

DEVELOPMENT OF ACTION PLANS FOR URBAN ENVIRONMENTAL ACUPUNCTURE

REPORT D.T2.2.5

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Development of action plans for urban environmental acupuncture in 4 FUAs

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Introduction

This report is part of work package T2 of the SALUTE4CE project and headed by the Leibniz Institute of Ecological Urban and Regional Development (IOER). The purpose of the deliverable D.T2.2.5 - ***Report on the development of action plans for urban environmental acupuncture in 4 FUAs*** is to provide a description of public involvement and documentation of the final transnational concept of action plans. Information for this report originates from two sources: English summaries of action plans from the four FUAs and a questionnaire that was distributed to the four pilot project cities: Alessandria Italy, the Impuls Region (Erfurt, Weimar, Jena, Weimarer Land), Germany, Liptovský Mikuláš, Slovakia and Chorzów, Poland in December 2020.

Description of the questionnaire (Annex 1)

Project partners were instructed to have the person leading the action planning team complete the questionnaire or ask someone they feel is the more knowledgeable to do so. The questionnaire included 28 questions separated into 4 thematic sections. The thematic sections included:

- Identifying information on person completing the form (to be able to match answers with the person responding)
- Purpose and content of action plan for UEA in the city or FUA (to aid in reporting on the framework of the 4 action plans)
- Creating action plans (to aid in understanding the planning process, success factors and problems occurred providing the opportunity to identify potential solutions)
- Feedback from the action plan team regarding action planning for urban environmental acupuncture (to understand the experience of project partners utilizing urban environmental acupuncture)

Description of the English summaries

It was a requirement for each of the cities with pilot projects to produce action plans in their respective languages but also to provide a 5-to-10-page English summary of the action plan. Instructions for both writing the action plan and providing the English summary of the action plan were provided in the “Transnational concept for action plans” written by the IOER including a sample outline in the appendix (Hemingway et al. 2020). City partners were required to provide a written document describing how they proceeded through the three main steps of the action planning process which included general consideration, creating local action plans and plan implementation.



Figure 1: Simplified version of the action planning process used in the SALUTE4CE project (Source: IOER project partners)

1. Purpose of action plans in the SALUTE4CE project

The main objective of the SALUTE4CE project is to protect and develop natural resources via integrated environmental management of green and blue infrastructure, accomplished specifically by planting native and climate resistant vegetation within selected functional urban areas (FUA's) (SALUTE4CE 2019). Urban Environmental Acupuncture (UEA) provides the opportunity of improving the urban fabric by increasing the availability and prevalence of green space. Green spaces may complement one another by bridging large and small sites and contributing to the urban green network. To successfully accomplish the project objectives, it was necessary to develop action plans guiding implemented of 16 pilot projects in four separate countries.



Figure 2: Implementation of Urban Environmental Acupuncture (UEA) an Illustration
 (Source: Franka Strangfeld, 2019)

The action plan concept created within the SALUTE4CE project (as part of work package T2) contributes toward continuity of action planning across countries documented within action plans and demonstrated within pilot projects. Specifically, visions, goals, and implementation strategies for UEA sites at the local level have been prepared by each pilot project country as part of their strategy. Action planning is the process of creating a written document that describes how a specific set of actions are to take place to bring certain goals and/or visions to fruition. An action plan contains different elements which typically occur in chronological order.

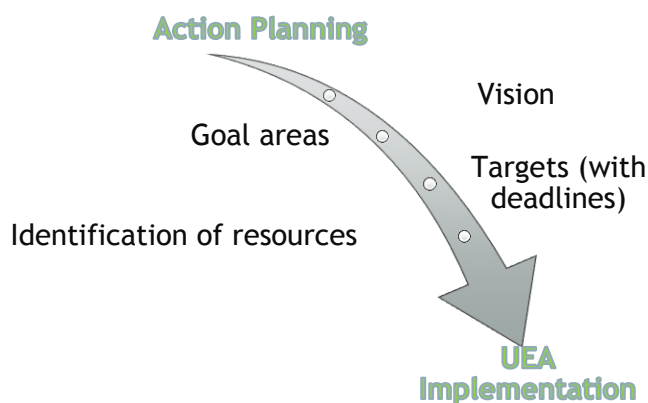


Figure 3: Visualization of action planning within the SALUTE4CE Project (Source: Hemingway, 2021)



The definition of action planning selected for the SALUTE4CE project is from Coyle (2011) which incorporates a set of steps which lead to UEA *implementation*. The definition is as follows, “It [an action plan] should be used to identify the specific tasks, timelines, and resources necessary for implementation. It will activate the community’s vision by enabling the desired outcomes appropriate to the people and place, including the protection of natural landscapes.” Within their FUA, pilot project partner cities were required to produce an action planning document describing an overall strategy for UEA as well as how their pilot projects would be implemented. This report will describe the action planning strategies used to implement pilot projects as conducted by the 4 pilot project cities or FUA’s.

2. Summaries of Action Plans in 4 Functional Urban Areas (FUAs)

In this chapter summaries are provided based on feedback given by project partners in each of the 4 pilot project cities. Progress has been reported as mentioned above from a questionnaire distributed by the IOER and English summaries of action plans provided by pilot project partners. For the most part, the text has been left unchanged. In some cases, the text has been slightly altered to improve readability (i.e. shortened or small English corrections). A special thank you to the individuals from each FUA for their willingness and effort in completing the questionnaire and the English summaries of action plans.

