

## 4.5. ECOCITY Trnava

### 4.5.1 General information

The ECOCITY Trnava case study deals with the ecological renewal of the urban centre of a medium-sized town with a valuable historic heritage and considerable development potential. Trnava is located on the fringes of the Danube lowlands, 50km north-east of Bratislava. Within the administrative structure of the Slovak Republic it plays the role of a regional capital. In terms of inhabitants, Trnava is the seventh largest city in Slovakia but the population size has been stagnating now for almost 15 years at around 70,000. Even in the future, no striking changes are likely in the city's demographic situation. However, it is expected that the new industrial capacities (PSA Peugeot-Citroën car factory) will help to stop the population decline in adjacent settlements and will cause an increase in migration towards Trnava.

Trnava enjoys a good location and is well connected to the road and rail network of Slovakia; nearby airports and ports are to be found in Bratislava. Inner-city trunk roads as well as excessive traffic volumes are common problems in many Slovak towns. The study for the ECOCITY Trnava emphasises sustainable urban development supported by appropriate transport infrastructure.

Similarly to almost all other Slovak towns, Trnava is supplied by energy (electricity and gas) from external sources. Specifically there is the nearby nuclear power plant, Jaslovské Bohunice, which supplies the city with heat. It will cease operation in 2006, which provides a good opportunity (and need) for the preparation of an alternative energy supply concept.

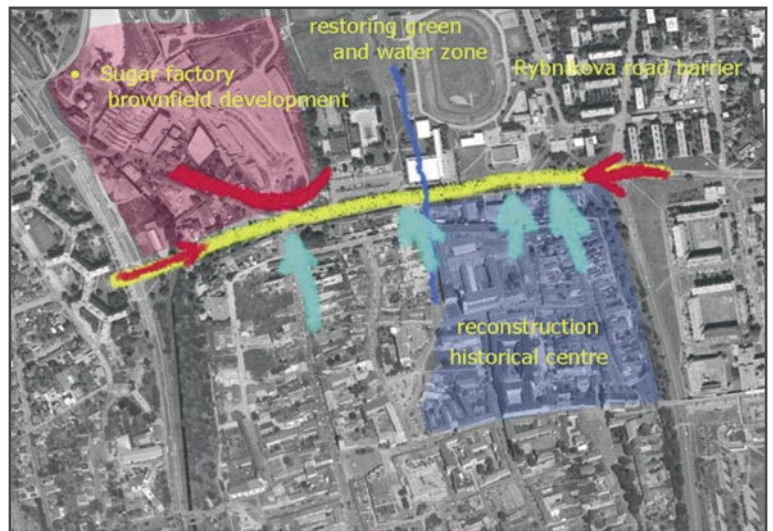


Figure 4.5.1  
ECOCITY Trnava  
site analysis

### 4.5.2 Project description

This ECOCITY project examined the possibility of implementing the ECOCITY principles in three neighbouring urban areas with different types of structure and use: the northern part of the historic city core, the disused sugar factory with adjacent sites and the Rybníková traffic corridor (see Figure 4.5.1, site analysis). The approach used was to investigate the principles of sustainable urban development in the integration of transport and spatial planning. In the ECOCITY, public spaces (streets and squares) are the arena for interaction. Their quality can be evaluated according to three criteria groups: ecological, economic and socio-cultural. The 'comprehensive transport master plan' [Rakšányi, 2000] is an appropriate tool for this. It is characterised by the permanent, ongoing participation of area users in all phases: taking stock, exploration, analyses, evaluation of development intentions, goal assignment, scenario development, selection of the most suitable scenario, design draft (ECOCITY conception) with detailed sub-variants and implementation of the final design as the Local ECOCITY Master Plan (LEMP). Design of the physical structure and sustainable transport is combined with transport policy measures such as those presented in the EU Project LEDA<sup>13</sup>.

