

IMPLEMENTATION STRATEGIES FOR URBAN ENVIRONMENTAL ACUPUNCTURE ACTION PLANS - CITY OF CHORZÓW, RUDA ŚLĄSKA AND ŚWIĘTOCHŁOWICE

9.2021

LP, PP2





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1. INTRODUCTION

The idea of urban environmental acupuncture has been applied for the functional urban area of Chorzów, Ruda Śląska and Świętochłowice in form of the Action Plan based on the Transnational Concept of Action Plans for urban environmental acupuncture (D.T2.1.1) elaborated by the consortium of 10 partners from 5 countries of Central Europe.

It is necessary to provide a document which would include a strategy for implementation this Action Plan to put it into practice.

The strategy brings the conceptual ideas for implementation and it constitutes the first step of further activities. The next step will be an official commitment of the cities' authorities confirming the will of co-operation in the field of further strengthening of green and blue infrastructure in this area. The cities aim at protection and development of natural resources by the integrated environmental management of green and blue infrastructure with planting native and climate resistant vegetation in small spots selected all over the whole functional urban area.

2. RESULTS OF ACTION PLANNING

In the Action Plan for Chorzów, Ruda Śląska and Świętochłowice FUA intervention sites and the specific tasks have been identified as well as activities and resources needed to implement the proposed urban green acupuncture activities.

The Action Plan summarizes information on the current status of green areas in the functional urban area, describes the vision and objectives for the creation of green acupuncture sites, the procedure for initial site selection and assessment and selection of proposed sites and planning of individual activities. It also includes identification of measures for future development and maintenance of the proposed activities. Part of the action plan is the description of the participation of stakeholders, including residents in the preparation and selection of the proposed activities.

The system of urban environmental acupuncture for FUA of Chorzów, Ruda Śląska and Świętochłowice reflects i.a. the character of this area and answers to specific spatial problems.

The three cities within the Functional Urban Area have risen and developed based on heavy industry, mainly coal mining and iron and non-ferrous metals metallurgy. The spatial structure of these cities is a mixture areas of different functions, defined primarily by the development and long-term functioning of industrial plants. Industrial and post-industrial sites and areas, such as heaps and dumps, are located in the vicinity of urban centres. Post-industrial sites are a characteristic environmental resource, valuable also due to the succession of vegetation. The share of anthropogenic sites reaches 55.71% of the total area of the FUA.

The Functional Urban Area is set within the regional context of the Upper Silesian and Zagłębie Metropolis (Metropolis GZM), established on the basis of the Ordinance of the Council of Ministers in 2017. The Metropolis consists of 41 cities and communes with a total area of over 2500 sq km, where 2.3 million residents live. The area is a dynamic economic centre, with over 240 thousand



companies and enterprises, generating approx. 8 percent of our country's GDP (metropoliagzm.pl).

In terms of natural resources, contrary to common stereotypes related to the industrial past of several of the communes of the Metropolis, natural areas constitute in total more than ¼ of the entire area of the Metropolis, with forests accounting for approx. 25% and public green areas under the responsibility of self-governments - parks and green areas - accounting for approx. 1%. The area is exceptional due to the occurrence of numerous water reservoirs of anthropogenic origin, resulting from mining activity, as well as the presence of several areas covered by natural succession.

Referring to the above circumstances the urban green acupuncture for the functional urban area of Chorzów, Ruda Śląska and Świętochłowice, can be used for different purposes:

- providing greenery in existing public spaces,
- providing greenery in residential areas,
- creating new public spaces within abandoned and neglected areas, etc.

Green acupuncture also offers the possibility of increasing the environmental, functional and aesthetic value of neglected places which have potential for improvement:

- areas in the central parts of districts,
- squares,
- inner courtyards of residential quarters,
- building facades,
- areas of service facilities e.g. schools,
- neglected strips of land along streets,
- pedestrian routes and cycle paths, in the vicinity of public transport stops etc.

The work on Action Plan elaboration included preselection and assessment of sites was carried out on the basis of:

- The collected suggestions of the employees of the Municipal Offices of Chorzów, Ruda Śląska and Świętochłowice;
- Recognition of potential sites within the framework of analyses of the cities, strategic documents and materials and conclusions obtained from previously conducted projects concerning the public space of the functional area of Chorzów, Ruda Śląska and Świętochłowice;
- Collected suggestions from the group of participants of the workshop meetings on the selection and evaluation of places for the possibility of applying urban environmental acupuncture (directly and via online meetings and e-mail communication);
- Discussions in a "living laboratory" (face-to-face meetings, presentations, online meetings);
- Conclusions from research walks carried out in individual cities.

