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Creating conditions for sustainable metropolitan nature system in Lodz

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CREATING CONDITIONS FOR SUSTAINABLE METROPOLITAN NATURE SYSTEM
IN LODZ

Lodz is Poland's third largest city (745 thousand population, 294 km² in area). Despite a serious economic crisis that affected the local economy in the 1990s, the city remains one of the most important conurbations in Poland.

Dense network of rivers and large forested areas located on government-owned land were the decisive factors for the Government of the Kingdom of Poland in the early 19th century to select the agricultural township of Lodz, together with other locations on the Polish territory, for textile "industry" development. The government's decisions at the time ensured favourable development conditions for weaving masters, who started settling in Lodz. In the industrial era, our city became a powerful textile manufacturing centre. Rapid expansion was driven by the cotton industry that manufactured cheap fabrics for the Eastern markets. After World War II, in the communist era, the textile industry, recognised to be of a lesser economic importance, was not sufficiently modernised, and its employees were underpaid. The city did not accumulate modern capital and declined to achieve pro-investment wealth levels. In effect of the socio-economic transformations and the collapse of the Eastern market in the early 1990s, Lodz suffered a deep structural crisis. What had been the monocultural source of the City's development, at the end of the day caused its decline. Absence of administrative protections for the textile industry that would counterbalance the growing sense of hopelessness, as well as declining economic conditions, effectively blocked the necessary transformation processes.

The City has identified new development sources being the industriousness of its citizens, capability of attracting major investors, and privileged geographical location in the centre of Poland. The City's functions have been diversified. Currently, in Lodz - as in other large cities - the tertiary sector prevails, although industry still plays a significant role.

Lodz is a city with many faces; it intertwines the cultural and natural heritage with the specific substance of post-industrial development. Urbanised areas (19th century tissue of the inner city) are found next to open areas. Urbanised land covers 46% of the city surface, while undeveloped lands take up 54%. Forested areas account for 8% of the city surface, while the figure for arable land is as high as 43%. Industrial developments often directly neighbour on valuable wildlife areas. For instance, a small natural lake is found next to Dell's factory. The

City still boasts original swards, scarcely found in the Polish landscape. The cityscape is added variety by river valleys, natural water bodies, remnants of the wild forest in municipal parks and suburban forests, and nature reserves in between urban developments.

The most valuable wildlife and landscape terrains cannot be left undeveloped, since they are potentially at the risk of landscape degradation. For many years the river valleys in Lodz were being devastated. After the existing marshlands were buried, unique flora became extinct. The elements that have survived need to be developed following careful consideration of their ultimate functions. Any developments to be built in these areas have to meet expressly specified requirements designed to protect their existing values. One such requirement is to forswear building the various perimeters. Concrete fences that from time to time appear even in the most scenic landscapes, e.g. in the river valleys, prevent migration of both plants and animals. They constitute not only visual, but physical barriers as well.