A summary is provided for each FUA of their respective action plans the information is separated by topic:

- **Questionnaire information provided by** → the person that completed the form
- **English summary of Action plan provided by**→ the person(s) that completed the action plan
- **Action planning goals**→ specific goals addressed in the action plan within the relevant FUA
- **Main internal and external supporters throughout planning process** → those supporting the action planning process such as the action planning team, the public and other stakeholders
- **Public Involvement in the planning process** → when and how the public has taken part in the action planning process
- **Selection of UEA sites**→ Explanation of UEA site selection in each FUA
- **Controlling and monitoring**→ This may include such measures as maintenance plans for UEA sites and monitoring of pilot project impacts (i.e. indicator development measure heat reduction for example)
- **Outlook and future prospects**→ This may include future recommendations for UEA planning in the FUA, recommendations or future plans.



Figure 4: Map of pilot project locations (Source: Hemingway, J. & Witschas, S., IOER, 2019)

Note: Apolda in the Impulsregion is also included in the SALUTE4CE project as well as Ruda Śląska and Świętochłowice in Chorzów, Poland they are not yet included in the map.

2.1. Action planning in Alessandria, Italy

Questionnaire information provided by: Angelo Ranzenigo, Botanical Garden of Alessandria City, Leader of Action Planning Team

English summary of Action plan provided by: Fabrizio Furia, Angelo A. Ranzenigo, Jody Marco Abate, Giuseppe Zicari

Action planning goals: The city of Alessandria focused on the implementation of thermo regulating effects, increasing urban biodiversity, environmental monitoring in the city centre, solid particulate mitigation, implementation of discussions and engagement of citizenship on environmental thematic in their action plan.

Main internal and external supporters throughout planning process: The main internal supporters for the action planning process was the action planning team. External to the action planning team a consultant, a not-for-profit Association (Natura e Ragazzi) was involved in all planning phases (preparation, analytical and the development phase). A local group (Soroptimis) participated in the developmental phase.

Satisfaction with the composition of actors in the planning process: The Italian partners were satisfied with the composition of actors and attribute this success to the structural composition of the action planning team, mostly internal to the administration, acknowledged as excellence, political and local administrators' support, scientific preparation of the external experts and direct knowledge of local issues.

Public Involvement in the planning process: The public has been informed of the SALUTE4CE project as soon as it was approved. Citizens have been actively involved in the action planning since the very beginning of the project, thanks to the willingness of citizens in the selection of the 4 pilot action sites and during all the elaboration phase where they took into consideration local problems and suggestions. It is also planned that citizens will be involved in the implementation phase. The public has been informed of project activities via press releases, conferences, local training, the city of Alessandria homepage and educational



activities within schools. Public feedback has influenced the selection of the spots and the selection of one project (City Tree that was altered as a result).



Figure 5: Pilot project site in Alessandria, Italy (Source: Max Dorigo Visuals, 2021)

Selection of UEA sites:

This text taken directly from the action plan of Alessandria (Fabrizio et al. 2021, p. 5):

To carry out the project, as foreseen in the action plan, a preliminary phase of identification of the criteria for choosing potential sites for the urban green acupuncture process was carried out, which included two important phases

- the application of a decision analysis system based on the selection of different criteria to explore alternative options.
- the next stage of the decision-making process using selection criteria with a scoring mechanism aimed at selecting the four functional areas where the four different urban acupuncture projects would be implemented. To make this selection, the principle of multi-criteria decision analysis (MCDA) was applied.

The selection of the sites was carried out by implementing the following procedure:

- Checking the availability by the municipal administration of land potentially useful for the project: small abandoned and degraded areas.
 - Consultation of cadastral information and the intended use of the areas.
 - Planning of inspections.
 - Implementation of site visits.
 - Identification of sites and production of documentation on the identified areas.

Subsequently, this information was shared with citizens in dedicated public meetings.



The review led to the selection of the following sites:

- ✓ Viale Teresa Michel
- ✓ Via Milite Ignoto
- ✓ Via Cavalli
- ✓ Via Fausto Coppi
- ✓ Via Croce/Via Pasino - School Morando
- ✓ Via Galvani ang. Via De Gasperi - School Villaggio Europa
- ✓ Lungo Tanaro Magenta -Parco Italia
- ✓ Via Cavour - Giardini Pittaluga
- ✓ Via Raschio
- ✓ Via D'Angennes - Zona School Campi
- ✓ Via Aldo Moro/Via Casalbagliano
- ✓ Via Don Bosco

The selection criteria identified by the working group were used for the preliminary selection of 11 sites from which to choose, with the collaboration of citizens, four areas where to implement the urban green acupuncture plan of the SALUTE4CE project. A checklist was thus designed, and a score was given for each of the parameters. Each project was designed for its subsequent didactic/scientific usability in the environmental field and for its cost-effective reproducibility. The Municipality of Alessandria then proceeded to define the four actions to be applied on the FUAs (Functional Urban Areas). Four implementation plans were designed: "The Urban Orchard", "The Refuge Forest", "City's Green Lung" and "Greenery in City Centre".



Figure 6: Pilot project site in Alessandria, Italy (Source: Max Dorigo Visuals, 2021)

Were set targets and measures met? The set targets and measures decided upon by the action planning team could be met as a result. The finalization of local stakeholder involvement has been slightly postponed due to the COVID pandemic. According to our Italian project partners the key to meeting deadlines



and targets was a direct result of the scientific level of members participating in the action planning team and the detailed work agenda.

Controlling and monitoring: To monitor the impacts of the UEA sites in Alessandria specific indicators will be utilized.

