

DELIVERABLE D.T2.2.3

Action Plan for the City/FUA of Alessandria based on Urban Environmental Acupuncture

Summary

Alessandria

Final version

09 2021

Fabrizio Furia, Angelo A. Ranzenigo, Jody Marco Abate, Giuseppe Zicari



Table of Contents

1. INTRODUCTION.....	2
1.1 CONCEPT OF THE ACTION PLAN IN THE CONTEXT OF SALUTE4CE PROJECT	2
1.2 OBJECTIVES OF THE ACTION PLAN	2
2. CREATION OF AN ACTION PLAN FOR THE CITY/FUA	3
2.1 CHALLENGES AND AIMS OF THE CITY/FUA	3
2.3 INVOLVEMENT OF STAKEHOLDERS AND INHABITANTS.....	3
2.4 WORK PROGRAM AND SCHEDULE	4
3. URBAN ENVIRONMENTAL ACUPUNCTURE SITES IN THE CITY/FUA	5
3.1 SELECTION OF UEA SITES	5
3.1.1 SITE ANALYSES - GENERAL AND PHYSICAL INFORMATION	5
3.1.2 SPECIFICATION OF IMPLEMENTATION SITES	6
3.2 PLANNING SINGLE ACTIONS.....	7
3.2.1 IDENTIFICATION OF MEASURES AND APPROACHES.....	7
3.2.2 PUBLIC FEEDBACK.....	7
3.2.3 SPECIFICATION OF MEASURES AND APPROACHES	8
3.3 RECOMMENDATIONS	9
3.3.1 MANAGEMENT AND MAINTENANCE PLANNING	9
3.3.2 CONTROLLING (MONITORING)	9
3.3.3 OUTLOOK AND FUTURE PROSPECTS	10

1. Introduction

Action planning based on the Urban Environmental Acupuncture (UEA) is an environmental and urban planning practice that uses the metaphor of acupuncture, a practice of traditional Chinese medicine, to designate the local character of interventions. UEA is based on the assumption that the effects of a small intervention, such as planting trees on an area of a few thousand hectares, can have great resonance. This theory opens the door to unconditional creativity and freedom. Every citizen has the opportunity to take part in the creative process, enhancing urban spaces for multiple ecological purposes. In a broader context, a site where an urban acupuncture project has been implemented can be considered as a place that brings citizens closer to nature. These small interventions in the urban context bring well-being to the community, promoting a process of revitalisation of the area, as well as improving ecological aspects.

Action planning on small urban acupuncture projects can be used to recover or revitalise marginal areas. In this way, the urban fabric is regenerated by involving the community to respond to a deficit of public space, and in particular, green space. Green spaces, trees and urban gardens become necessary factors for increasing urban resilience to current environmental challenges (climate change, reduction of biodiversity) and their use determines policies other than traditional urban planning and architecture.

1.1 Concept of the Action Plan in the context of SALUTE4CE project

The SALUTE4CE project is integrated in a general vision of improvement of public green areas and foresees the application of a methodology defined here as an Action Plan.

The most important parts of an Action Plan, in summary, are the following:

- General (municipal) project to improve public green spaces, biodiversity and to increase resilience to climate change.
- The SALUTE4CE project in the general strategies for the improvement of public green spaces.
- Establish objectives.
- Establish a programme to achieve the objectives.
- Identify resources to achieve the objectives.
- Schedule deadlines and indicators.
- Apply the established programme.

The local action plan is based on the “Transnational Concept of Action Plans for urban environmental acupuncture” (D.T2.1.1).

1.2 Objectives of the Action Plan

The Municipality of Alessandria has been planning for some time to adopt an urban green strategy that sets criteria and guidelines for the promotion of urban and peri-urban forests that are consistent with the environmental, historical-cultural and landscape characteristics of the places.

Policies should be based on three essential elements: increasing green infrastructure, reducing asphalt surfaces and adopting urban forests as a structural and functional reference of urban green. The urban forest includes all aspects of urban greenery such as forest patches, tree-lined avenues, large parks, urban gardens, historic villas, neighbourhood greenery, and architectural greenery including vertical forests and green roofs.