The evaluation of the sites was carried out on the basis of an initial analysis of exclusionary circumstances and admissibility criteria, followed by a scoring of necessity and suitability.



As a result the following specification of the selected sites in the individual cities of the FUA has been presented:

Chorzów

Out of 36 considered sites, 9 sites were selected for potential locations of green urban acupuncture. The selected sites are mainly located in the city centre district. These are mainly neglected yards and courtyards of multi-family housing developments, which are sealed (paved) and deprived of sufficient greenery. Two neglected squares with potential for significant improvement of environmental and utility values and one car park with potential for transformation into a green square were also selected.

Ruda Śląska

Out of 20 considered sites, 10 sites were selected for potential locations of green urban acupuncture. They are located in different districts, as the city structure in Ruda is polycentric and there are no large areas devoid of greenery, and greenery deficits were identified locally. The chosen places are mainly existing green areas (squares, greens), but they are neglected, insufficiently developed, lacking high greenery and not providing sufficient comfort to people staying there. Three sites were designated in the Wirek district; three sites in the Nowy Bytom district, including Jana Pawła II Square which is the main public space of the city, mostly sealed and in need of de-sealing and supplementing with greenery. The remaining sites are located in the districts of: Hebzie, Halemba and Kochłowice.

Świętochłowice

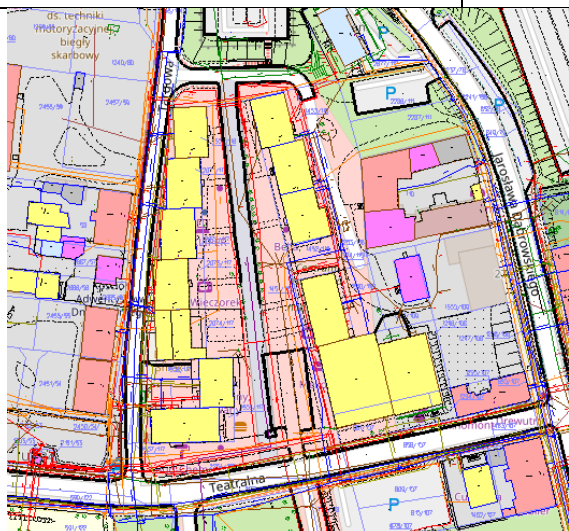
Out of 11 considered sites, 8 sites were selected for potential locations of green urban acupuncture. The sites are located mainly in Lipiny district. These are courtyards inside quarters and one courtyard of a municipal housing building. One site was rejected due to existing, recently completed comprehensive development. In the district of Chropaczów two sites were indicated which both meet the required criteria. In the centre three sites were preliminarily identified, one of which meets the criteria for green urban acupuncture, and two were rejected at the pre-selection stage due to existing landscaping in the surrounding area or due to other plans.

The Action Plan UEA sites have been presented in a table with the Specification of measures and approaches, a map of the spot, as well as aerial or site photos. In the cases where prior materials of conceptual design was available, in line with the goals of SALUTE4CE project, samples of such designs were included too. Presented below are 3 samples of specification of measures and approaches for particular sites.

Ruda Śląska - Empty space on Teatralna street within existing service functions

Geodetic plots, ownership:	Part of the plot no. 2254/116, City of Ruda Śląska
Type of green space to be created:	Greened pedestrian street for recreation Greened recreational space
Recommended Nature Based Solutions (NBS):	Urban flower meadows Flowerbeds with native perennials Lawns Green paving

	<p>Roadside trees</p> <p>Rain gardens with drainage into the ground</p> <p>Vegetated slope enhancement with green fences</p> <p>Green pergolas / arbours</p> <p>Green façades with climbing plants</p> <p>Green roofs / roof terraces</p> <p>Light green canopies</p>
Recommended complementary development elements	<p>Neighbourhood space (benches, tables)</p> <p>Street art</p>
Potential beneficiaries and partners	Residents, local business owners
Institution responsible for maintenance:	Municipal Office
Financial resources for maintenance:	Municipal Office
Other comments:	Preliminary concept created by a students team led by the author; (2021) with acknowledgement of the city revitalization committee



Site map

Site photo (May 2021) (M.Stangel)

Chorzów - Backyard, 26-28 Mielęckiego street

Geodetic plots, ownership:	Plot no. 1776/199, City of Chorzów
Type of green space to be created:	Green courtyard / yard
Recommended Nature Based Solutions (NBS):	<p>Trees</p> <p>Green pergolas and arbours</p> <p>Flowerbeds with native perennials</p>