This text taken directly from the action plan of Alessandria (Fabrizio et al. 2021, p. 9-10):

- **Thermoregulation effect:** the contribution of the tree vegetation present in the SALUTE4CE areas on the mitigation of air temperatures in their proximity will be evaluated, comparing it with the measurements made outside the cone of projection of the shadow of the foliage. The data will be collected at 9 a.m., 1 p.m. and 5 p.m. on the first 5 working days from April to September inclusive.
- **Increase in outdoor educational activities:** the educational offerings will be supplemented with the possibility of holding lessons inside the Salute4CE areas. The school proposals will be active from March to June and from October to December. The number of classes involved will be reported monthly.
- **Evaluation of learning:** considering the didactic/experiential value as fundamental, the aim is to evaluate the effective improvement of the pupils' learning capacity by means of lessons in the City of Alessandria.
- **Number of visitors to the areas per day:** the number of visitors will be counted at 10 a.m., 3 p.m. and 6 p.m. on the first and third Sunday of each month from April to September inclusive.
- Increase in the presence of pollinating insects belonging to the Order Lepidoptera and the Order Hymenoptera Superfamily Apoidea: counting through observation for 15 minutes, at 12.00, in the ring sown with wildflowers, weekly (only on sunny days) from April to August.
- **Biological monitoring:** evaluation of the stress state of the plants grown in the city planters through photosynthetic efficiency measurements with a fluorometer. The measurements will be taken on an hourly basis, from 7.00 to 17.00, on a weekly basis and with a minimum number of 5 measurements on different leaves of the same plant.

Outlook and future prospects

Text taken directly from the action plan of Alessandria (Fabrizio et al. 2021, p.10):

In the light of the satisfaction felt both by the Sector's technicians and by the stakeholders who, with different roles and opportunities, have collaborated to make the idea of the environment pursued by all the people capable of giving themselves time in the green real, it is still difficult to predict the real contribution of these areas in a measurable value of mitigation of the effects linked to climate change.

For this reason, many of the project ideas pursued aim to promote the areas as privileged places in which to carry out effective teaching or simply a popular action to improve the perception of our ecological footprint. But urban acupuncture is not just that. It is not to be understood simply as a tool for improving the climatic characteristics of a city.

Two thousand square metres of surface area, if well designed with a green area coherently integrated into the city fabric, have several positive aspects: they become an attractive meeting point for the community, increase the citizens' perception of wellbeing, mitigate the view of buildings, combat urban decay, stimulate open-air activities, and allow the redevelopment of depressed marginal areas at low cost.

Moreover, this type of project aims to build a model that can be replicated on a large scale. The greater the number of such areas, the greater their effect on a city scale. It is for this reason that the Administration of the Municipality of Alessandria has decided to commit itself already in the short term to proceed with a renewed involvement of stakeholders to carry out new urban acupuncture projects, starting from the areas initially identified but not included among those selected for this project. The SALUTE4CE project activities and the implementation of the Action Plan and the pilot actions, have had a fundamental impact on the

that green spaces in cities are becoming increasingly important. This is related to improving access to parks and playgrounds or mitigating the effects of climate change. Demographic changes and the associated urban redevelopment have led to different demands on open spaces. The concept aims to meet these challenges.

Main internal and external supporters throughout planning process: In addition to the green space and urban planning offices, climate protection managers were an important source of information. In addition, important insights were gained in various citizen participation formats. The garden departments and urban planning departments of the cities of Erfurt, Weimar, Jena and Apolda (Weimarer Land) were heavily involved in the creation of the action plan. The involvement took place in all three phases of the creation process.

Satisfaction with the composition of actors in the planning process: Through the involvement of various offices and actors with a specialist focus, it was possible to make good additions to the content of the Action Plan. This concerned, among other things, the planning and content of the concept. The Impulse Region attributes the success to creation of a common basis at the political level so that the project would have good framework conditions. The resolution of the concept and the measures to be implemented by the board of the Impulse Region was an indispensable basis for the subsequent realization phase. The resolution at the political level created the necessary binding force for the planned activities. After that, a working group had to be set up, which was responsible for the content of the project. Responsibilities and deadlines had to be clarified. At joint meetings held at specific intervals, the current processing status was discussed, and solutions worked out when problems or challenges arose.



Figure 8: UEA site in Erfurt, Germany (Source: Hemingway, J., 2021)

Public Involvement in the planning process: The public was included in action planning in different phases. After the development areas were determined, meetings were held with the local district councils and residents. First, the project was presented. Afterwards, the stakeholders were asked for their suggestions on how the measures should be implemented. Following that, the plans were revised according to the residents' suggestions, and then another meeting was held to discuss the results. Information about the project was disseminated through Press articles in newspapers, social media (e.g., Facebook); notices with posters in residential areas of development sites, press conferences with local newspapers, distribution of flyers. Thanks to the involvement of citizens in the selection of the 4 pilot action sites and during all the



elaboration phase to take into consideration local problems and suggestions. There are also plans to involve citizens in the implementation of individual measures. The exact form this will take place has yet to be clarified. The individual proposed measures were strongly influenced by the ideas of the citizens. The residents of the respective development area can best determine how the area can be upgraded in an aesthetic and functional way.

Selection of UEA sites:

This text taken directly from the action plan of the Impulse Region (Bachmann et al. 2021, Section: Environmental Acupuncture Sites in the Impulse Region):

The selection of environmental acupuncture sites is intended to create a network that usefully complements existing green spaces in cities. Urban green spaces should provide a wide range of ecosystem services to society, such as oases of well-being for recreation and leisure, improvement of air quality and urban ecological services such as habitat creation. By means of analysis, neighbourhoods with a lack of climate resilience are to be identified. The definition of what constitutes a suitable location was discussed and determined with the stakeholders in various meetings. Other important quality characteristics are, for example, the size of the area, the degree of sealing, shading or the presence of seating. For this purpose, small green spaces are to be selected in the Impulse Region. Examples can be unused areas such as backyards, pathways, facades, and fallow land. The area should not be larger than 0.2 hectare. This corresponds to about a quarter of a football field. Small, targeted measures are intended to increase biodiversity, improve adaptation to climate change and promote the quality of life of residents. After the pre-selection of areas with a deficit of green space, criteria must be applied to generate a list of potential acupuncture points. This is followed by an assessment about the need for action and the suitability for upgrading. Here, the McKinsey matrix is used as an aid. This results in a list of acupuncture points with the highest need for action and best suitability for upgrading.

