Interreg Danube Region

Co-funded by the European Union

Be Ready

Acupuncture for Healthy Heat-resilient Communities

How Small Interventions Make a Big Impact in Cities

This project is supported by the Interreg Danube Region Programme co-funded by the European Union.

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1. Introduction: Be Ready for Urban Heat

Cities in Europe are suffering from heat. Due to the high density of buildings, asphalt, and paved surfaces, and limited vegetation, Urban Heat Islands (UHI) have formed, causing temperatures in cities to be several degrees higher than in surrounding rural areas.

The novel approach taken by the project Be Ready – "urban acupuncture" - allows the partners, both cities and knowledge partners, to take targeted, small but powerful, context-based measures to deal with UHI in critical urban areas. City pilots tested solutions in three areas: "green acupuncture" (vegetation-based interventions); "white acupuncture" (based on innovative surfaces and materials); and "blue acupuncture" (novel uses of water resources).

The digital brochure "Acupuncture for Healthy and Heat Resilient Communities" aims to translate the pilot experiences of the Be Ready project into practical and accessible knowledge for cities and stakeholders across Europe.

By presenting real stories, concrete tips and replicable ideas, the brochure supports the implementation of specific acupuncture measures against urban heat islands, while highlighting their contribution to key EU policy frameworks, such as the EU Strategy on Adaptation to Climate Change, the Territorial Agenda 2030, and the European Green Deal.

Developed in English and available in open access, this brochure serves as both an inspiration and a practical reference for building people-centered, climate-resilient urban environments.

About the Project

Be Ready is a transnational project bringing together 19 partners and 9 associated strategic partners from 12 countries to help cities adapt to climate change, with a strong focus on reducing Urban Heat Island (UHI) effects.

The project is co-funded by the Interreg Danube Programme and contributes to sustainable, inclusive, and resilient development across the Danube Region.

The project provides local and regional authorities with practical tools, research, and tested solutions to better understand and mitigate urban heat. Through 10 city pilots, partners co-create and validate green, blue, and white measures,

helping municipalities develop and implement targeted UHI resilience action plans.

Be Ready applies an urban "acupuncture" approach, based on small, targeted interventions with measurable impact on the built environment, public health, and quality of life.

As heatwaves intensify and become more frequent in Europe, the project shows how nature-based solutions and cross-border cooperation can reduce climate risks and strengthen long-term urban resilience.

Project website: https://interreg-danube.eu/projects/be-ready

2. What is Urban Acupuncture?

What is Urban Acupuncture?

The term urban acupuncture is often used, but it is not clearly defined. Interventions that fall into this category — small-scale, local projects, often carried out by the community — have been around for a long time.

The first mentions of urban acupuncture are in the professional discourse of architects Marco Casagrande and Jamie Learner (former mayor of Curitiba, Brazil).

Marco Casagrande developed the concept of urban acupuncture within his theory of the Third Generation City, where the city is understood as a living, adaptive system shaped by the interaction between human activity and nature. In his writings and projects, he argued that small-scale, carefully targeted interventions in key urban locations can initiate broader regenerative processes, improving the environmental and social performance of the urban fabric.[1]

Jamie Learner believed that "Strategic interventions can create energy and help strengthen existing scenarios. This is urban acupuncture - revitalizing diseased or depleted areas by simply 'touching' a key point. Just like in medicine, the intervention will trigger positive chain reactions, helping to heal and improve the entire system".[2]

Why Use Urban Acupuncture?

[1] *Casagrande, M. (2010). Third Generation City. Architectural Design, Vol. 80, No. 3, Wiley*
[2] *Lerner, Jaime. (2014). Urban Acupuncture. Island Press, Washington, DC*

In light of climate change, many cities are struggling to implement major systemic changes due to:

- Low budget resources;
- Urban congestion;
- Lack of coordination between departments.

Urban acupuncture offers a practical alternative:

- Accessible and high-impact interventions;
- Solutions designed to solve local problems;
- Verifiable and replicable projects;
- Carried out in collaboration with the community, increasing local responsibility and awareness.