The Trnava 'ECOCITY in the Historic City' vision is based on the combination of three goals of sustainability: environmental quality, socio-cultural identity and economic effectiveness. The preservation of the historical heritage of Trnava was emphasised here. Specific to this project is the differentiated approach to individual areas, based on their quality and their current extent of preservation

<sup>13</sup> Legal and regulatory measures for sustainable transport in cities, <http://www.ils.nrw.de/netz/leda> (website in German)

of the natural and cultural assets of the area. For the model area, two relevant aspects that determine the character and the development of the ECOCITY Trnava model were selected: the direction of spatial development in relation to the urban gravity centre (concentration, de-concentration) and the approach to the cultural and historical heritage (reconstruction, restructuring).

The methodology resulted in four different scenarios. These scenarios enable different trajectories for the area's further development. Changes in traffic volumes in the ECOCITY scenarios are qualified by the change of functions in the transportation network of the whole city. The basic principle is speed reduction towards the city centre. For the transport sector the following sustainability characteristics were selected for the quality criteria: reduction of unfavourable transport functions and reducing overall traffic loads; design criteria appropriate to both vehicles and pedestrians; strengthening regional connections and links to neighbouring areas; improving public transport services; locating parking facilities to favour other modes; and providing city logistics.

The scenarios were discussed with citizens, local associations and independent experts. They were also discussed with the representatives of the town council and the mayor. After the completion of this participation process, the scenario was selected that restores and strengthens the city image through an appropriate degree of intensification of land use in some areas and an emphasis on the ecological principles of town development in the currently non-developed parts of the model area.

The whole design concept was inspired by the acceptance of the genius loci of both built and natural structures of the ECOCITY area. In drafting the scenarios new functions, hierarchies and categories of urban roads were tested. These have been proposed to contribute to the modernisation of the Slovak national standard 'Planning and design of urban and similar roads'.

The Trnava LEMP is a comprehensive documentation of urban structure and sectoral planning, resulting from parallel design and participation procedures and underpinned by an ECOCITY quality support procedure and quality criteria (see Figure 4.5.2).

