

FINAL DEMONSTRATION ACTIVITY REPORT

WP 5.3

**THE CITY OF ŁÓDŹ
2006-20011**

ANNEX 4

Implementation of the Blue-Green Network Concept

**DEPARTMENT OF APPLIED ECOLOGY, UNIVERSITY OF ŁÓDŹ
CITY OF ŁÓDŹ OFFICE**

ŁÓDŹ, 15 APRIL 2011

CONTENT:

1	Introduction	3
2	Blue-Green Network Concept	3
3	Recommendations to the Study of Conditions and Directions of Spatial Development of the City of Łódź (17 th June 2009)	5
4	References	9

1 Introduction

Originally SWITCH only planned to operate in Łódź at a demonstration scale. However the demonstration projects became an inspiration for several developers, architects, artists, spatial planners, NGOs, scientists and others, and initiated bottom-up activities that contributed to spreading the SWITCH expertise and prompting ideas for implementation of innovative approach around the city. Moreover, the Learning Alliance interest in the solutions proposed by the SWITCH project contributed to extending its activities to the city scale, including development of recommendations for the city's sustainability planning based on water resources as a key element. This has proved vital to the uptake of integrated urban water management at a larger scale. As a result, the city-scale concept of a Blue-Green Network was developed in 2008 (SWITCH Brochure, 2008; Zalewski & Wagner, 2009, Wagner & Zalewski, 2010, Zalewski & Wagner, in press).

The Blue-Green Network emerged in the course of the project as a framework that extended the initial scope of SWITCH to wider city development processes. Thanks to this framework, water became an element of the city agenda, and innovations developed under SWITCH started to be foreseen for a broader application in the future.

In February 2009, the concept was presented at a conference organized by the Mayor of Łódź. The city management and stakeholders considered it as a promising idea for sustainable development of the city. Information about the Blue-Green Network was disseminated to local media and was presented during various meetings and local, regional and international events held between 2008 and 2010, including the World Water Week in Stockholm and the International Water Week in Singapore. In Łódź, several meetings were held with a wide range of stakeholders and the idea continued to capture local interest. An effort was also made to reach politicians through meetings with members of three City Council committees and other stakeholders participating in the spatial planning of the city.

In June 2009, as a result of the Learning Alliance action, the Concept was submitted for its inclusion into one of the key strategic documents for the City of Łódź, i.e. the Study of Łódź Conditions and Directions of Spatial Development of the City of Łódź (ERCE 2009). It has been officially approved for implementation.

2 Blue-Green Network Concept

The Blue-Green Network (Fig. 1) is a concept of urban space development for the city of Łódź, which complements the traditional city planning concept of a green belt around the city. Spatial organization proposed by the concept is based on a network of existing and (potentially) restored rivers and their valleys, and green areas (agricultural areas, parks, old orchards, wastelands, degraded areas and others) as a basis for the city spatial planning, sustainable development and adaptation to global climate change. Buffer zones around the green areas and rivers, allowing for more intensive urban functions, will contribute to the protection and maintenance of the continuum of ecological processes within the network.

In the new challenges that Łódź is currently facing, the concept provides new perspectives for reducing threats and strengthening opportunities for sustainable development and adaptation to global climate changes. The new public space will contribute to several social and environmental functions, such as:

- increasing the number of areas for recreation and psychophysical regeneration, with better access from each section of the city, contributing to promotion of healthy life styles and better quality of life;
- better conditions for developing zero-CO₂-emission alternatives for individual and public transportation by providing space for bike routes, pedestrians and trams;
- providing areas for stormwater management through ecohydrological measures and ecosystem biotechnologies, such as application of biofiltering systems, constructed wetlands, river rehabilitation, building reservoirs with increased capacity due to phytotechnology applications (the use of plants to address technological challenges), and other measures. Increased retention of purified stormwater in the city landscape will result in lower runoffs during stormwater events, lowering the costs of investments in stormwater infrastructure, reducing economic losses after flooding, and improving functioning of the WWTP and the city rivers. This approach constitutes a flexible and cost-efficient adaptation to global climate change;
- improving humidity, air quality and microclimate in the city to contribute to a healthier environment and to reduce the number of cases of asthma and allergies;
- protection and revitalisation of the historical, environmental and cultural heritage of the city, contributing to improvement in its attractiveness, aesthetics and quality of life.