The involvement of stakeholders and necessarily multidisciplinary skills is essential to develop suitable public policies for the implementation of plans and projects based on ecosystem

services and green infrastructure networks, defined to achieve precise social, environmental, financial and employment objectives.

The action planning on green areas is therefore an important element in the regeneration of the urban environment. Urban greenery is a vehicle for well-being thanks to the eco-systemic services provided by nature, such as landscape improvement and social, recreational and functional contributions.

2. Creation of an Action Plan for the City/FUA

2.1 Challenges and aims of the City/FUA

The main objective of the Action Plan is the protection and development of urban natural resources through the integrated environmental management of green infrastructure by planting native and climate-resistant vegetation in functional urban areas lacking large green spaces: the Action Plan improves the capacity of the public sector and related entities in the management of green and blue infrastructure in FUAs (Functional Urban Areas) by using small green spots that are unattractive for other purposes or are currently unused.

The principles of urban environmental acupuncture are applied in three urban areas in the Municipality of Alessandria, defined as functional urban areas, suitable for this purpose (a total area of about 5,000 m²).

Four different projects called "The urban orchard", "The refuge forest", "The city's green lung" and "The greenery in the city centre" have been implemented. These green areas were designed to make advantageous use of the functional characteristics of trees: protection from chemical, visual and noise pollution, thermoregulating capacity and support for the wildlife in the city, encouraging opportunities for socialising, scientific dissemination and educational activities. A fourth project envisages the redevelopment of small planters in the city centre of Alessandria to house native shrubs and Mediterranean shrubs. Different types of plants has been used in order to compare their ability to resist the effects of climate change and urbanisation.

The interventions stem from the desire to shift the focus of public greenery from "ornamental greenery", which is not fundamental, to "functional greenery", with the aim of regenerating four degraded places through ecological-functional, socio-cultural, economic, urban planning and aesthetic-perceptive criteria.

2.3 Involvement of stakeholders and inhabitants

Stakeholder engagement, a tool for listening, dialogue and involvement with which administrators deal with their interlocutors in a logic of mutual collaboration and responsibility, is of fundamental importance. Participation of citizens and stakeholders is commonly understood as the practice of involving them in the public policy-making process. Stakeholder involvement also has an instrumental value, as it enhances transparency and the knowledge base on which policy-making is based, and reduces implementation costs. Involving citizens, in a context of transparency, can be seen as an enrichment of representative democracy and can, in some cases, avoid controversy and mistrust and dissatisfaction among citizens.

In the context of the Alessandria action plan, the stakeholder engagement was implemented through:

- **Public communication:** public policy makers transmit information to stakeholders. The information flow is one-way: stakeholders are not actively involved, no input from them is expected or required.
- **Public consultation:** policy-makers receive information from stakeholders as part of a process initiated by them. The contributions collected are perceived as representative of social views on the issue.

- Public participation: citizens, stakeholders and policy-makers exchange information.

In the case of the SALUTE4CE project, all three strategies were used. The mechanisms used were different at different stages of the cycle itself, i.e:

1. in the programming phase;
2. in the elaboration, drafting and approval phase;
3. in the implementation and monitoring phase.

2.4 Work program and schedule

PRELIMINARY PREPARATORY PHASE

Programming the types of interventions to be implemented in the Municipality of Alessandria

C2.1 The working group

C2.2 A vision on the choice of urban functional areas

C2.3 The selection of functional areas for the implementation of urban green acupuncture in the city of Alessandria

C2.4 Criteria for choosing urban functional areas where to install new green infrastructures

C2.5 Designing intervention plans according to the principles of urban green acupuncture

C2.5.1 Criteria for choosing plant species

ANALYTICAL PHASE: GATHERING INFORMATION

C2.6 General information on the city of Alessandria

C2.7 Soil consumption in Piedmont

C2.8 The state of health of water in Piedmont

C2.9 Animal husbandry and the protection of water resources in Piedmont

C2.10 Bees: indicators of the state of health of the agricultural environment in Piedmont

C2.11 SALUTE4CE: urban green acupuncture and functional areas in Alessandria shared with citizenship

C2.12 SALUTE4CE: The selection of functional urban green areas shared with stakeholders