### **Urban structure**

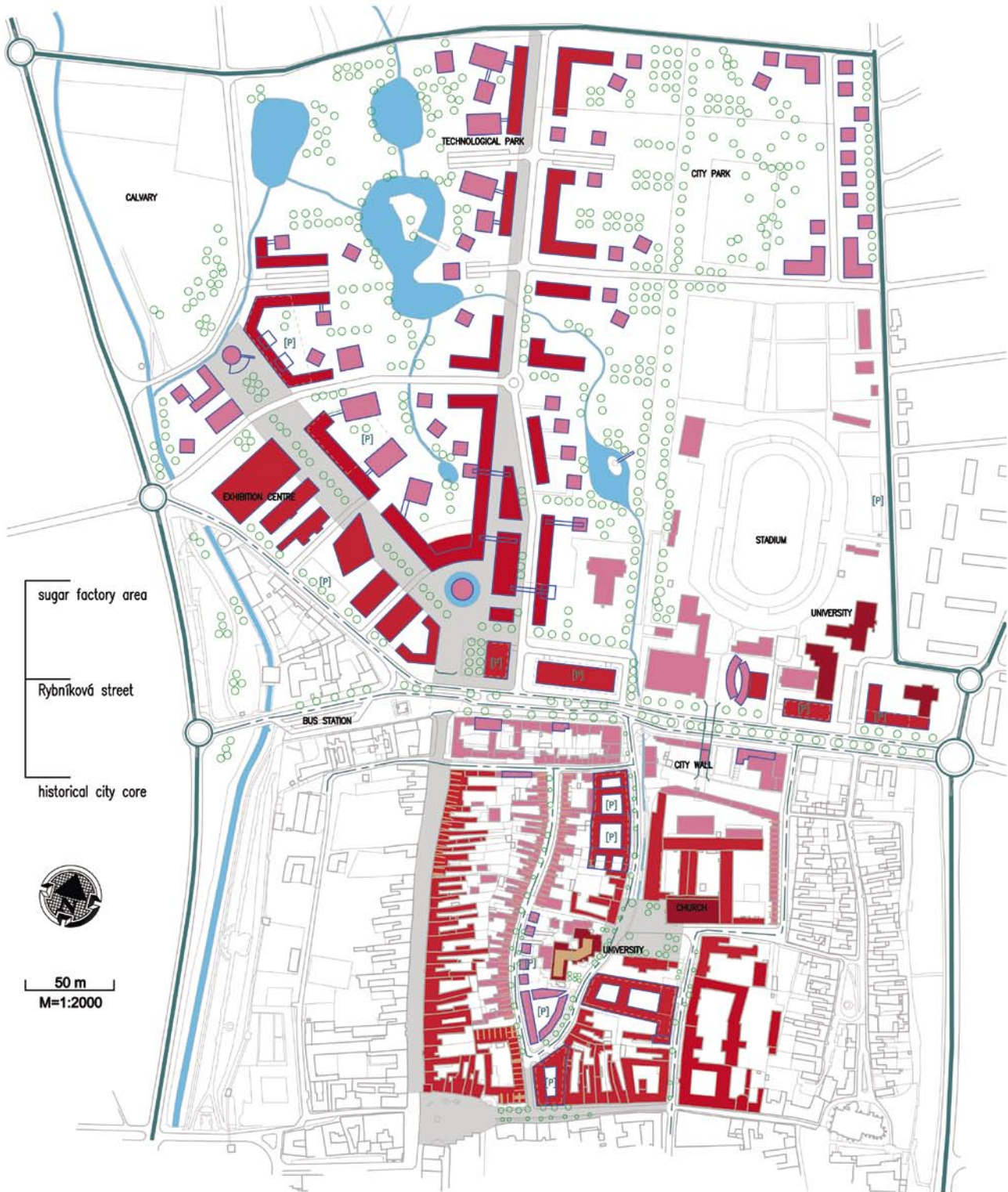
The planned development in the central area fully respects the baroque urban structure of the historical city centre and preserves its compactness, texture and urban hierarchies. It also respects the character of the industrial development of the 19<sup>th</sup> century but proposes to demolish buildings without historical (or city image) value.

The scale of the planned development on the site of the old sugar factory has the character of an addendum to the historical structure, providing the components of urban fabric which are missing there. Optimisation of functions and the provision of functions with city-wide relevance in the new development ('city of short distances') were a main design principle. Mixed use is therefore a very important aspect of the plan and all major urban functions are integrated into it: housing, shops and services, schools, cultural and religious centres, administration, sports and recreation, public green spaces and water features.

Although in the historical centre there are no significant changes of urban functions, the sugar factory area loses its industrial character and its function is changed: an exhibition area, a technological park, a university campus, service facilities and housing are planned there. The new development around Rybníková street will have a distinctly mixed-used character.

### **Transport**

The provision of a multifunctional structure is based on the principle of pedestrian accessibility and optimisation of commuting distances. Of further importance is an overall design of the city without barriers, which is accessible for all groups of people including the elderly, parents with children and the



## Local Ecocity Masterplan

## ECOCITY TRNAVA

### LEGEND:

- Urban structure
- existing structures
  - proposed new structures
  - recommended rebuildings
  - possible addition of garrets (floors)

- Height of buildings
- 1-2 floors
  - 3 floors
  - 4 floors
  - 5-6 floors
- Natural elements
- water
  - trees

### Transport

- main road
- traffic calming
- main pedestrian areas and paths
- underpass / overpass
- on-ground parking
- underground parking spaces