To select suitable environmental acupuncture sites, certain criteria must first be met, as already described in the previous section.

The following examples can be mentioned here:

- Necessity of the redesign
- Legal status and clarity on the authorisation procedure
- Fit to existing/planned infrastructure
- In accordance with applicable plans, programs, or projects
- No conflicts with local interest groups

Also, further evaluation criteria can be applied. When evaluating in terms of the usefulness of the area, a score can be given to allow comparison of potential acupuncture points.

Were set targets and measures met? The deadlines were largely met. However, the Corona pandemic caused delays. Some administrative staff had to go on short time working. As a result, the preparation of the data, which first had to be generated, especially for the new potential development areas, took longer than initially planned. In addition, not all citizens' meetings could be held because larger gatherings were prohibited in the lockdown. It was possible to meet the deadlines because a schedule with clearly defined goals and responsibilities had been drawn up during the preparatory phase of the action plan. However, it was not apparent when the schedule was drawn up that the Corona pandemic would have such a major impact on the work in the SALUTE4CE project.

Controlling and monitoring:

This text taken directly from the action plan of the Impulse Region (Bachmann et al. 2021, Section: Controlling and monitoring):



A regular comparison between the original project goals and the current project status should be carried out by those responsible for the project at certain intervals. Here the following question must be asked: "After the implementation of the planned measures, has the effect been achieved and the defined objectives reached? To be able to recognise current developments and assess the resulting options for action, it is necessary to regularly determine the position. This is the only way to see whether the human and financial resources have been used efficiently and effectively for the common goal. Depending on the results, the planning and implementation process can be adjusted.

In a working group, project-related information can be exchanged between the institutions involved in order to control and evaluate the results. In the working group, persons should represent the participating departments that have been technically involved in the project. They compile the individual results and thus obtain an overview of the entirety and the status of the achievement of objectives.

The information of the controlling measures should take place on different levels. Public reporting concerns internal and external stakeholders, the population of the cities and participating companies. Information to decision-makers should take place at regular intervals. A report on measures could be produced once a year. Larger reports to all levels should be produced at intervals of 3-4 years.

Outlook and future prospects:

This text taken directly from the action plan of the Impulse Region (Bachmann et al. 2021, Section: Outlook and prospects):

From the perspective of the outlook, the further methodological procedure could be as follows: The study area - in this case the Impulse Region - is divided into sub-areas (location types) with comparable local conditions or requirements, considering all relevant environmental factors. The progressive climate change is given weight by modelling all climatic parameters (e.g., temperature, climatic water balance, wind) for a future climatic period. Based on the derived site types, plant species can thus be selected whose characteristics correspond best to the conditions of a particular site. Thus, ensuring functionality and saving costs for new plantings and maintenance measures. However, this means a higher expenditure of time and money. With the knowledge gained, the idea of urban environmental acupuncture can be implemented in a more targeted manner, so that the Impulse Region has a guideline for action that enables sustainable development of the region. Thus, the provision of green spaces adapted to climate change can proceed further.

2.3. Action planning in Liptovský Mikuláš, Slovakia



Figure 9: Pilot project rendering near a school in Liptovský Mikuláš (Source: Petran, M., 2021)

Information provided by: Jana Kormanikova, Head of Project Management Department, City of Liptovský Mikuláš

Role in SALUTE4CE Project: To coordinate and manage project activities and financing for the city of Liptovský Mikuláš

English summary of Action plan provided by: Municipality of Liptovský Mikuláš, Ekojet, S.R.O., Šembera, T., Masárová, M., Šembera, I. and Kertys, L.

Action planning goals: The main thematic challenge addressed by Liptovský Mikuláš was abandoned spaces and beautification of public space. Initial focus of action planning was focused on gathering proposals from the public and other stakeholders to identify small, abandoned localities in cities and villages that could benefit from application of urban environmental acupuncture.

Main internal and external supporters throughout planning process: The main internal supporters were the action plan team consisting of 7 persons in various functions. IURS Ostrava, the Mayors of the city and villages of the FUA, Members of City Parliament, Civil associations, and the public. The elaborator of action plan was EKOJET Limited selected through the public procurement process. They were selected based on a bidding process considering three potential elaborated and according to the rules of public procurement the one with the cheapest offer was selected.

Satisfaction with the composition of actors in the planning process: Liptovský Mikuláš found the composition of actors quite suitable, however assert there is always room for improvement. Students from Universities and Secondary schools, landscape architects, professions, decision makers from business sector - were invited to participate but did not take part in the process of Action plan preparation. The main success factor was the precise and detailed preparation of public procurement, were detailed content and requirements for potential AP elaborators. According such a precise description and conditions, we have



succeeded to find the elaborator that was able to fill our expectations and requirements in Action plan elaboration.

Public Involvement in the planning process: The public was informed concerning the opportunity to take part in collecting of suggestions for UEA in March 2021, in analysis phase, before the GIS map application was activated. GIS map application was made available to the public on the websites/social network accounts of the town of Liptovský Mikuláš and the commuter municipalities between 31.3.2021 and 30.4.2021. We have asked (via email) 37 mayors of surrounding villages (FUA) to participate on the “survey”. The mayors of the following 6 of the 37 municipalities that were approached confirmed their participation in the project: Prosiek, Ľubela, Smrečany, Liptovský Ondrej, Uhorská Ves, Závažná Poruba. A great effort was made to include the public via public meetings (mainly in online form due to the COVID pandemic), surveys via the facebook voting, GIS application, emails, and in-person in the form of voting ballots, a survey in the field with mayors of FUA in April 2021 and living labs (Neighbourhood green space in Podbreziny area on November 11, 2019, and finally an online conference - webinar on May 5, 2021. The public was actively involved in the selection of the 4 pilot action sites and during the entire elaboration planning phase taking into consideration local problems and suggestions. Without this public feedback (suggestions of concrete abandoned spaces) the AP will probably miss its “added value”.