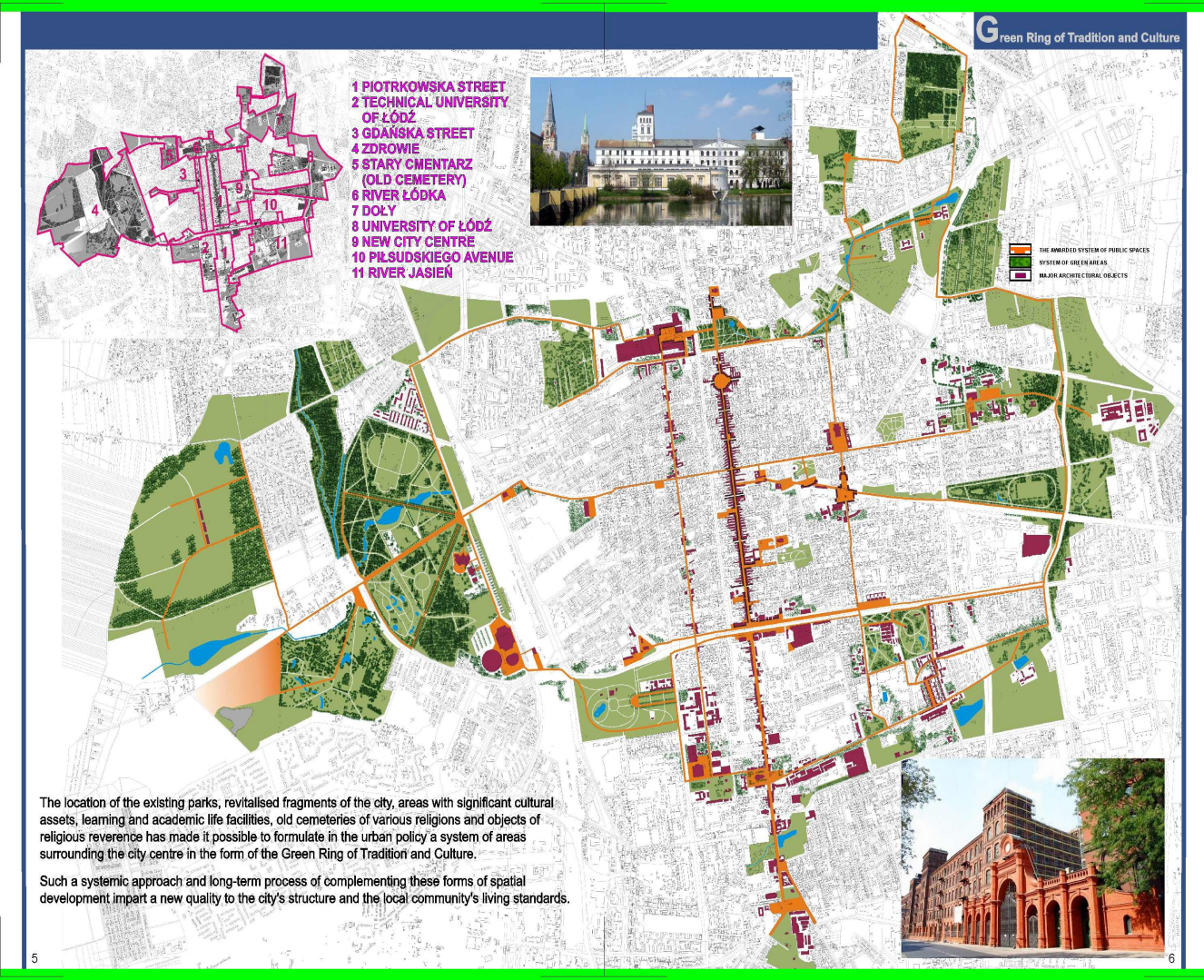
Our intention is to protect the natural environment and harmoniously integrate it into the urban tissue through a variety of measures. The City's sustainable development requires optimum functionality of the ecosystems under the circumstance of urban planning pressure. The greatest threat for valuable wildlife areas is uncontrolled development, most frequently by individual investors, which often permanently degrades natural and landscape assets. At the same time, we cannot treat all undeveloped areas in the city as listed lands protected against development. The need to contain the existing urban sprawl requires informed decisions of the City authorities that would help to make urbanised areas in Lodz more attractive and available for housing development.

For this purpose, it is requisite to introduce adequate provisions into the currently updated "Lodz Spatial Development Framework". A research team from the University of Lodz has already designated the most valuable natural and wildlife/culture areas within the City's space. In the course of a stocktaking process, 32 protection-worthy objects were identified. First of all, these are the areas of marshy habitats, i.e. river valleys or upper river sections that, as a rule, do not lend themselves to urbanisation. They should be protected on "as is" basis and as such included in the City's urban nature system. These areas are separated from one another, do not merge into a self-contained whole, and insufficiently improve the environmental quality. Nevertheless, they have a potential that in the future will produce multifaceted effects, after many partial projects have been implemented and the entire system has been integrated into the City's organism.