Figure 4.5.2:  
Masterplan Trnava



disabled. Thus, for the transport system the requirements of the following participants and elements of the transport system lead the design (in the order stated): pedestrian traffic (pedestrian zones, ‘woonerfs’ or home zones<sup>14)</sup>, mixed-use areas, car-free zones, car-reduced zones and recreational pedestrian routes); bicycle traffic (segregated cycle paths, mixed-use streets, possibility to cross pedestrian areas and mixed-use lanes); public transport (city bus routes and stops, stops for other bus routes, regional bus station and multi-functional strips for buses and bikes); car traffic (main roads and other roads, mixed-used street areas, streets with calmed traffic, boulevards and crossings with traffic lights); and parking facilities (multi-storey car parks, carparks above and under ground, on-street parking and the possibility of secure bicycle parking). These parking facilities (in the form of large multi-storey car-parks) are

<sup>14)</sup> a traffic calmed street or area, with a speed limit of 10 km/h and legal priority for pedestrians and cyclists

Figure 4.5.3  
Transport plan

- pedestrian zone
- pedestrian preference
- mixed use
- car-free housing
- parking house
- on-ground parking
- underground parking
- on street parking
- citybus line
- bike / bus strip
- segregated bike line
- wall walk
- main roads
- other roads
- citybus stop
- bus stop
- reg. bus station
- bicycle parking
- traffic lights



located at strategically beneficial spots on the border of the area, with only limited underground parking facilities provided in the historical centre of the city (see Figure 4.5.3).

Special attention has been paid to traffic organisation by designing different areas: car-free or car-reduced zones and traffic-calmed streets. Speed reduction and traffic calming is guaranteed through the design of the road layout, especially on the Rybníková boulevard. This is achieved using elements recommended by previous research work undertaken at the Slovak University of Technology in Bratislava [STUBA; Bezák, 2004] – narrow lanes for cars, coloured and reflective separation lines, rumble strips on the road, rough paving, humps, longitudinal parking, etc. (see Figure 4.5.4).

### Energy and material flows

The potential for energy saving in ECOCITY Trnava is enhanced through better thermal insulation and the use of alternative energy sources. Since there are no specific requirements for low energy houses/buildings in Slovak legislation and standards, the buildings were designed to fulfil the conventional values.

The ECOCITY will be supplied mainly through existing heat/energy networks and supplies (mainly central heating system, gas, oil and electricity). Due to the desire to keep a balance between existing supplies and new sources, renewable energy use represents only approximately 5%. In addition to solar energy (passive and active), heat pumps can be engaged, utilising waste heat from buildings and from the ground. Wood chips and wind power are also proposed to cover some of the energy demand, excluding the city core.

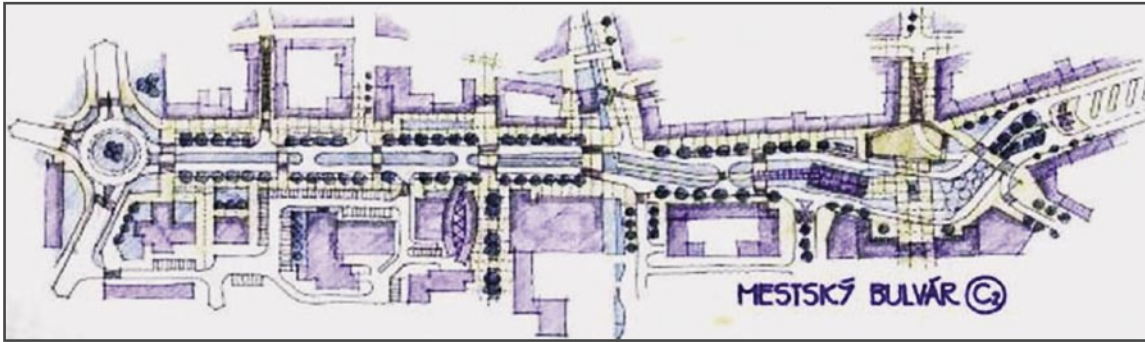


Figure 4.5.4  
Traffic calmed  
boulevard

The possibilities for the application of ECOCITY energy principles in the historical part of the town are limited. Most of the buildings are on the national heritage list which means that the possibilities for improving their thermo-technical properties through additional insulation are minimal. Hence energy demand for heating remains very high in comparison to eco-building standards.