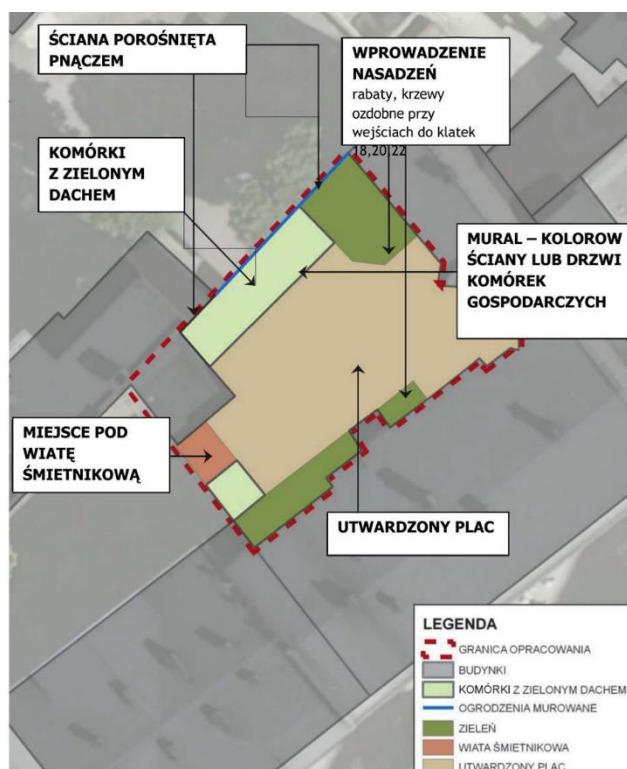
	Green wall (climbing plants)
Recommended complementary development elements	Neighborhood space (benches, tables)
Potential beneficiaries and partners	Residents
Institution responsible for maintenance:	Municipal Office
Financial resources for maintenance:	Municipal Office
Other comments:	Preliminary concept from the Programme for the renovation of Chorzow's backyards until 2030 (2015)



Site map, geoportal.chorzow.eu



Site photo (May 2021) (M.Stangel)



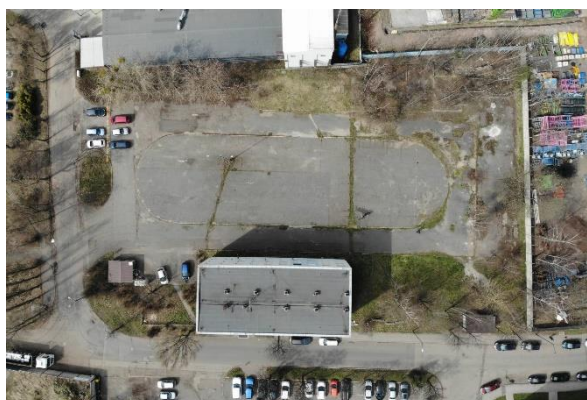
Preliminary concept from the Programme for the renovation of Chorzow's backyards until 2030 (IRM 2015)

Świętochłowice - An area at 8 Sądowa street, behind a multi family house

Geodetic plots, ownership:	Part of the plot no. 1018/6, state owned, perpetual usufruct: commune of Świętochłowice
Type of green space to be created:	Green recreational space Greenery in the vicinity of office or industrial buildings
Recommended Nature Based Solutions (NBS):	Lawns Trees Rain gardens with drainage into the ground Green pergolas and arbours Flowerbeds with native perennials
Recommended complementary development elements	Neighborhood space (benches, tables) Playground or sports area
Potential beneficiaries and partners	Residents
Institution responsible for maintenance:	Municipal Office
Financial resources for maintenance:	Municipal Office
Other comments:	Maintaining the functionality of the car park on a section of the site



Location Site photos (May 2021) (M.Stangel)





3. IMPLEMENTATION STRATEGY

The implementation of the action plan of urban environmental acupuncture in the functional urban area of Chorzów, Ruda Śląska and Świętochłowice needs a strategy which would constitute a basis for further steps in order to put into practice the proposed activities. In particular the implementation will be embedded in the existing planning systems, decision making procedures including involvement of stakeholders as well as ensuring financing, maintenance and monitoring of results.

3.1 Legal basis of urban green development

Local spatial development plan

In the local spatial development plan, depending on the intended use of the area, the share of bio-logically active area should be maintained in the following compartments:

- production areas 10-20%
- areas of mixed housing development, approx. 30%
- areas of multi-family housing development 20-30%
- areas for single-family housing development 25-50%

Percentage share depends on local conditions, the environmental impact prognosis for local spatial development plan and the rules resulting from the study of the conditions and the actual development of a given place (such as city ventilation corridors, ecological corridors).