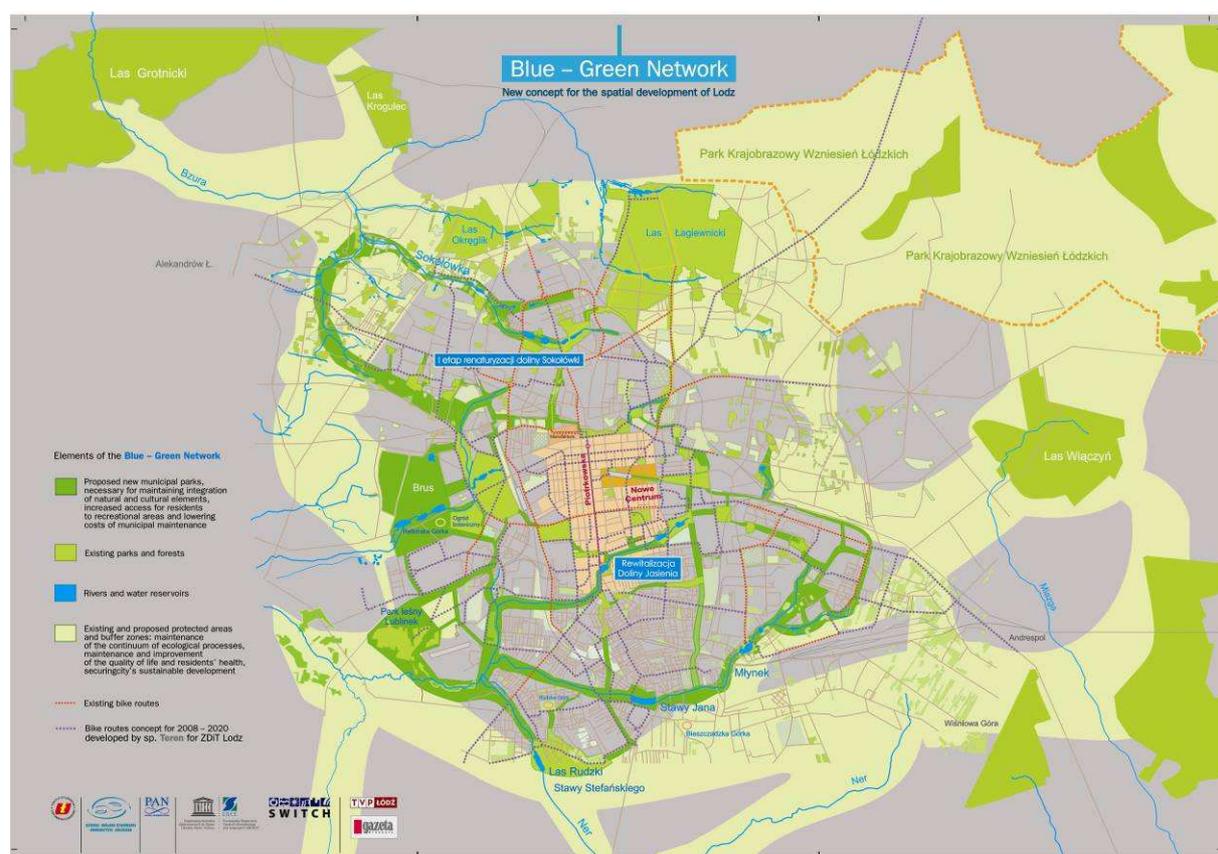


Figure 1. Blue-Green Network in Łódź City (dark green - proposed new municipal parks; light green - existing parks and forests; blue - rivers and water reservoirs; yellow - existing and proposed protected areas and buffer zones; red dotted line - existing bike routes; violet dotted line – proposed bike routes)