C2.13 The four actions for functional urban areas in Alessandria

DEVELOPMENT PHASE: SELECTION AND PLANNING OF ACTIONS

C2.14 Climatic conditions

C2.15 Soil analysis

C2.16 The spontaneous vegetation of the Alessandria territory

C2.17 Urban acupuncture interventions in functional green areas in Alessandria

C2.17.1 PROJECT NO. 1. The urban orchard

C2.17.2 PROJECT NO. 2. The refuge forest

C2.17.3 PROJECT NO. 3. The city's green lung

C2.17.4 PROJECT NO. 4. Greenery in the city centre

C2.17.5 Equipment and instruments supporting the SALUTE4CE project

IMPLEMENTATION PHASE

C3.1 The final project of the interventions

C3.2 The FUA Maintenance Plan

C3.3 The Benefits Monitoring Plan

C3.4 Analysis of the Operational Phase

C3.5 Publicity Strategies and Actions

C3.6 Projects supporting SALUTE4CE

3. Urban Environmental Acupuncture sites in the City/FUA

3.1 Selection of UEA sites

In order 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 in order to explore alternative options;
- the next stage of the decision-making process through the use of 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:

1. Viale Teresa Michel
2. Via Milite Ignoto
- 3.1 Via Cavalli
- 3.2 Via Fausto Coppi
4. Via Croce/Via Pasino - School Morando
5. Via Galvani ang. Via De Gasperi - School Villaggio Europa
6. Lungo Tanaro Magenta -Parco Italia
7. Via Cavour - Giardini Pittaluga
8. Via Raschio
9. Via D'Angennes - Zona School Campi
10. Via Aldo Moro/Via Casalbagliano
11. 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 action plans were designed: "The Urban Orchard", "The Refuge Forest", "City's Green Lung" and "Greenery in City Centre".

3.1.1 Site analyses - General and Physical information

The pilot action in Alessandria is structured in four different actions called "The urban orchard", "The refuge forest", "City's green lung" and "Greenery in the city centre":

1. The urban orchard: via De Gasperi - via Galvani, coordinates 44° 54'102.6" N - 8° 37'120.5" E. The area is a portion of approximately 1.600 m² of flat grassy plot, rectangular in shape, located on the corner of the intersection between via De Gasperi and via Galvani, in the Europa district. On the west side of the area is the Villaggio Europa primary school. The area has long been uncultivated and unequipped. The soil was clayey with a high water retention capacity. The aim of the project is to plant fruit trees and sowing wildflower mixtures for the benefit of pollinating insects.

2. The refuge forest: via Benedetto Croce, coordinates 44° 55'103.6" N - 8° 37'142.5" E. This urban functional area is a not perfectly flat grassy plot, of irregular shape, which extends for about 1.225 m². This area is separated by a large concrete strip which is in front of the Morando Primary Institute. The soil is clayey with a high water retention capacity. The aim of the project is to plant trees and berry bushes, which will be able to support wild birdlife.

3. City's green lung: via Teresa Michel, coordinates 44° 55'117.2" N - 8° 37'142.8" E. This urban functional area is a rectangular grassy plot, flat in the centre and with depressions at the edges, of approximately 2.000 m². The soil is clayey with a high water retention capacity. The area is bounded to the south by a tree-lined pedestrian and cycle path, and to the north by the extension of the Urban Cemetery of Alessandria. The aim of the project is to plant tall, native trees with thermoregulatory and air-purifying functions. It is also envisaged that suitable equipment will be installed.

4. Greenery in the city centre: coordinates 44° 54'148.2" N - 8° 36'158.1" E. The area of interest is widespread as the project involves the redevelopment of dozens of flower boxes in all the main streets of the centre of Alessandria. The historical centre is in fact characterised by a very low density of vegetation, due to the almost total lack of green areas. The project envisages the redevelopment of small planters in the city centre of Alessandria to house native shrubs and Mediterranean shrubs. Different types of plants have been used in order to compare their ability to resist the effects of climate change and urbanisation. The pilot action is included in the project's Investment I3 with a total cost of € 109.800,00.

3.1.2 Specification of implementation sites

The elements of the four functional interventions are summarised below, including the rehabilitation of three green areas and the upgrading of small planters that will host native and Mediterranean shrubs.