In the performance of the policies designed to improve the quality of life and implement the principle of sustainable development in the City, two concurrent and, in some

areas, overlapping strategic projects are being completed with a view to developing the City’s natural elements.

The earlier project is intended to harmoniously integrate into the system valuable historic, urban planning, natural, and landscape elements that add new value to Lodz’s space. The project’s aims and objectives were formulated in 1993 in the City’s spatial development plan titled „Green Ring of Tradition and Culture”.¹



¹ Picture 1. Green Ring of Tradition of Culture

The areas incorporated in the spatial structure of the Ring have been selected from among elements of Lodz's cultural and natural heritage that highlight the City's identity. The idea of the Ring, still valid and inspiring, consistently appears in the various documents, e.g. in „The Lodz Spatial Development Framework”, scientific dissertations, and other specialist study papers. The space of the Ring, together with Piotrkowska Street that cuts through it, with the adjacent quarters, and the East-West axis finally formed in the first decade of the 21st century constitute the core of public spaces in Lodz which concentrates the social life of the City. Since the beginning of the 19th century Piotrkowska Street has been the City's compositional axis. The Ring's structure incorporates certain discontinuities which are being gradually filled with connective elements. This role is attributed to: cycling paths, pedestrian passages, allotment gardens, and new parks and squares.

The concept of the Ring is founded on the idea of developing the environs of Lodz's two major rivers: Lodka and Jasien. The valleys of these two rivers were the original locations of the first factory settlements that gradually transformed into large textile industry compounds incorporating, e.g. factory buildings, factory owners' villas and palaces, workers' houses, schools, hospitals, parks, and even churches. Such compounds, which have almost completely survived in their original form, are being gradually revitalised. This helps to highlight and increase their value in the city's space. A series of projects designed to enhance the city's spatial quality have already been completed, others are pending. The most important completed projects include the following:

- redevelopment of the former I.K. Poznański's factory compound into a service and shopping centre „Manufaktura”,
- construction of a monument commemorating the Litzmannstadt Ghetto victims on the site of the former Radegast railway station,
- arrangement of the Survivors' Park in the Łódka River valley, where 400 trees have been planted in the memory of those who survived the hell of the Litzmannstadt Ghetto, and built has been a monument of Poles Who Saved Jews,
- extension of the academic quarters of the University of Łódź and the Technical University of Łódź together with the system of public spaces,
- construction of cycling paths and development of new public spaces.

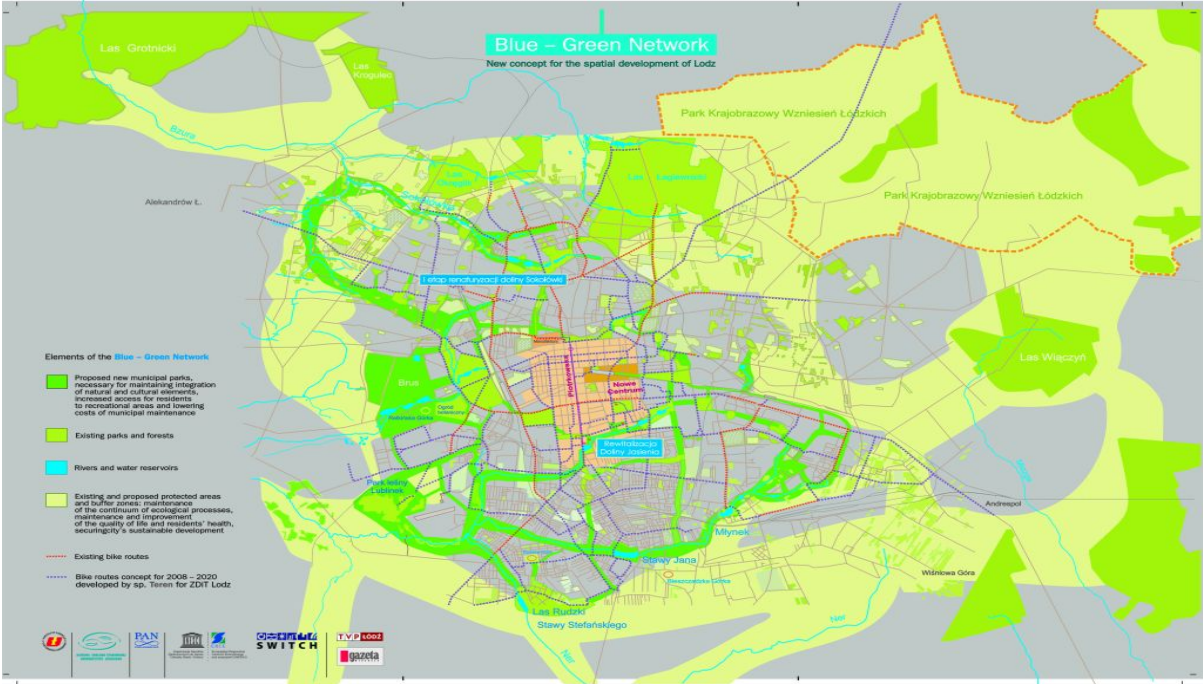
All of the foregoing elements help to significantly improve the quality of degraded urban space and complement one another in the cityscape. The “Green Ring of Tradition and