3 Recommendations to the Study of Conditions and Directions of Spatial Development of the City of Łódź (17th June 2009)

1. General Information

- 1.1. This application is a result of multi-annual research carried out by Łódź scientists representing the University of Łódź, the International Institute of the Polish Academy of Sciences – the European Regional Centre for Ecohydrology under the auspices of UNESCO, the Nofer Institute of Occupational Medicine, the Medical University, and the Technical University of Łódź.
- 1.2. This application is a result of a meeting of representatives of scientific circles, experts and key decision makers involved in management and conservation of Łódź's natural elements to facilitate the City's sustainable development. The meeting took place on 28 May 2009 at the Department for Environmental Protection and Agriculture of the Łódź City Office, under the patronage of Mr Jerzy Kropiwnicki, the Mayor of the City of Łódź (Annex 1: the List of the participants of this meeting). This activity was delivered under an EU SWITCH Project (GOCE 018530).
- 1.3. Within its scope, this application refers to the application of 23 April 2009 submitted at the Teren Company: the Guidelines to the Study of Łódź Conditions and Directions of Spatial Development of the City of Łódź with respect to Sustainable Rainwater Management, and it remains consistent with this application.

2. The Subject of this Application

- 2.1. **We request that the Study of Łódź Conditions and Directions of Spatial Development of the City of Łódź (hereinafter referred to as the Study) should take into account the studies concerning Łódź's natural elements carried out by Łódź scientists, and in particular:**
 - 2.1.1. The Blue-Green Network (the concept developed in 2008 by the Faculty of Applied Ecology of the University of Łódź and the International Institute of the Polish Academy of Sciences – the European Regional Centres for Ecohydrology under the auspices of UNESCO in Łódź, which was provided to the Teren Company in the first quarter of 2009);
 - 2.1.2. Analysis of the range of the valley areas within the territory of the City of Łódź, and principles of their management (the study carried out in 2008 by a team chaired by Professor M. Zalewski, the Faculty of Applied Ecology of the University of Łódź, the International Institute of the Polish Academy of Sciences ERCE/UNESCO and the Technical University of Łódź, which was provided to the Teren Company by the City's Urban Planning Office at the initial stage of the Study development);
 - 2.1.3. The geobotanic inventory and zoological valuation of the naturally valuable areas within Łódź's administrative borders that so far have not been under conservation in order to select the sites to be covered by legal protection (the study carried out in 2009 by a team chaired by Professor J. Kurowski: the Faculty of Geobotany and Vegetation Ecology of the University of Łódź, the Faculty of Nature Conservation of the University of Łódź, the Łódź Hills Landscape Park and the City Botanical Garden; this paper was submitted to the Teren Company by the Department for the Environmental Protection and Agriculture at the initial stage of the Study development);

- 2.1.4. The Green Circle of Tradition and Culture (the concept developed for the purpose of the Łódź Spatial Management Plan of 1993);
- 2.2. **We request that the Study should take into account the spatial solutions that will enable to maintain continuity of the Blue-Green Network's elements within the City, including their buffer zone in the adjacent municipalities and Łódź Region, and the source areas of Łódź rivers in the eastern part of the city outskirts, which ensure that the city's natural system operates appropriately, protect elements of special natural value, and provide necessary ecological benefits and sustainable development of Łódź and the Region. It is necessary that the spatial continuity with the following areas should be maintained:**
- 2.2.1. The Cultural and Natural Circle of Łódź Metropolitan Area (the concept developed by the Marshal's Office in Łódź);
- 2.1.4. The Łódź Region Circle related with the valleys of the Warta, Bzura and Pilica.