Different types of plants were used in order to compare their ability to resist the effects of climate change and urbanisation.

The types of intervention envisaged in the preliminary design phase were therefore confirmed:

- the planting of trees, shrubs and flowers with rustic characteristics and adapted to the local pedoclimatic conditions;
- the regeneration of lawns with the creation of lawn areas with spontaneous essences (wildflowers), chosen from seed mixtures compared through experimental plots at Municipal Botanical Garden;
- the supply and planting of plants and shrubs, chosen with priority from those proposed by the project partnership;
- the pruning of shrubs, hedges, ground cover;
- the supply of agricultural materials, such as manure, certified agricultural soil, fertilisers and seeds;
- the carrying out of mechanical weeding, with pelargonic acid or pyro-diserbos;

- the upgrading of flower boxes in the urban centre;
- the involvement of citizens, administrators and other stakeholders such as the members of the Associazione Natura e Ragazzi.

3.2 Planning single actions

Through the phase of sharing with the stakeholders both the choice of the sites on which the interventions were implemented and the purposes of the equipped green areas, the working group duly translated the desires and hypotheses into a final project that was subsequently approved by the City Council, together with the administrative acts necessary to prepare the public tender:

- Special tender specifications
- Estimated metric calculation
- Chronoprogramme
- Price list
- Economic expenditure framework
- Table of labour costs
- Technical and environmental report
- Technical illustrative report
- Project tables

The projects, approved by the Municipal Council of the City of Alessandria, started on 19/04/2021. Three of them were carried out by entrusting a specialised company in the sector, while for the fourth, in accordance with the aim of directly involving stakeholders, it was decided to proceed through an operation carried out by the staff of the Botanic Garden with the collaboration of citizenship.

The approved and entrusted project, following the provisions of the regulations in force, detailed through various documents the operations and the characteristics of the works, including the intervention times which were fully respected.

3.2.1 Identification of measures and approaches

There is no reasonable doubt that the impact of the four pilot actions on mitigating the effects of climate change, given the small surface areas on which they intervene and the need to keep investments and subsequent maintenance operations to a minimum, is small, but their value in arousing and promoting a new approach to urban green areas is just as indisputable, with the hoped-for desire to see all of us mature in our civic sense through our way of experiencing the environment.

It is also for these reasons that the working group has always supported the need to implement the functions of the green areas, for example by creating clear and easy-to-read signs, an informative and popular value of the same, or by inserting within them some "life path" tools that add motivation and meaning to our outdoor living.

Moreover, in order to give the project future meaning, the working staff, in agreement with the stakeholders, considered it important to earmark part of the funding for the purchase of scientific instruments suitable for monitoring plant physiological parameters and environmental data, thus creating the conditions for updating meetings and discussions over time.

3.2.2 Public feedback

The rehabilitation of degraded or abandoned urban green spaces through the use of urban acupuncture techniques is fundamentally based on two important pillars.

On the one hand, interventions aimed at mitigating the effects of climate change are intended to be as effective as possible, seeking the most advantageous compromise between reducing investment/maintenance costs and minimising environmental impact during their implementation.

The second aspect, continually emphasised and strongly promoted by the project, is the involvement of stakeholders in all phases of the work, from the conception and design of the areas through to their subsequent implementation and maintenance.

Already in the case of traditional interventions, experience has shown that the simple publicising of the works carried out, through inaugurations and articles in the media, apart from generating initial enthusiasm in the citizens, has hardly been able to create sufficient levels of affection for the places to improve their approach to them.

The question the working group had to answer was: what is it that leads people to a protective and constructive attitude?

Unquestionably, what each of us protects is what becomes precious to each of us: whether it is a principle, an affection or a place, when these cease to exist only outside of us, then they become an integral part of our being, the clear colours of our lives.

But the environment, by definition and by law, belongs to everyone.

It is by making this definition our own that the working group decided to devote a great deal of energy to involving citizens, with diversified actions: by taking part in the Environment and Urban Green Commissions, we urged city politicians to take a stand on the effects of climate change; by presenting the project in specialist courses aimed at architects and agronomists, we tried to suggest new methods of landscape design and management.