Acupuncture in Be Ready: Three Types of Measures

Within the Be Ready project, urban acupuncture is applied through pilot interventions implemented in partner cities to address the Urban Heat Island (UHI) effects in selected urban locations. These pilot projects demonstrate how small and targeted actions can generate measurable improvements in thermal comfort, environmental quality and public space use.

The interventions are structured around three types of acupuncture measures, adapted to local conditions:

- Green acupuncture, using vegetation-based solutions to reduce temperatures and improve microclimatic conditions;
- Blue acupuncture, introducing small-scale water-related elements that support cooling and environmental awareness;
- White acupuncture, applying reflective materials, light-colored surfaces and shading solutions to limit heat absorption.

By carrying out these pilot projects, Be Ready provides practical evidence on how urban acupuncture can be integrated into local action plans and replicated in other cities in the Danube Region.

3. Green Acupuncture

Green acupuncture integrates vegetation into urban environments to reduce heat through natural cooling processes such as shading and evapotranspiration, improve local microclimates, and enhance residents' comfort and quality of life.

Plants don't just have an aesthetic role in cities – they also help cool the urban environment by providing shade, releasing water vapour through transpiration, and making the air cleaner and easier to breathe.

These interventions are small in size, have a significant impact, are strategically placed in spaces vulnerable to heat, such as courtyards, alleys, rooftops or concrete schoolyards. The goal is to restore the connection between people and nature, even in the densest urban areas.

Why Green?

Urban areas with little or no vegetation accumulate and retain heat, amplifying the Urban Heat Island effect. Green acupuncture reverses this by:

- Reducing surface and air temperatures;
- Supporting biodiversity, such as pollinators;
- Providing psychological and social benefits like stress reduction and community gathering spaces;
- Improving aesthetics and property values.

What might it look like?

Green acupuncture interventions vary based on context, but may include:

- Planting fruit trees, vegetable beds, flowers, herb spirals and benches;
- Mini-parks or "pocket parks";
- Park trees, shrubs, workout playgrounds, dry hill wall;
- Schoolyard greening with native species;
- Outdoor green vertical walls.

As part of the Be Ready project, cities have piloted nature-based solutions to reclaim heat-exposed spaces for people and wildlife. Green spaces have helped to gradually transform hot cities into more comfortable and livable places.

Pilot Zenica — Londža 2

Location: Zenica

Description:

The total surface area of the pilot location Londža 2 is 1,321 m². The pilot primarily benefits the residents of the Londža local community, one of the most densely populated urban areas in Zenica. Green acupuncture measure was carried out with the aim of enhancing the aesthetic and decorative function of the space, increasing biodiversity, and preserving endemic and strictly protected species such as the Serbian spruce (Picea omorika) and yew (Taxus baccata).
As part of the landscaping the following has done:

- existing yew, birch, and plane trees were pruned,
- 108 ornamental shrubs were planted (dwarf yew, lavender, barberry, yucca, feather grass),
- 138 ornamental perennials (carex, ivy, blue grass),
- 13 dwarf trees, including yew, Japanese maple, and mountain pine,
- 5 Serbian spruces.

In addition, the surrounding surfaces were enriched with white stone and river pebbles as well as pine bark, giving the area a natural and harmonious appearance. WPC (Wood Plastic Composite) seating boards were installed at 12 locations, creating a pleasant space for residents to rest and socialize.

Local engagement:

The pilot was co-designed through the Local Climate Sandbox Workshop (29 May 2025) with participation from city authorities, urban planners, climate-adaptation experts, businesses and civil society. A local stakeholder coalition pact, which had been previously established and formally signed, also participated in the process, ensuring coordinated input, stakeholder engagement, and alignment with local development priorities.