3. Justification of the Application

1. **The Blue-Green Network** is a concept that combines and extends the already existing publications concerning natural elements and green architectonic elements of Łódź and Łódź Region (see 2.1, 2.2). This concept benefits from Łódź's location on the borderland of the first order watershed, and where possible, assumes using the restored system of rivers and green areas of the city as a basis for a functional, economic and logical organization of space. Retention of rainwater treated with an aid of ecosystem biotechnologies, which is a valuable asset for Łódź being the city located on the watershed, is a key and new element of this organization.
2. **Taking the Blue-Green Network concept into account in the Study of Conditions and Directions of the Spatial Management of the City of Łódź is necessary to ensure the City's sustainable development in the meaning of the UNO Agenda 21 and the EU Sustainable Development Strategy.** The principle of sustainable development obliges the EU and UNO member states to implement in their policies horizontal measures based on sound management of cultural and natural resources in the local and global scale in a way that will ensure that the needs of the current generation shall be met without decreasing opportunities available to future generations. Decisions concerning management of Łódź's natural elements are of a key importance to the City's sustainable development, and they will generate long-term impacts on its functionality, aesthetics, identity, dynamics of its development, ecological security, living standard and health of its inhabitants, which will contribute to Łódź's competitiveness in the country and region (the European Union).
3. **Conservation and sustainable management of the natural elements in Łódź is a basis for adaptation to global climatic changes, in accordance with the strategy proposed by the European Commission.** The EU White Paper identifies a two-staged strategy of actions based on the results of integrated scientific studies, which are specific for the individual regions, and necessary in order to strengthen the Union's capacity to adapt to the changing climate. The results of the studies conducted under the EU SWITCH Project demonstrate that due to the location on the first order watershed and in the central region of Poland, which is vulnerable to desertification process, maintaining functional

connections among the natural elements and river valleys in Łódź (the Blue-Green Network) and rainwater retention are key elements to adapt to climatic changes.

4. **The Blue-Green Network is a basis for improving living standard and health of Łódź inhabitants.** Improved access to recreation areas for inhabitants is an important tool to promote health-oriented behaviours, which is one of Łódź's top priorities. Statistics for our city indicate that among major Polish cities, Łódź has the highest rate of diseases that can be prevented by regular physical exercises and a possibility of psycho-physical regeneration (such as cardiovascular diseases, tumours, psychic disturbances resulting from excessive stress). Improved health conditions are possible to achieve through conscious development of natural elements in the city, which provide recreation areas for its inhabitants, and their promotion. Presence of green areas and water reservoirs in urban areas also improves the city's micro-climate by increasing air humidity and reducing factors causing asthma, allergies and other health problems.
5. **Maintaining continuity of the natural system provides a basis for urban economic development.** A research conducted in Europolies between 2007 and 2008 indicated that accessibility to green areas of high quality is the most important factor contributing to selecting the place of residence. These results have been confirmed in social surveys delivered among Łódź inhabitants. Green areas provide aesthetic and cultural values to their inhabitants. The European research has confirmed that the living standard, which translates into quality of the natural environment ensuring health and possibility to relax, is a key factor that attracts creative individuals to the cities, which significantly contributes to acceleration of metropolitan development and improved competitiveness.
6. **The Blue-Green Network responds to social expectations concerning organisation of public space, green and recreational areas of Łódź inhabitants.** The scientific research delivered by Łódź scientists (the Grant of the Mayor of the City of Łódź implemented by the Department of Geographic Sciences) and social consultations with 10 non-governmental organisations (II ERCE PAN/UNESCO) have indicated an important role of the Blue-Green Network in the City's spatial management. Łódź inhabitants decided that the green areas and water ecosystems constitute an attractive element of the City, which provides a basis for implementing such infrastructure components as cycle lanes, pathways, turf grounds for playing team games, picnic sites, cross-country skiing routes, culture zones, cafés and restaurants, street greenery, green yards (in particular the yards of the buildings in the city centre, where options to develop new green sites are limited). A possibility of developing educational paths for children and youth, and educational sites concerning systemic innovative solutions in the field of sustainable planning of urban space for the community, is an additional advantage. The respondents also expressed the need to maintain natural and historical complex in Księży Młyn, whose landscape perfectly fits the adjacent areas, and develop the grounds surrounding the EC4, to provide a basis for Łódź's identity and its future development.
7. **Conservation of Łódź unique and valuable nature and landscape complexes and ecological sites covered by the Blue-Green Network, and upgrading them to obtain higher forms of environmental protection are only possible where they will be functionally connected with major green areas constituting their external protection zone.** The geobotanic inventory and zoological valuation delivered in 2008 for the area of the City of Łódź indicated that there are numerous sites holding valuable natural resources. 4432.64 hectares have been envisaged for conservation, and they include city forests and naturally and culturally valuable river valleys in particular. The Blue-Green Network constitutes a natural protection zone for these sites. It facilitates conservation