Adopting a resolution on local spatial development plan is subject to the procedure of reviewing, submitting applications to the plan and agreeing with various authorities. It is a multi-stage process based on national law (Act on Spatial Development and Planning - Article 17).

The next steps in the process:

1. starting to draw up a plan for a given "piece" of the city or the whole district or the entire city (resulting from the need of local entrepreneurship, the needs of residents)
2. making this fact public
3. applying to various authorities for applications to the plan
4. after obtaining the conclusions of various authorities, a draft plan is drawn up along with a forecast of the environmental impact and a forecast of financial consequences and a physiographic study
5. agreeing the draft plan with the various authorities
6. public announcement - public consultation of the draft plan
7. adopting the plan
8. the validity of the plan begins usually 30 days after publication.



Such activities as the creation of green and blue infrastructure result from not only planning documents but also strategic documents such as the City Plan for Adaptation to Climate Change.

Other documents and projects

Many years of observations of the climatic conditions in our region prove that the climate is constantly changing and these changes are taking place more and more dynamically. For these reasons, the City of Chorzów was among the 44 largest urban centres in Poland, for which in the years 2016 - 2018 the "Urban plans for adaptation to climate change" (MPA) was developed at the request of the Ministry of Environment. As a result of the work, the four most sensitive sectors of the city were selected:

- public health
- water management
- high-intensity housing
- transport.

In the high-intensity residential areas sector diagnosed with the greatest risk of thermal phenomena related to heat waves, urban heat islands, torrential rains, sudden urban floods, pollution concentration, smog and strong and very strong winds. One of the conclusions from the two-year work on the MPA was the need to undertake actions aimed at reducing the urban heat islands.

Participation in SALUTE4CE is a consequence of political will and reflects the process of making such decisions. Both the Mayor of the City and the City Council create the directions of local policy in this area.

Regarding the cooperation of cities with FUA, the SALUTE4CE project is the third project carried out in this area (FUA). The first is the City3 - the project implemented by Chorzów, Ruda Śląska and Świętochłowice in 2013-15, thanks to the EU funds obtained, allowed for the development of a concept for the development of the functional area at the junction of these three cities. As a result, the cities gained: a more accurate definition and use of the development potential of this region, strengthening cooperation between partner cities in the scope of planned activities, greater competitiveness against other regions, comprehensive problem-solving in the common area, participation of residents in investment decisions in their neighbourhood.

Another LUMAT project carried out in 2016-19. The main objective of the project was to respond to and contribute to solving urban land management problems as evidenced by the growing negative phenomena such as urban sprawl, soil sealing, still existing brownfields and climate change threats as a consequence of all of the above-mentioned problems. The LUMAT project has outlined how to take a few steps forward to get closer to the goals set out in the EU's strategic documents for 'zero land take by 2050'. The aim of the LUMAT project was to implement the Sustainable Spatial Development Strategy, which will be applied in 7 Central European functional urban areas (FUA) with common transnational territorial and scientific competences.

As the part of each of the projects, city authorities signed letters of commitment to strengthen cooperation in the Municipal Functional Area of Chorzów, Ruda Śląska and Świętochłowice. Each time, departments responsible for city development and external fundraising, departments responsible for municipal services and ecology were involved in each city. It was also necessary to cooperate with units responsible for the management of road infrastructure, municipal investments as well as departments of architecture and construction.



3.2 Implementation in the city/FUA administration

Management structure

The future of the urban environmental acupuncture system is depending on the will of co-operation of the three cities of the FUA. This will be expressed by signing the letter of commitment, in which the representatives of the FUA cities declare establishing Permanent Conference (Task Group) led by the Co-ordinator, who will settle the detailed rules of co-operation.

The Co-ordinator will be responsible for:

- organization of the work on the Action Plan implementation,
- organization of the work on preparing applications for financing actions on the behalf of the cities belonging to the Functional Urban Area,
- initiation and organization of the information and promotion events concerning the implemented Action Plan,
- preparing the work plan for the team responsible for implementation of the Action Plan.

Monitoring

The ways of monitoring effects of the implemented Action Plan have been described in the document of the Action Plan itself.

