES TO BE MAINTAINED AND IMPROVED

The system to collect and purify the city's wastewater will be upgraded. Adequate spatial planning and new land purchases will make it possible to safeguard the local water-protection area, prevent harmful changes in function, and define proper use. Monitoring of fertilizers and pesticides will be carried out in water-protection areas; spatial-planning documents will define specific areas for garden sheds and plots. The city will encourage organic agriculture and farmer education and assemble a register of farms and a relocation program for interested farmers. Illegal dumps will be cleaned up and a center for managing construction waste will be established. Inspections will be more rigorous, the environmental protection information system will be upgraded with data on water polluters, integrated water and soil pollution control will be established, and observation structures will be built. Maps of the Ljubljana Basin aquifers marking threatened points will be drawn up, along with a plan for containment of incidents of sudden water-source pollution. A balance of central water sources will be established and water-source management measures will be introduced.

QUANTITY OF DRINKING-WATER SOURCES TO BE PRESERVED

The overhaul of the water-supply system will decreases losses, monitoring of groundwater levels and sources will be introduced, new wells will be connected to the water-supply system, and preparations for the construction of a backup water station will take place. Funds from concessions will be earmarked for groundwater pumping. Drinking water will be realistically priced; the use of rainwater will be encouraged.

POLLUTION OF SURFACE WATERCOURSES TO BE DECREASED

Monitoring of surface water quality will be conducted, the treatment plant for leachate at the Ljubljana Marsh landfill will receive environmental protection consent, and the sewer system will be hydraulically improved. The problem of discharging precipitation will be tackled. Natural restoration of watercourses will be implemented, and selected watercourses will be the subject of a detailed conceptual solution. Light liquid separators will be maintained; a sustainable wastewater treatment method will be introduced in the Ljubljana Marsh.

City of Ljubljana
Strategic Environmental Goals

4: Introduction of natural and green-space protection

Urban meets green

City life is healthier when there is an intersection of the urban and natural environments. A unique feature of Ljubljana is its forested areas in the very core of the city, giving a pleasant first impression of the city and moderating the climate, as well as offering residents a healthy way to spend their free time. In addition to increasing public green spaces, we will nurture the natural diversity that surrounds us.

46% of the City of Ljubljana is covered by forest.

BIODIVERSITY AND VALUABLE NATURAL FEATURES TO BE CONTINUOUSLY MAINTAINED

The city budget will guarantee funds for the management of protected areas. A management plan for the Tivoli, Rožnik Hill, and Šiška Hill landscape parks will be drafted; the Magpie Valley (Sračja dolina) and Rakovnik will be protected, as will forest heritage areas. Especially significant parcels within the protected area will be bought up, natural conservation will be monitored, land in biodiversity areas will be rehabilitated, and natural restoration proposals will be prepared. The city will keep track of indicator species and provide public education.

EXISTING GREEN SPACES TO BE PRESERVED AND NEW ONES CREATED

Green spaces will be categorized; funds will be set aside for their management and planning, and the creation of new ones. One public green space that has already been planned in the spatial planning documents will be created. Registers of public green spaces and tree-lined avenues will be assembled. The city will have instructions for maintaining city trees and parks; it will assess the situation and introduce monitoring. Forests with special significance and legally protected areas will be purchased. Special-purpose forests will be declared and wooded land will be bought up. A forestry learning center will be established.

Ljubljana

City with a mission

LOCATION

250 km east of Venice, 350 km from Vienna, and right in the center of Slovenia is one of Europe's most inspiring capitals. Covering an area of 275 km² (106 mi²), it stands in the Ljubljana Basin, which provides the city with its famous morning fog. At an elevation of 298 m (978 ft), it stretches along the Ljubljanica River. The climate is pleasant, with warm summers and moderate winters, and an average annual temperature of 11.6 °C (52.9 °F). The city's settlement area continues into the 150 km² (58 mi²) Ljubljana Marsh, a habitat for a wide variety of animals and plants. Tivoli Park – the largest park in Ljubljana – is in the center of the city, with three chestnut-lined avenues to stroll along on a sunny day.

PEOPLE

As the capital of Slovenia and its largest city, Ljubljana has approximately 280,000 residents and a population density of 1,004/km² (2,612/mi²) . The city's residents lead an active life; most work in the private sector and spend their free time doing sports. Arts and entertainment can be enjoyed at many outdoor events such as Festival Ljubljana, and arts venues with both classical and avant-garde repertoires. The people of Ljubljana are still very attached to driving on a daily basis, but increasingly more are riding their bikes to work and helping keep the city clean. Many other Europeans have made a home for themselves here since Slovenia joined the European Union in 2004, contributing to the diversity of a population in which some 50,000 students add a special youthful vibe.

CITY

Although it has a young feel, like many other great historical European capitals, Ljubljana also impresses visitors with its rich past and Roman legacy. The old city center and small picturesque shops mix with Art Nouveau buildings and impressive creations by the architect Jože Plečnik. Around them the city's commercial world bustles with skyscrapers and the headquarters of Slovenia's leading companies. Ljubljana currently produces about 25% of Slovenia's GDP. It is a business, conference, and exhibition center that many prominent artists and public figures include on their tours and itineraries.

Population: 276,091
Population density: 1,004/km² (2,612/mi²)
Area: 275 km² (106 mi²)
Coordinates: 46°03'20" N, 14°30'30" E
Elevation: 298 m (978 ft)
Average annual temperature: 11.6 °C (52.9 °F)
Average temperature (January): 2.5 °C (36.5 °F)
Average temperature (July): 21.4 °C (70.5 °F)
Number of students: 57,147
Number of tourists: 375,666
Number of overnight stays: 740,602
Average gross monthly wage: 1,663.43
Number of unemployed: 7,515

* all data is for 2008

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"For me, Ljubljana is the most beautiful city in the world: a modern European capital that may be one of the smallest by area, but is surely one of the biggest on our planet in terms of openness, warmth, and hospitality. My hope for Ljubljana's future is that it will also become the cleanest city; this requires hard work from each and every one of us. Our joint effort, knowledge, and experience can significantly increase the quality of life and wellbeing of all residents of our beautiful city. We can ensure that our city – traditionally known as 'white Ljubljana' – is also green for generations to come."

(Zoran Janković, Mayor of the City of Ljubljana)

City of Ljubljana Strategic Environmental Goals

1: Establish a sustainable mobility system
2: Ensure energy efficiency and the use of renewable resources
3: Ensure a long-term natural drinking-water supply
4: Introduce natural and green-space protection

City
of Ljubljana