Selection of UEA sites:

Text taken directly from the action plan of Liptovský Mikuláš (Municipality of Liptovský Mikuláš et al. 2021, p. 76-78):

The process methodology and the criteria for selecting urban acupuncture sites are based on the philosophy and objectives of the SALUTE4CE project and is common to all the project’s partner countries. (Deliverable D.T1.1.1 Methodology of Selection of Spots for Urban Environmental Acupuncture (EUA)). This method is the result of the latest technique for identifying methods of selecting public areas that deserve improvement, particularly by implementing elements of green urban infrastructure. The selection methodology is based on 2 main qualitative and quantitative assessment criteria: need (expected benefits of greenifying a specific site) and suitability (favourable / adverse conditions). Each criterion carried a score of 0 to 2, with different “weights” assigned to different criteria depending on the specific characteristics of the given site type. The main step in the preparation of the Action Plan was preliminary selection of so-called acupuncture sites (AS). This phase consisted of gathering the information available from the digital platforms (e.g., the GIS application) and research on the ground (field surveys of potential AS). The “need” and “suitability” criteria were applied in the individual stages of the Action Plan’s creation in the context of current and expected (future) conditions. The assistance of experts should be sought, and local stakeholders should be consulted to ensure correct interpretation of the data on the state of FUAs and acupuncture sites. As part of the participation of the residents and stakeholders in the selection of urban acupuncture sites, a total of 114 suggestions were collected, of which 101 suggestions were collected through the GIS application and 13 suggestions were collected through the email communication. The data from the GIS application and email communication were subsequently analysed and evaluated. The assessment of sites was carried out for the town of Liptovský Mikuláš and the following municipalities: Prosiek, Ľubela, Smrečany, Liptovský Ondrej, Uhorská Ves and Závažná Poruba. A total of 8 suggestions were received from Ľubela’s residents, sent through the GIS application. As it scored the maximum number of points, we highly recommend site no. 3: children’s playground. A total of 6 suggestions were received from Smrečany’s residents, sent through the GIS application. As it scored the maximum number of points, we highly recommend site no. 1: pocket park. A total of 8 suggestions were received from Uhorská Ves’ residents, sent through the GIS application. As it scored the maximum number of points, we highly recommend site no. 2: small park area.

A total of 5 suggestions were received from Prosiek’s residents, sent through the GIS application. As it scored the maximum number of points, we highly recommend site no. 1: centre - outside the Jednota shopping centre, and site no. 3: local pocket park. A total of 8 suggestions were received from Liptovský Ondrej’s



residents, sent through the GIS application. As it scored the maximum number of points, we highly recommend site no. 1: centre - children's playground.

7 suggestions were received from Závažná Poruba's residents, sent through the GIS application. As it scored the maximum number of points, we highly recommend site no. 2: centre - outside the Jednota shopping centre. A total of 68 suggestions were received from Liptovský Mikuláš residents, of which 55 were sent through the GIS application and 13 by email. We highly recommend the following sites, as they scored the maximum number of points: 1: Minipark in the Ondrašová City District, 2: M.R. Martáková Park, 3: Námestie osloboditeľov, 4: Demänovská Kindergarten and Primary School (Záhrada starej mamy - garden), 5: Urban block courtyard in Podbreziny City District, 6: Dom kultúry (culture centre), 7: Námestie mieru, 12: Bodice City District, 13: Greenery on Borbišova St., 14: Park area in Demänová City District, 16: Along the Smrečianka stream, 17: Apartment buildings between Štúrova St. and Jilemnického St., 18: Apartment building premises on Lipová St., 20: Podbreziny cycle path - Lipt. Ondrašová, 22: Pedestrian and cycle path - Opavská St. - rail bridge, and 24: Garages on Senická St.

List of solution types for the Liptovský Mikuláš FUA:

- ✓ Installation of street furniture (benches, flowerpots, waste containers, information boards)
- ✓ Construction of a green wall on smaller facilities (bus stop),
- ✓ Construction of vertical green walls on buildings
- ✓ Construction of a green pergola at a waste container spot
- ✓ Construction of paving using grass paving slabs
- ✓ Construction of a green fence,
- ✓ Planting of park woody plants and shrubs
- ✓ Revitalisation of existing woody plants
- ✓ Planting of a tree allée along routes/paved areas (cycle paths, pedestrian pavements)
- ✓ Planting of perennials in flower beds
- ✓ Construction of a community garden for educational purposes.

Were set targets and measures met? Deadlines for action planning have been prepared completely as of the end of May 2021. In more detail, the contract with the elaborator of the action plan (EKOJET, Ltd., Bratislava) was signed on February 5, 2021, and public procurement was approved by FLC on March 1, 2021. The timetable for the action plan elaboration (stated and fulfilled): Analytical part: March 2021 Collection of suggestions for UEA from public (GIS campaign): March 31, 2021 - April 30, 2021 and the final document action plan on May 2021. The action planning team in Liptovský Mikuláš attributes their ability to meet deadlines to their efforts to strengthen and concentrate much effort to prepare the action plan in the timeframe from 03/2021 to 05/2021. In the realization phase they appreciated the perfect preparation phase because they knew exactly what and how to do to meet stated targets. The public procurement was a challenge timewise as it was quite difficult to find potential elaborators of action plans, as well as to set the public procurement documentation (content of AP, requirements and goals). The preparation phase took all in all a half a year (09/20-02/21).