Monitoring the effects of measures for green acupuncture sites is crucial to determine whether the measures are delivering the intended benefits (i.e. the functional aspect) and to examine whether certain groups in society may benefit more or less from urban greenery (i.e. the social equity aspect). Information related to resident satisfaction, indicators or land use can be collected through paper surveys during site visits, e.g. inspections of pilot projects, environmental indicators based on appropriate methods and standards according to project objectives. Monitoring may vary depending on the desired impact of the green acupuncture sites and be carried out by representatives of municipal offices of conservation specialists, biologists, arborists, naturalists or trained volunteers. After the implementation of the green infrastructure sites, indicators, expressed as numerically as possible, should be defined, which will provide important information to project leaders and decision makers. The areas of the city and municipalities involved in the project are the subject of monitoring. General sustainability indicators for monitoring:

- visual assessment of the vitality of green areas (trees, shrubs, flowerbeds, etc.),
- assessment of the visual aspect and functionality of urban furniture,
- assessment of the use of the site (site visit, use of elements,
- assessment of the safety of the site,
- assessment of the accessibility of the site for children, elderly and disabled people,
- biodiversity monitoring (presence of native species, elimination of invasive species).

The frequency of monitoring the current state of the site will be carried out in two stages:

- Stage 1 - completion of landscaping and handover to the community
- Stage 2 - completion of final maintenance by the municipality.



Maintenance of UEA sites

Activities concerning a proper maintenance of the UEA sites are closely connected with the tasks of sites management.

In particular the proposed basic principles for the management and maintenance of green acupuncture sites are as follows (acc. to Action Plan document):

- high quality planning and design - emphasis on the selection of planting sites, protection of native species, protection of vegetation and use of vegetation for energy conservation;
- soil quality - a need to protect and improve soil through the use of organic fertilizers;
- appropriate plant selection, determined by the minimum requirements for supplementary irrigation. It is recommended to promote biodiversity and purchase plants from local retailers;
- selection of practical size of grass area due to irrigation and maintenance requirements;
- effective irrigation - emphasis on natural irrigation. If technical elements are used, local water sources should be used (e.g. rainwater harvesting);
- appropriate care and maintenance of greenery;
- where possible, an appropriate share of on-site composting;
- appropriate and correct choice of mowing intensity (depending on the plant species selected) and use of non-toxic pest control products;
- planting trees that serve as protection from adverse weather conditions and provide protection from solar radiation and excessive heating of surfaces and buildings;
- providing quality green acupuncture sites, through a conceptual approach combining the environmental values and functions offered by urban greenery to residents and enriching their local living environment.

Financing

It is assumed that the basic possibility of financing undertakings in the field of municipal green acupuncture is financing from own resources, i.e. from the public budgets of the individual cities of the functional area involved. Four pilot projects were financed through the SALUTE4CE project. The ecological, environmental and social value of urban green acupuncture sites allow us to assume the potential possibility of financing tasks also from external sources, such as, for example: Regional: Regional Operational Programme of the Silesia Voivodeship; Provincial Fund for Environmental Protection and Water Management; National: National Fund for Environmental Protection and Water Management; Funds of Civic Initiatives Fund; EU: European Regional Development Fund; Technical Assistance Programme; Cohesion Fund; Fair Transition Fund.

In addition to the above sources of funding, it would be advisable to involve the residents and local institutions neighbouring with individual green acupuncture sites in the revitalisation process and to organise certain investments on the basis of inspiration, support and co-financing of bottom-up activities of the residents (this applies to semi-private space - backyards; and selected activities in public space - squares, greens, playgrounds, etc.).



3.3 Involvement and public participation

Social consultations are an obligatory element of each project. It takes various forms - from public hearings, consultations, to meetings with residents, workshops, commented walks and living labs. Each time, ordinary residents of the city as well as entrepreneurs, NGOs, housing cooperatives and communities, foundations and associations can take part. Consultations are conducted at the stage of developing strategic documents or designing an investment, while the implementation and maintenance stage is the responsibility of the City Hall.

4. FINAL REMARKS

In order to confirm the will of implementing the UEA in functional urban area of three cities: Chorzów, Ruda Śląska and Świętochłowice a ceremonial event of signing the letter of intent will take place in Chorzów on 11 March 2022. The letter will be signed by mayors of the three cities in the presence of the teams who were working on preparation of the action plan.

It is important to stress the role and place of the system of urban environmental acupuncture in climate change adaptation of urban areas. The climate change adaptation plans are nowadays being elaborated for cities and regions and in each of these documents green infrastructure is a very important element which:

- is reducing urban heat island phenomenon,
- is contributing to surface de-sealing, which gives better conditions for drainage during urban floods,
- is improving living comfort of inhabitants.

Two cities of the FUA - Chorzów and Ruda Śląska have already elaborated and approved for implementation their climate change adaptation plans. The city of Świętochłowice is planning to do it in 2022. Therefore the urban environmental acupuncture can become an important part of an urban green infrastructure in the three cities of the FUA. It is another opportunity and strong argument for implementation of the system of urban environmental acupuncture as an element of the whole green infrastructure.