And while the project ideas were taking shape during the meetings with the citizens, several schoolchildren were accompanied to the construction site to choose the positioning of the trees and bushes: it will be the citizens of tomorrow who will protect today's investments. A number of high school students spontaneously created educational and informative posters in the green areas, full of information on the environment but above all of participation. The local newspapers and television stations were not neglected, whose reports reached many people, telling them about the areas and telling them about the people.

The public was repeatedly offered the opportunity to participate in conferences and lectures on the project theme, which was complemented and enhanced by other projects proposed by local associations.

Proposals (already underway) for cooperation in maintenance operations have arisen spontaneously both from private companies and from groups of parents who have formed committees and who have managed to implement the spaces.

The image of the Botanical Garden of Alessandria has been linked to the Salute4CE areas: the experts from the Service have taken part in various initiatives to promote and describe the experience. In conclusion, a joint action with the technicians of the municipal administration was proposed to the citizens. It is through this synergy that we now believe we can change the initial paradigm: the environment belongs to no one, the environment belongs to everyone!

3.2.3 Specification of measures and approaches

The decision to plan, design, build and maintain green infrastructures according to "sustainable management" criteria must be shared with local communities, in order to give them an overall vision of the objectives set and how to achieve them.

For public administrations, a crucial issue in the management of relations with citizens is external communication, which must be simple, correct and constantly updated, in order to avoid problems linked to citizen dissent and to make them participate in the management of public assets. The promotion of public green policies can stimulate the development of good practices by citizens and achieve an improvement in the management of private green areas as well.

The SALUTE4CE project is integrated in the activities of promotion of public green areas, citizens' involvement and environmental dissemination carried out by the Municipality of Alessandria, the Botanical Garden and environmental associations such as RNA (Associazione Natura e Ragazzi).

Some institutional activities are now effectively integrated and connected with the SALUTE4CE project:

- Educational workshops and environmental dissemination at the Botanical Garden of Alessandria
- Public participation in the management of green spaces
- Micro-projects by organised citizens.

3.3 Recommendations

3.3.1 Management and maintenance planning

The management of green areas is complex and requires specific planning and management tools in order to give substance to enhancement and protection policies. For this purpose, three sector instruments for the management of urban green areas have been identified: census, regulation, plan.

To these, traditionally considered, must be added, if possible every year, the "Monitoring and management plan for green areas", as a decision-making support to the municipal administration,

The green plan, established by municipal resolution, is a voluntary tool designed to create the green system in the urban environment and provides a medium to long-term strategic approach.

To this end, the working group has drawn up a maintenance plan, a document that identifies and quantifies the interventions in a precise manner and thus allows monitoring of maintenance operations.

As a general rule, the provisions of the "Municipal green areas regulations of the municipality of Alessandria" approved by resolution no. 64 of 26 April 2017 apply.

The interventions for the creation of green areas designed according to the principles of urban acupuncture include the planting of trees and bushes, the sowing of small areas of wild flowers, the regeneration of grass carpets, the placement of wooden benches, exercise equipment and information boards, as well as the regeneration of at least 100 planters in the city centre area.

For each of these contributions, the minimum number of maintenance operations and their timing, including the quality details required during implementation, were stipulated.

3.3.2 Controlling (Monitoring)

1) 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. - 5 p.m. on the first 5 working days from April to September inclusive.

2) 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 on a monthly basis.

3) 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

Salute4CE areas. By administering a short multiple-choice didactic test after a one-hour lesson in the classroom and after a lesson of the same length in the field, it will be possible to determine the degree of attention/engagement of the students. Comparison for each class of two 10-question multiple-choice tests. The comparison value will be expressed in relative form.

4) Monitoring of the level of satisfaction through an anonymous questionnaire: the satisfaction of at least 2 stakeholder teachers involved per class during the different events (seminars, conferences, etc.) has to be detected.

5) Number of visitors to the areas per day: the number of visitors will be counted at 10 a.m. - 3 p.m. - 6 p.m. on the first and third Sunday of each month from April to September inclusive.

6) 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.

7) 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.

3.3.3 Outlook and future prospects

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.