Controlling and monitoring:

This text taken directly from the action plan of the Liptovský Mikuláš FUA (Municipality of Liptovský Mikuláš et al. 2021, p. 78-79):

For all of the selected sites we recommend creating a greenery adaptation project together with suitable green and blue infrastructure management. Greenery management in a town is defined as the set of all activities required for the planning, establishment and maintenance of municipal greenery leading to the optimal use of available greenery resources. The basic principles of greenery management include: Quality planning and design, soil quality improvement, suitable selection of plants, lawn areas, efficient irrigation, suitable maintenance and composting on the site. A blue infrastructure is a network of water features that supports native species, protects natural ecological processes, prevents floods and protects air quality and



water resources. The basic principles of blue acupuncture (infrastructure) management are: Rainwater management (RWM), gradual conversion of impermeable paved areas to permeable or semi-permeable areas and construction of retention structures in suitable locations (infiltration basins, infiltration trenches, vegetation infiltration strips, polders and retention basins, grass paving slabs, gravel lawns, etc.) Urban greenery management, including green acupuncture, relies on the following specialist documents required for reasonable and efficient greenery management: Field study of the greenery system and greenery plan.

The maintenance concept for the pilot actions is based on the design situation of gardens and public greenery adaptation: planting of fruit and ornamental woody plants (trees and shrubs), flower and herb beds, lawns, and vertical vegetation wall maintenance. Agrotechnical periods need to be observed when performing the maintenance for pilot actions. The definition of the monitoring target and objective in the Action Plan for urban acupuncture is based on the Environmental Monitoring Update and Rationalisation Concept adopted by Regulation No. 42 in an operational meeting of the Environment Minister on 4.4.2005. The values obtained in the monitoring will be evaluated and stated in the Monitoring Report. We recommend preparing the following documents for the purposes of efficient and sustainable urban greenery management: Woody Plants Maintenance Document, Regional Territorial System of Ecological Stability (RTSES) / Local Territorial System of Ecological Stability (LTSES), Climate Change Adaptation Strategy for the town. The main objective of proposing and carrying out green acupuncture investment activities is to improve the climate resilience of cities and support ecosystem services. Investment activities in an urban environment are associated with the water management and water regime of the given land, with biodiversity and ecosystems, and with care for the population's health.

Outlook and future prospects:

This text taken directly from the action plan of Municipality of Liptovský Mikuláš (Municipality of Liptovský Mikuláš et al. 2021, p. 79):

The implementation of the presented Action Plan will result in positive long-term changes in the quality of the environment and the urban environment and will increase biodiversity and improve the quality of ecosystem services in the given FUA. The development of the selected urban acupuncture sites will help expand and improve the green and blue infrastructure in the region. In the long term, it will improve the FUA's climate resilience (extreme torrential rains, warming, greenhouse gas emissions increase, etc.) and reduce the undesirable effects of climate change (formation of urban heat islands). The presented Action Plan complies with the strategic documents of the given FUA and with Slovak and EU legislation.

2.4. Action planning in Chorzów (Ruda Śląska and Świętochłowice), Poland



Figure 10: Pilot project in Ruda Śląska, Left: site map, Right: site photo (Source: Stangel, M., 2021)

Information provided by: Agata Beryt, Director of the department of development, responsible for obtaining external funds for municipal investments and contacts with investors, Chorzów, Poland

Role in SALUTE4CE Project: Member of Steering Committee on behalf of the city of Chorzów

English summary of Action plan provided by: Agata Beryt

Action planning goals: The areas included in the SALUTE4CE project include three autonomous administrative units: Chorzów, Ruda Śląska and Świętochłowice, which in total cover an area of 124.19 km², representing 10.19% of the area of the Upper Silesian agglomeration understood as a Functional Urban Area (FUA) with metropolitan characteristics. The main element that links Chorzów, Ruda Śląska and Świętochłowice is the industrial history of the origin of these cities, and their development based on heavy industry functions, mainly hard coal mining and metallurgy of iron, steel and non-ferrous metals. The second factor, no less important, is the central location within the metropolitan area as the analysed area borders with Katowice on its eastern border and, what is more, two main communication axes - A4 motorway and Drogowa Trasa Średnicowa (DTŚ) run parallel through it.

The main vulnerabilities experienced are negative climatic phenomena such as heat waves, urban heat island and heavy rainfall. The availability of green space varies considerably between neighbourhoods and parts of the city. In the context of considering the legitimacy of joint development of green acupuncture sites, the following provisions of the Integrated Development Strategy of the Functional Area of Chorzów, Ruda Śląska and Świętochłowice by 2030 are considered important: Strategic goal 1: High level of quality of life of the inhabitants of the Functional Urban Area. Specifically, priority 1.1 raising the standard of living in the Functional Urban Area. Strategic goal 4: High level of development of social, technical and transport infrastructure of the Functional Urban Area. Specifically, priority - 4.3. Revitalisation of degraded areas of the Functional Urban Area and finally, Strategic goal 6: Increasing the quality of the environment in the Functional Urban Area. Specifically, Priority 6.1. Improving the condition of the environment in the FUA.

Main internal and external supporters throughout planning process: The key supporters external to the action planning team in preparation of the action plan were NGOs (Non-Governmental Organisations) and residents of Chorzów. In addition, the team from IETU and Silesia Botanic Garden also partners in SALUTE4CE

project were key supporters throughout the planning process as well as City Hall employees and additional external experts.

Satisfaction with the composition of actors in the planning process: The composition of actors in the planning process was suitable. One of the main challenges in the action planning development process was identifying sites owned by the city where green acupuncture investments could be implemented. This challenge was overcome thanks to excellent cooperation with the department responsible for the real estate within City Hall. The main success factor in Chorzów was the engagement of all actors in the planning process.