and preservation of these valuable natural resources, their appropriate functioning and sustainable recreation-related use of specific elements of this system.

8. **Functioning of the Blue-Green Network in Łódź is only possible where it shall be connected with natural sites of the adjacent municipalities and region.** This will ensure continuity and maintenance of natural processes which contribute to ecological benefits to the inhabitants of the city and region.

4. Benefits resulting from the Blue-Green Network

Improved living standard and health of the inhabitants

- Greater access to green areas for residents of all the districts and housing estates, which will ensure their good living standard in the conditions of progressing climatic changes and urbanisation;
- Developing opportunities of every-day psycho-physical regeneration without the need of using car transport, and developing an attractive network of walking and cycle lanes;
- Reducing the risk of occurrence of development-related defects in children, asthma and allergies;
- Improving the living standard of the inhabitants and the City's aesthetics, in the degraded parts of Łódź in particular (social inclusion);

Improved quality of the environment and reduced cost of management

- Improving micro-climate, air and water quality, and biodiversity in the urban areas;
- Reducing the risk of inundations and the related cost, during intensive rainfall periods by intensification of rainwater retention in the urban space;
- Improving urban vegetation and reducing the cost of its maintenance due to larger quantities of water kept in the landscape;
- Reducing rainwater run-off through a combined sewer system which improves operation and economics of sewage treatment and limits negative impact on the rivers during torrential rains;
- Connecting green areas within the city and around it, which improves integration of ecological processes (ecological corridors, biodiversity and city ventilation);

Preservation and regeneration of cultural heritage

- Enhancing the idea of integrated regeneration under the Integrated Regeneration Programme for Łódź Inner City by including natural elements which are historically connected with Łódź identity next to architectonic elements;

Improved attractiveness of the City and sustainable development

- Enhancing attractiveness of Łódź as a residential area, which will translate into attracting professionals and creative individuals, keeping and attracting capital, urban development and improved competitiveness in the region;
- Creating new jobs for the needs of organisation and maintenance of the Blue-Green Network system;
- Improving ecological and public security, reducing social costs resulting from diseases and creating conditions for sustainable development in the meaning of the UNO Agenda 21 assumptions;

4 References

- ERCE. 2009. APPLICATION: Recommendations to the Study of Conditions and Directions of Spatial Development of the City of Łódź with respect to Management of Łódź's Natural Elements: the Blue-Green Network. 17 June 2009
- Wagner, I., Zalewski, M. 2009. Ecohydrology as a Basis for the Sustainable City Strategic Planning - Focus on Łódź, Poland. *Rev Environ Sci Biotechnol.* 8: 209-217. DOI 10.1007/s11157-009-9169-8.
- Wagner I. & Zalewski M. 2011. System solutions in Urban Water Management: the Łódź (Poland), perspective. In: Howe C., Mitchell C. (eds). *Water Sensitive Cities. Cities of the Future Series.* IWA. pp: 224
- Zalewski M., Wagner I. 2011 (in press). Blue-Green Network. The concept.