Culture” project is an example of an urban planning idea that has a chance of being implemented for having been included in the City’s spatial policy.

Apart from the very project implementation, it is equally important to disseminate information of the Ring, which will help to improve citizens’ awareness, deepen the knowledge of the City’s cultural heritage, and consequently lead to increased investment and revitalisation efforts.

The decisions adopted by the City authorities in respect of developing natural and cultural elements of Lodz are among of many taken actions: infrastructure, transport, economic and social. Are crucial to its sustainable development and will have a lasting impact not only on functionality, aesthetics and identity of the city, but also its development dynamics, ecological safety of quality of life, health, population, and thus the competitiveness of the country and the region.

Recently, the Lodz Ecohydrology Centre has developed a concept proposal to gradually build in Lodz a “blue-green network”² interconnecting the City’s parks, forests, and water bodies and greenery areas. This is a spatial development idea, complementary to an earlier urban planning concept of green rings around cities, that utilises the fact of Lodz’s location in the borderland between the watersheds of Poland’s two main rivers: the Vistula and the Oder. The project envisages that the existing and reclaimed, to the extent possible, river system and greenery areas in the City will provide the basis for functional, rational, and economical organisation of the urban space.



² Picture 2. Blue – Green Network

In the past, today's Lodz used to be crossed by 18 rivers and streams. In the 19th century they added variety to the industrial cityscape and helped alleviate adverse effects of manufacturing processes. At present, in the city centre they are mostly hidden in underground sewers.

Today, at the onset of the 21st century, with the cooperation between the City authorities and scientists from the Department of Applied Ecology, University of Lodz, and the International Institute of the Polish Academy of Sciences - European Regional Centre for Ecohydrology (ERCE) under the auspices of UNESCO in Lodz, the hope reappears that the rivers will be the highlight of our city.

The underlying idea of the "blue-green network" is to uncover the Lodz rivers and adequately develop their valleys so that they become green wedges that squeeze into the urban development. A new element of the project is the idea to retain precipitation waters purified with the use of ecosystem biotechnologies. The measures targeting better use of water resources will be complemented by projects designed to create new parks to be located on so far unused and degraded urban lands, and to build interconnecting cycling paths and walkways.

The concept proposal for the "blue-green network", already in the implementation process, was conceived in the course of the City's active participation in the international SWITCH project. The project's objective is to ensure that every citizen of Lodz should live just a few minutes' walk from green urban areas that merge into an easily accessible network. In this way active recreation, requisite to improve public health, will be more easily accessible to all Lodzians. The network's elements so prepared and interconnected, such as: cycling paths and walkways, park paths and forest tracks will form an enormous number of options how to use urban greenery areas. Some of the propositions suggest that the projected urban greenery network should be connected with the suburban forests in Grotniki, Łagiewniki, Wiączyń, and Brus.