Figure 11: Research Walks with the public in Chorzów (Ruda Śląska and Świętochłowice) (Source: Fudala, M., 2021)

Public Involvement in the planning process: The public was involved in the preparation phase where they provided feedback and information. Workshops with the participation of residents of Chorzów city. Public feedback provided indications of the potential green city acupuncture spots. Which has been taken onto account during creation of the action plan. For example, a preliminary selection of the UEA locations took place with employees of the City Offices of Ruda Śląska, Chorzów, and Świętochłowice. Further suggestions were collected during a „living laboratory” as well as during personal meetings, presentations, and online meetings. What is more, research walks were carried out within individual cities.

Selection of UEA sites:

Text taken directly from the action plan of Chorzów (Municipality of Chorzów et al. 2021, p. 76-78):

The preliminary site selection was carried out taking into account the key factor of considering the suggestions of stakeholders and residents of the functional area of Chorzów, Ruda Śląska and Świętochłowice. The selection 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.

Collection of suggestions and information gathering took place between April and June 2021.

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.

Specification of implementation sites

- ✓ 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.

Were set targets and measures met? The set targets and measures could be met. The main success factor was engagement of all actors throughout the planning process.

Controlling and monitoring:

Text taken directly from the action plan of Chorzów (Municipality of Chorzów et al. 2021, p. 14-15):

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
- 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

Outlook and future prospects:

Text taken directly from the action plan of Chorzów (Municipality of Chorzów et al. 2021, p. 14-15):

It is important that the urban green spaces (green areas and green infrastructure elements) included in the action plan are not only created, but also maintained for future use. Without proper care, green spaces, especially those in high demand, will show signs of wear and tear. It would be a shame for the well-thought-out design of each UEA site to deteriorate soon after implementation. We define the management of green acupuncture sites as the total of all activities necessary for the planning, establishment, and maintenance of urban green spaces, aiming at the optimal use of available green space resources. Proposed basic principles for the management of green acupuncture sites are as follows:

- 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.

The full text of the Action Plan includes detailed recommendations on issues such as:

- Recommendations for shaping green neighbourhood spaces at residential developments / green courtyards and backyards
- Recommendations for shaping green public squares
- Recommendations on plant species
- Recommendations on financing
- Recommendations on public participation
- Recommendations on plant care

The processes of creation of green acupuncture places initiated in the project should be implemented and continued, according to the guidelines and recommendations included in the Action Plan, and monitoring should contribute to drawing appropriate conclusions from the implementation, promoting the idea of green acupuncture, and encouraging the development of further actions in line with this idea. The idea of using small areas of the city to create places of green acupuncture, initiated in the SALUTE4CE project, should be promoted, implemented, and developed in the cities of the Functional Urban Area of Chorzów, Ruda Śląska and Świętochłowice in the future in various activities aimed at adaptation and mitigation of climate change.

In the following years, the idea of creating green acupuncture places should be adapted through various other activities and references in strategic and operational documents of particular cities. In addition, the idea of green acupuncture sites could be promoted through urban spatial information systems, expanding them with thematic layers such as a detailed map of low green cover, a detailed map of urban trees, the possibility of showing the extent and access to green areas, etc.

The idea of creating green acupuncture sites for integrated enhancement of environmental and climatic values and functionality of sites, with positive effects on the local quality of life may be particularly important in the future for increasing environmental awareness of residents and education in pro-ecological behaviour and actions on a local scale, in the context of global and European challenges, and in line with European Union's guidelines for action in cities to adapt to and mitigate climate change.



3. Summary of Action planning within the 4 FUAs

The thinking behind urban acupuncture is that small-scale selective adjustments to cities can progressively transform the urban fabric resulting in significant positive impacts on a larger urban scale (Hemingway et al. 2020). In order to do this the planning mechanisms behind UEA also need to be adjusted, adapted and improved in order to accommodate successful implementation of these small green spaces. Below is a summary of the action planning presented in this report which provides a solid basis for understanding and improving action planning processes that incorporate UEA both now and in the future.

Within the action planning summaries of each FUA we see both similarities and differences in the way planning was carried out despite having a transnational action plan concept which guided planning. Which is a good thing because this means that the concept was flexible enough to accommodate the unique needs of each pilot project. As we see from the English summaries of action plans, a variety of actors were involved in completing the action plan including city employees, garden and greenery offices, city planning offices, office managers, consultants, and students. Just within the plan writing we see a diversity of actors coming together to implement UEA. Action planning goals vary for each FUA for example *Liptovský Mikuláš* and *Chorzów* have been focused on addressing abandoned spaces and urban beautification/revitalization. Whereas *Alessandria* is quite focused on measuring the impacts of pilot projects regarding solid particulate climate mitigation and urban biodiversity. What we see in common among all 4 FUAs is the focus on climate change adaptation especially in relation to heat regulation, air quality and high precipitation events. What is more, all project partners are heavily focused on including the public in green infrastructure planning and in maintaining a high level of public involvement in the future.

The main internal and external supporters have included consultants, NGO's, political and local administrators, climate protection managers, green and city urban planning departments as well as the scientific project partners (e.g. IOER, IURS, IETU), external experts and last but not least local residents. It has been repeated many times how important the public has been in selection of sites for UEA, deciding on Nature Based Solutions and the importance of the public in pilot project implementation. Unsurprisingly, the public has been involved within the 4 FUAs from the onset of the planning process in various formats including living labs, GIS map applications, presentations, during online meetings and during research walks. This various formats have helped to inform the action planning process. In addition to data collected from residents, population, cadastral, land use and climate change data as well as information collected on-site regarding soil, percentage of sealed area, shade and temperature information has contributed to the selection of UEA sites. The McKinsey Matrix Deliverable D.T1. 1.1 developed by SIGB guided project partners in narrowing down the sites based on necessity and suitability of sites.