Testimonials:

"Before the Be Ready project, we rarely thought about how much the lack of trees and green spaces affected the summer heat in our neighbourhoods. Through the project, we learned how planting greenery and creating shaded areas can make a real difference for our health and daily comfort. What makes me happiest is that people in our community are now working together, including schools, families, and local groups, to make Zenica a greener, cooler, and more pleasant city to live in." - *Amira Kovač, Zenica resident.*

"The Be Ready – UHI Zenica project has clearly demonstrated the importance of integrating community engagement and scientific expertise in urban development. Through collaboration between experts, institutions, and citizens, we have developed practical, evidence-based solutions to address Zenica's specific urban heat challenges—from expanding green infrastructure to improving public awareness of climate impacts. The insights gained from this initiative will be invaluable in shaping our future urban and spatial planning strategies, ensuring Zenica continues to grow as a sustainable, inclusive, and climate-resilient city." - *Lejla Brljevac, Head of the Department for Urban Planning, City of Zenica.*

Lessons from the pilot:

The pilot confirmed that small, well-targeted interventions can have significant local impact if combined with community engagement and awareness campaigns. The experience gained can be shared with other municipalities in Bosnia and Herzegovina and the wider region through peer exchanges, workshops, and national climate adaptation networks.

Pilot Niš — Greening of the city center

Location: Niš, King Milan Square, Plaza in front of the Puppet Theatre

Description:

The Greening of King Milan Square focused on vertical greening of four canopy entrances to the underground passage and the replacement and addition of deciduous trees, including new planting locations. Climbing plant arches were installed on five main supports using independent structures, creating a green oasis that improves the microclimate, reduces the Urban Heat Island effect, enhances visual quality, and supports urban biodiversity.

The pilot included all preparatory and maintenance works, from planting and irrigation to pruning and protection, with a focus on testing climate-resilient plant species suitable for urban conditions. In addition to physical interventions, the action introduced an innovative seedling donation campaign, mapping key local stakeholders and existing greening initiatives from the public, business, and NGO sectors.

Local engagement:

In November 2024, the City of Niš and 18 local stakeholders signed a local coalition agreement to strengthen cooperation in addressing climate change impacts, with a focus on Urban Heat Islands (UHI). The coalition brings together actors from research, business, civil society, and public institutions to develop and implement UHI mitigation actions tailored to the urban context of Niš. Beyond the joint implementation of a Be Ready pilot action, the cooperation includes ongoing coordination and information exchange, participatory UHI risk assessments, community engagement and awareness-raising activities, and the co-creation and testing of solutions to reduce UHI effects in the city.

Testimonials:

“Finally, we can hope for a change in the city center. The new plantings will bring freshness, and the square, hopefully, will be pleasant to stay in even on warmer days.” - *M.J., resident of the city center.*

“Perhaps the most important segment, which will continue to live on and bring new green areas to our city, is the innovative tree-planting donation scheme through which we introduced the city’s Greenery GIS application, now available to all citizens and all institutions in the city. We have also improved the already existing Medijana app, Eko Lovac, where citizens can propose new planting locations, and we have opened a dedicated account where anyone can donate and contribute to making our city greener.” - *Ivana Miljanović, City Administration for Local Economic Development and Investments and Project Coordinator for the City of Niš.*

Lessons from the pilot:

To strengthen society’s readiness and capacity for adaptation to cope with the impacts of climate change and to enhance resilience at the city level, it is essential to better inform the public about the importance of climate change adaptation, as well as to encourage citizen participation in decision-making related to this topic, and to strengthen the capacity and preparedness of local administrations to better plan and manage climate adaptation and disasters.

It is also essential to select and test climate-resilient plant species, as summers are becoming increasingly hotter. Consequently, planting practices must be adapted to ensure that new plantings have a higher chance of survival under changing climate conditions.

Pilot Podgorica — Public bus shelter

Location: Bulevar knjaza Danila Petrovića (City Kvart) in Podgorica

Description:

A public bus shelter has been modified with a green roof intended to help cool the area both for the public transport service users and the personnel and customers of the newsstand underneath. The dimensions of the shelter roof to be covered by heat-tolerant vegetation are 8 m x 2 m (16 m2). The green roofing of the public bus shelter located in the UHI-affected area is intended to create a UHI-mitigating effect on the micro location use by the broad public, both the residents and small business owners of the neighbouring apartment buildings, and the commutes using the public transportation in Podgorica. Reducing the ambient temperature at the micro location by covering the public bus shelter with the heat tolerant plants is one of expected results, with air purification, saving energy consumption for newsstand cooling, rainwater buffering, and biodiversity encouragement being the expected secondary effects.