Opinion polls show that city dwellers highly appreciate the possibility of living in green areas. Therefore, the City of Lodz is taking up the challenge and developing projects that harmoniously integrate the residents' priorities with effective urban space development. Cooperation with developers helps to popularise the idea of building on the outskirts of the City housing buildings lower than the surrounding trees. This principle is more and more commonly applied. So far undeveloped urban spaces are increasingly developed with greenery and fountains which improve spatial quality and make the spaces more resident-

friendly. This makes it possible, at least to some extent, to ease the heat in the hot “urban desert” and enable people to move during the summer heat.

Measures have been taken to renaturalise the beds of the rivers flowing across urban areas and develop the surrounding land. Retention of impure stormwater and other waters carried away in the sewers requires that they be purified applying ecological biotechnologies. All projects concerning water bodies in Lodz are required to ensure good purification of the collected water in such a manner that will not disturb the ecosystem.

One of the housing estates in Lodz – Julianów – is the location of an avant-garde ship-shaped block of luxury flats „Marina”. The building is equipped with a sedimentation and biofilter system that allows rainwater from the roofs and car park to be carried away into the ground, where it will be naturally filtered, and facilitate increased retention of water in the ecosystem of the Sokołówka River valley. The solutions so applied facilitate the project to renaturalise the River Sokołówka, relieve municipal rainwater collectors, and additionally increase landscape biodiversity in view of the fact that willow buffer zones have been applied (a willow variety that absorbs ground water toxins).

This project raised many controversies among citizens and experts alike. The key controversy is the excessive scale of interference with the river valley and inadequate size of the building in relation to the available space. The lessons learnt from this project strongly suggest that unique and innovative projects should be preceded by broad-scale consultations. This will help to avoid many mistakes and strengthen public support for the proposed transformations.

The Lodz Ecohydrology Centre for several years now has researched into the various issues found in the area of the city and looked for adequate solutions. The Centre consistently identifies the existing constraints and barriers and develops methods and tools necessary to overcome them.

Water-related issues in urban environment are not the only aspects being worked on by the Lodz Ecohydrology Centre. For 6 years the Centre has also dealt with the issue of new sources of energy. Lodz is the first Polish city to maintain a 60-hectare experimental SALIX plantation that is fertilised with sludge. In the initial stage the crop output per hectare reached 2 tons. With the monitoring and optimisation processes at present the crop output has risen tenfold, while the expected target crop output figure is 60 t/ha. The energy produced in effect of combusting SALIX wood will be absorbed by the municipal power system.

By taking up such challenges and enabling prototype project implementations, the City develops models that will help to achieve significant long term results. These measures are

promising, yet require long-term studies. At the end of the day, however, they facilitate applications of effective and innovative methods of the City's beautification, spatial harmonisation, and gradual improvements to the quality of life in the City.

The overarching objective of the measures expected to create the conditions for Lodz's sustainable development is to consistently improve the living standards in the City by designing and building a "good city". The term "good city" refers to such urban space that is environment-friendly, characterised by spatial order and adequate land use proportions, as well as one that enables smooth movement of people and is easily accessible from the outside. The restoration, renaturalisation, and internal and external accessibility improvement programmes that have been implemented in the last few years add new value to the urban space in Lodz.

New elements include, *inter alia*, the developing international Władysław Reymont Airport in Lodz, and a cross-city tunnel with an underground high-speed interregional railway station. These elements improve the City's external accessibility and enable Lodz to make better use of its geographical location in the centre of Poland and Europe.

To sum up we would like to point out that ecohydrology is a contemporary challenge to adjust the measures employed to serve man and the natural environment, especially in highly-urbanised areas. Natural resources are the element that is ancillary to man and community. The farther away from the urbanised city centre, the greater the role of nature and the ecosystems. Utilising the surviving elements of the ecosystem and the values it has produced, we should focus our actions so as to protect, complement, and harmonise them with the environment, as well as to trigger natural environmental renaturalisation processes. Any man-made infrastructure to be introduced into this system must utilise environment-friendly technological solutions.