The introduction of natural components through urban 'bio-corridors' enables the integration of water and greenery into the city environment along the Trnavka stream and along Hornopotocna street. The basic water source for the new retention-ponds in the sugar-factory area will be the Trnavka. Rainwater from roofs and other sealed surfaces will be absorbed into the soil in planting areas, supporting the greenery. Recycling of used ('grey') water is proposed in the new buildings with the aid of local rainwater filters. It will be used where drinking-quality water is not required.

### Socio-economy

In order to overcome the complex implementation problems of the ECOCITY, it will be necessary to involve all parties and for them to co-operate closely. The main stakeholders are the municipality, investors, citizens, landowners, entrepreneurs, developers, universities and the chambers of commerce. The creation of a public-private partnership could be a key for better co-operation between the above-mentioned partners. Consequently, it has the potential to solve many implementation problems. However, caution should be exercised. The practical implementation of the public-private partnerships is not easy, since hardly any such arrangements have yet been put into practice in Slovakia. It is thus necessary to gradually develop the culture of partnerships, especially between the municipality and the potential investors.

The concept of ECOCITY Trnava was created and discussed with the aim of benefiting the community of Trnava on different physical and psychological levels. These included the construction of new housing and urban renewal; the implementation of transport ideas such as the Rybníková boulevard, car-free areas and traffic calming; improved energy and waste concepts; and soil decontamination.

Two participation meetings were organised with focus groups (citizens from civic organisations, clubs, schools and representatives of NGOs) to inform them about the ECOCITY project and discuss how the citizens' values can be met in the project. Two further participation meetings were held with local councillors and civic administrators from the departments of environment, planning, transport and economic relations to discuss the inputs from the city strategy perspective as well as the strong and weak points of the ECOCITY scenarios. The ECOCITY Community Forum also commented on the scenarios during one of the participation meetings.

### 4.5.3 Project outcomes – key elements

In the design of ECOCITY Trnava, principles were used which aim to unify the central area of the city in the near future. Currently there are very different functions: the historic heart of the city, fields with under-utilised sport utilities, the university and the sugar factory (brownfield). These will all be connected by a road of regional importance (Rybníková), with the dimensions and character of a boulevard with social functions. The axes of water and greenery cross this road as well as some urban built elements.

Key element 1	Key element 2	Key element 3
Street as a connecting factor, not as a barrier	Reintroduction of water element into the public space	'Green' revitalisation of the historic city core
<p>Rybníková street today is both a psychological and physical barrier with heavy transit transport, separating the historic city core and the new development areas of educational institutions, sports facilities and the sugar factory area to be redeveloped as a part of the ECOCITY project. Its proposed transformation into an urban street, or boulevard, with smooth but slow car transport (typically without lorries and transit traffic) creates conditions for street life, pedestrians and cyclists. Mixed use – services, shopping and culture – at ground level in buildings is provided near dwellings and workplaces to attract people.</p>	<p>Reintroducing and managing water in the public spaces and green areas prevents such negative impacts of urbanisation as soil contamination and local storm water floods. Water is retained in the urban area and used for landscape functions.</p> <p>The dysfunctional sedimentation basins of the old sugar factory will be transformed into three ponds to retain the rainwater. Combining greenery and linear water features creates bio-corridors connecting the city with its surroundings while the stream re-appearing in the medieval streets restores their historical image and improves their micro-climate.</p>	<p>The 'green' revitalisation of the historic city core not only emphasises the cultural values and conservation of the historical heritage, it also brings ecological values into the historic city fabric.</p> <p>This means more trees and green in the streets and courtyards, new parks, revitalisation of the stream, increased area of unsealed surfaces, more environmentally friendly buildings (also reconstructed ones) and last but not least calmed traffic with car reduction – to give the streets back to the people.</p>