Local engagement:

Members of the local coalition pact gathering the stakeholders from Podgorica and Montenegro discussed possible micro locations for the pilot activity and proposed the intervention solutions at the local workshop held on 24 October 2024 in Podgorica, while the concrete solution was defined at the launching event of 5 December 2024. Both online and in person questionnaires were filled and the responses analysed, discussed and the proposals were pinned on the wall-mounted map of the city, then re-examined among architects, city planners, NGO activists, healthcare experts, municipal utilities' providers, and others, before the final decision was reached both for the UHI-affected micro location and the intervention solution.

Testimonials:

"As someone who lives in this part of the city, I'm thrilled to see projects like this happening right in our neighborhood. A greened bus stop shelter brightens the area and gives a sense of nature in the heart of the city. It's wonderful to see greenery amid the buildings." - *Miroslav Boljević, City kvart resident.*

"I view this as a small but meaningful step in improving urban life. Green roofs are already a standard feature in major cities worldwide. They enhance the cityscape, improve microclimates, and elevate quality of life, while also showing that Podgorica is keeping pace with global sustainable development trends." - *Hadži Vesna Vujošević, Head of Office for International Cooperation and Partnerships, Capital city Podgorica.*

Lessons from the pilot:

The experience gained through this pilot provides lessons that can serve as a solid foundation for knowledge transfer—both within the local context and to other municipalities interested in similar initiatives. The process demonstrated the importance of careful preparation, from drafting a clear and comprehensive project description to coordinating technical requirements, selecting suitable plant species, and organizing the implementation phase. Furthermore, the project highlighted the significance of collaboration between different sectors—urban planning, environmental protection, local governance, and community representatives—which proved essential for successfully integrating green infrastructure into an existing urban setting.

4. Blue Acupuncture

To combat urban heat and flooding, blue acupuncture uses water-based solutions. Water cools the surrounding air as it evaporates, making it a powerful natural ally for cities trying to adapt to extreme temperatures. Water systems also help manage heavy rainfall and create welcoming public environments.

Blue acupuncture differs from large-scale water infrastructure projects by focusing on localized interventions, often being developed to serve as both functional and social spaces.

Why Blue?

Due to climate change, cities are facing two extremes: hot, dry, summers and unexpected, intense storms. Blue Acupuncture addresses both by:

- Evaporative cooling that reduces temperatures in paved areas;
- Retention and infiltration of rainwater to prevent flooding;
- Designing enjoyable, interactive public spaces for all ages;
- Improving visibility of water management and community education.

What might it look like?

Examples of small-scale blue interventions include:

- Bioretention basins such as rain gardens (including 'pocket parks'), planter boxes and swales;
- Public art installations using water spray or jets;
- Cloudburst Roads;
- Wet plazas or floodable public spaces;
- Constructed stormwater wetlands;
- Floodable Parks and recreation spaces.

Be Ready pilot projects show how blue acupuncture transforms hot pavements and urban structures into cool, pleasant environments that are both functional, beautiful, and inclusive.

Pilot Kranj — Rain Zone

Location: Main Square (Glavni trg) in old city center of Kranj

Description:

The pilot action in Kranj was implemented as a blue measure, using water-based solutions to mitigate Urban Heat Island (UHI) effects. Based on the Vulnerability Assessment Report, the inner-city core was identified as the most affected area, leading to the installation of a "water cloud" with a misting system in the centre of the old town.

The pilot introduced an innovative cloud-shaped structure made of waterproof wool, equipped with a water vapour distribution system that cools the space during hot summer days and provides refreshment for citizens, visitors, and pets. The intervention was very well received, particularly by young people, and quickly became a popular gathering point and a visible symbol of innovative public space design.

Local engagement:

The pilot was co-designed through the Local Climate Sandbox Workshop (20 May 2025) with participation from city authorities, urban planners, climate-adaptation experts, businesses and civil society. A local stakeholder coalition pact, which had been previously established and formally signed (October 2024), also participated in the process, ensuring coordinated input, stakeholder engagement, and alignment with local development priorities. This collaborative approach created a strong local coalition, ensuring that the pilot was not only technically sound but also aligned with community needs and wider strategic planning objectives. The involvement of diverse stakeholders also enhanced the replicability and sustainability of the pilot's outcomes.