To ensure that all of the efforts have paid off and as detailed in the national action planning concept controlling and monitoring plans activities have been carried out in each of the four FUAs. *Alessandria* for example has created and will implement a number of indicators measuring temperature, biodiversity, education experiences and impact of green sites on learning capacity. The Impulse Region emphasizes receiving information regarding controlling and monitoring from different levels such as the public, internal and external stakeholders and city residents. *Liptovský Mikuláš* have based their monitoring and controlling recommendations on already existing documents and regulations within their FUA. The maintenance plan appears to also be related to the monitoring of the impact of vegetation and soils. And also recommended the creation of specific types of reports for example Wood plants maintenance document, Regional Territorial system of Ecological Stability or a Climate Change Adaptation Strategy. *Chorzów* has identified specific aspects to be monitored including vitality of green areas, visual appeal and usefulness of urban furniture, safety, accessibility for different population sectors and biodiversity.



Overall the practitioners within the pilot project FUAs are optimistic concerning UEA and see potential in utilizing the concept for future green infrastructure planning. The knowledge gained from the project is seen as useful in conducting more targeted UEA in the future. Pilot projects also fit well with the current objectives within the FUAs and are predicted to contribute to climate change adaptation. Further integration of UEA into planning structures is desirable as it contributes toward public engagement as well as meeting local, global, and European environmental and social challenges.

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Annex 1: Questionnaire on Action Plan Development in four Cities

Identifying information on person completing the form (This will help us to match responses with the person responding.)

- What is your name, position and field of work in your city/FUA?
Project partner response:
- What is your role in the SALUTE4CE project?
Project partner response:
- What is your functional urban area called (i.e. country, city, region where are you implementing Urban Environmental Acupuncture)?
Project partner response:

1. Purpose and content of action plan for UEA in your city/FUA (This section will help us to report on the framework of the four action plans.)

- a. What are the main thematic challenges being addressed within your FUA using environmental urban acupuncture (problem statement)?

Project partner response:

- b. Considering local policy, why is it so important that these challenges be addressed (e.g. citizens are complaining of extreme heat, no place to socialize, etc....)?

Project partner response:

- c. How will your action plan including the small green sites help to address the challenges identified above (Goals/purpose of small green sites)?

Project partner response:

2. Creating action plans (This section will help us to understand the planning process, success factors and problems occurred providing the opportunity to identify potential solutions.)

- a. Which types of data have been collected in preparation of your action plan (physical conditions, demographic and economic circumstances, planning framework)?

Project partner response:

- b. Who were/are key supporters external to the action planning team in preparation of your action plan (i.e. external consultant, NGOs, from public policy, or other person (s) not directly involved in the planning process)?

Project partner response:

- c. Who are/were the actors in the three phase's action planning phases (i.e. preparation, analytical and development phase)?

Project partner response:

- d. Was the composition of actors in the planning process suitable?

Project partner response:

- e. If important actors were missing which ones (e. g. decision makers, professions, etc.)?

Project partner response:



- f. What were the **main challenges** in the **action planning** development process? If you overcame the challenges, how? If you did not overcome the challenges, what prevented you?

Project partner response:

- g. What have been the **success factors** in the process of **action planning** for UEA [political, structural, technical, spatial]?

Project partner response:

- h. In which action planning phases did **public relations** take place (**i.e. informing the public**)?

Project partner response:

- i. What types of **public relations** were conducted (i.e. press release, flyer, information on city's homepage, events)?

Project partner response:

- j. In which planning phases did **public participation** in the action planning process take place (**i.e. the public provided feedback or information, active involvement in planning or/and implementing (e.g. planting trees)**)?

Project partner response:

- k. What type of **format** (s) did **public participation** take place (i.e. living labs, public meetings, surveys, interviews or other)?

Project partner response:

- l. How has **public feedback** influenced the action plan development process (i.e. what was changed due to public input)?

Project partner response:

- m. Has a maintenance and management plan been created? If yes, what are they and what purpose do they serve?

Project partner response:

- n. Did you meet your set targets and measures (i.e. deadlines set by the action planning team in the preparation phase)?

Project partner response:

- o. If yes, what was key in meeting your deadlines and targets? If no, what prevented you from meeting the set targets and measures?

Project partner response:

3. Feedback from the action plan team regarding action planning for urban environmental acupuncture:

- a. Based on your experience with the SALUTE4CE project: how do you think planning for small green spaces differs from planning of large green spaces?

Project partner response:

- b. How can the planning process for small green sites be improved in your country, city and region/FUA?

Project partner response:

- c. How do you feel planning using the concept of urban environmental acupuncture differs from traditional planning (it's not just small green space, we're talking about the concept of creating many small adjustments to improve the city as whole)?



Project partner response:

- d. What has been your experience both positive and negative utilizing urban environmental acupuncture (i.e. general feeling regarding the concept)?

Project partner response:

- e. What potential, if any, does urban environmental acupuncture have in the future of planning in European cities?

Project partner response:

- f. What would you recommend to improve The Transnational Concept for Action Plans created for the SALUTE4CE project in order to implement urban environmental acupuncture?

Project partner response:

- g. Are there any other thoughts you'd like to add concerning urban environmental acupuncture or concerning the development of action plans for UEA?

Project partner response:

- h. The IOER would like to create a Map with **ALL pre-selected (those considered) UEA sites and ALL final pilot project sites (those selected).**

Please complete the following table:

Site Coordinates of ALL sites considered: save location using https://geojson.io/ as GeoJSON or shapefile:	Initial criteria for selecting this site (why did you consider this site?):	Land use at time of evaluation (i.e. abandoned lot, parking, commercial, housing...):	Type of Intervention (NBS) considered or selected:	Was this site included selected as a pilot project? 1. Yes or No 2. Please explain the decision.
*Expand table as needed (there is no limit)				