Testimonials:

"We have pronounced heat waves, which are then interrupted by storms, precipitation events or long-term droughts. Economic damage is caused, people also feel worse, because heat is a silent killer." - *Climatologist Lučka Kajfež Bogataj from the Biotechnical Faculty in Ljubljana.*

"We want to develop Kranj as a city that breathes with nature - as a city that knows how to combine urban development and climate responsibility. This is the direction we are going in, and we will insist on it. My recommendation to other municipalities is: start with small but visible steps. Every tree, every new green space, every retention solution is part of a bigger story. It is important that you move forward - together with people and with a clear goal. Be Ready project is a proof, that it works" - *Mayor of the City of Kranj Matjaž Rakovec.*

Lessons from the pilot:

The pilot demonstrates that small, temporary interventions can achieve high impact in dense and heritage-protected areas, and that creative, artistic solutions increase public support for climate adaptation. It also confirmed the importance of multidisciplinary cooperation between urban planning, heritage, design, and technical experts, while showing that visible pilot actions raise awareness and encourage behaviour change. Peer learning supported transferability: the pilot was positively evaluated by external reviewers, recognised as a replicable good practice, and shared within the Be Ready network and at national and EU urban-climate platforms, supporting further innovation in adaptive urban cooling.

Pilot Ratiboř — Bioclimatic bus stop

Location: Ratiboř

Description:

The area being tested in the pilot project was described in the project as an extensive area of over 6,000 m² located right in the centre of the village. The pilot project is located at a bus stop, a place where several hundred residents of Ratiboř pass through every day.

The pilot project consists in installation of two vertical adiabatic panels for cooling air through water evaporation, three double benches facing each other for socialising for up to six people, a central segment for climbing plants planted in the original terrain, and installation of an information panel in the central part. The roofed areas are covered with a light green roof with succulents.

Local engagement:

The project involved

- Representatives of the municipality of Ratiboř – persons with decision-making powers;
- Local residents – children, adults, senior citizens;
- Climate adaptation experts.

Testimonials:

"The new bioclimatic bus stop in the center of Ratiboř, built as part of the Be Ready project, represents a modern and sustainable solution for public spaces.

Thanks to its green roof and adiabatic water circulation system, it improves the microclimate, provides comfort for passengers, and reduces dust and temperature in the surrounding area. It is an example of a responsible approach to climate protection." - *Martin Žabčík, Mayor of Ratiboř.*

"The new bus stop is very pleasant. I often wait here with my children and appreciate the greenery and comfortable benches where we can relax and chat. This place is very busy, both in terms of traffic and people, and I believe that in the future it will be even more pleasant on hot days." - *Martina Janků, resident of Ratiboř.*

Lessons from the pilot:

The pilot is an example of good practice in the field of micro-adaptations to UHI, transferable within and beyond the region.

The project and the cooperation of partners have brought increased interest in planning new adaptation elements combining the environmental, social and sustainable dimensions in the municipality. The constructed bioclimatic bus stop serves as an example of good practice. The municipality of Ratiboř has good experience with presenting the outputs of good practice (they often receive visits from mayors and citizens from other cities), therefore it is assumed that the outputs of the Be Ready project will also be presented to interested parties in the future. Cooperation with a scientific partner and the involvement of a company in the project, which is dedicated to adiabatic cooling, have created new opportunities for cooperation, which represent a space for the transfer of acquired experience and for the development of new smart solutions for adaptation measures in settlements.

Pilot Galati - Mitigation of the Urban Heat Island Effect in the Municipality of Galati

Location: Galati, Brailei Street

Description:

The pilot project "Mitigation of the UHI Effect in the Municipality of Galați" was designed as a demonstrative intervention to reduce the effects of excessive urban heat, improve thermal comfort, and strengthen the city's resilience to climate change through green and blue infrastructure.

The project implemented a set of green and blue measures integrating natural and technical cooling functions:

- Installation of rain gardens and permeable pavements to manage stormwater and reduce surface heat;
- Creation of vegetated pergolas, planters, and green façades using drought-resistant native species;
- Introduction of smart misting systems and urban cooling points in areas with high pedestrian flows;
- Placement of urban furniture and seating zones in shaded areas;
- Awareness activities and public events to engage citizens in the co-design process.

Local engagement:

The pilot project was implemented through a collaborative and participatory approach, ensuring that all relevant local actors were actively engaged from the planning stage to post-implementation monitoring. A Local Climate Adaptation Coalition, coordinated by the Galati Municipality, was actively engaged throughout the pilot. The coalition

included municipal departments (Urbanism, Environment, Public Works), NGOs, academic experts, and local community leaders. This coordinated engagement ensured that the pilot was community-driven, technically sound, and socially inclusive, establishing a governance model that can be replicated in other Romanian cities.

Testimonials:

“It’s much more bearable to wait for the bus here now. You can really feel it’s cooler, and you don’t feel suffocated by the heat anymore.” - *Anca Savin, resident.*

"We have identified, at the moment, a bus stop to be "dressed up" with plants which will absorb the heat and insulate the space, in parallel with a water spraying station which, as you know, is very efficient for cooling such areas." - *Sorin Enache, deputy mayor of Galați*.

Lessons from the pilot:

The Galați pilot project demonstrated how small-scale urban acupuncture interventions can effectively mitigate local UHI effects. The installation of green façades at the Brăilei Street bus stop illustrated how targeted vegetation-based measures can improve microclimate conditions and increase comfort in public spaces. Key lessons highlight the importance of early coordination between local authorities, transport operators, and maintenance services to ensure technical feasibility and long-term sustainability. While green façades and water-based elements deliver strong environmental and visual benefits, they require adequate supporting infrastructure and maintenance. Public feedback showed strong support for such interventions, confirming the value of citizen engagement. Overall, the Galați pilot provides a transferable model, demonstrating that integrating feasibility, maintenance planning, and community involvement from the outset supports scalable and sustainable urban climate adaptation.

5. White Acupuncture

White acupuncture refers to urban built surfaces - sidewalks, facades, roofs - to reduce their ability to absorb and retain heat. In most cases, cool or reflective materials, innovative coatings, or lighter colors are used to reduce surface temperatures and reflect solar radiation.

This strategy is especially useful in congested areas where there is no possibility of adding vegetation or water.

Why White?

Common building materials — asphalt, reinforced concrete, brick — absorb up to 95% of the sun's energy, dispersing it back into the environment. White acupuncture prevents this by:

- Reducing roof and pavement temperatures by several degrees;
- Lowering energy demand for air conditioning;
- Improving pedestrian accessibility and user comfort;
- Contributing to better air quality and public health.

What might it look like?

White acupuncture refers to the use of smart, thermally reflective materials to improve the city's microclimate:

- Reflective roof coverings;
- High-reflectivity paving materials for streets and squares;
- Light/white, mobile modular structures for pop-up cooling;
- Light-colored bus shelters or walls;
- Modern asphalt innovations for heat-sensitive neighborhoods.

The results of the Be Ready pilot studies highlight how technical solutions can be integrated into existing urban infrastructure, contributing to the creation of cooler, more efficient, and more sustainable cities.

Pilot Sofia - Acupuncture climate shelter

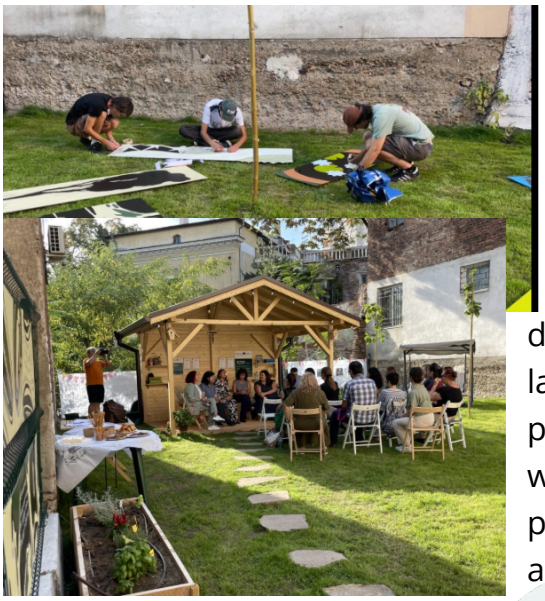
Location: Sofia, 55 Veslets Street

Description:

The pilot area covers approximately 350 m^2 in the yard of a municipally owned building with direct access from Veslets Street, in the Draz Mahala neighborhood near Lion's Bridge. The pilot project transforms a neglected municipal yard into a climate shelter, offering relief and coolness to the public. Developed in collaboration with local stakeholders, the site was cleared and redesigned as a climate-resilient, permeable space, featuring shaded seating with a water misting system, a drinking fountain, and extensive tree and plantings following guidelines developed by the University of Forestry for Sofia Municipality. A small community garden with raised beds was added based on residents' input from a co-design workshop. Additional eco-friendly elements—such as a rainwater collector, compost bin, birdhouses, and a bug hotel—support biodiversity and community use, complemented by flexible furniture and games to encourage everyday social activity.

Local engagement:

Over 130 stakeholders were involved in the planning and implementation of the pilot, starting with a co-design workshop in May that brought together 42 participants from the local coalition, including citizens from other European countries.



As the project progressed, volunteers from diverse backgrounds contributed at different stages, including handymen, landscaping, art and design students and professionals, NGO activists, and social workers. The collective effort supported planting activities, visual enhancements, public art, and the organization of initial community

events. Members of Vuzel Studio created public art in the climate shelter, using storytelling to engage visitors with climate change mitigation.

Throughout the process, Sofia Municipality and the Serdika District Administration provided essential coordination, support, and institutional backing

Testimonials:

"Mitigating urban heat requires cities to not only develop appropriate infrastructure, such as shading, water features, reflective surfaces, and climate-adapted vegetation, but also to engage vulnerable groups and the wider community in preparation and responsive action. The new climate refuge exemplifies how these dual objectives can be effectively achieved." - *Ekaterina Yordanova, Sofia Municipal Council.*

"We were delighted to take part in the co-creation of Sofia's new climate shelter. Through public art, we aimed to educate and engage citizens in climate change mitigation. The shelter not only merges infrastructure with community engagement and storytelling, but also creates a platform for young artists, like our Vuzel Studio, to showcase their work." - *Vyara Momcheva, Vuzel Studio.*

Lessons from the pilot:

A good climate shelter meets a variety of needs and functions, including heat refuge and awareness about the risks and mitigation measures; small event space, play areas for children, spaces for relaxing or meeting friends, taking lunch breaks, etc. The successful climate shelter has five key qualities: it provides seating, shade, water, internet and charging facilities; it is accessible; allows people to engage in activities; is a comfortable space and has a good image; and finally, it is a sociable place where people meet each other.

Pilot Chisinau — Pavilion for children's outdoor activities

Location: Chisinau, area adjacent to Kindergarten No. 100

Description:

The Chișinău pilot intervention involved the construction of a modern, partially enclosed pavilion for children's outdoor activities and the landscaping of the surrounding area at Kindergarten No. 100, located on Moscova Boulevard in the Râșcani sector. The pilot area covers 44 m², including a 22 m² pavilion designed for small-group outdoor activities.

The project followed a structured process, from site analysis and procurement to design development, permitting, construction, testing, and final validation. In addition to project funding, municipal budget resources were allocated to complete the pilot and on-site arrangements.

Local engagement:

The pilot involved key stakeholders including the General Directorate of Architecture, Urban Planning and Land Relations, the Directorate General for Education, Youth and Sport as the main benefiting authority, and the Kindergarten's Principal and staff. Technical consultants, urban planners from the Municipal Design Institute "Chişinăuproiect", and architects with expertise in educational infrastructure and urban greening also participated.

The local community was engaged to support maintenance and responsible use of the space, ensuring active involvement and ownership. This collaboration formed a strong local coalition throughout planning and implementation.

Testimonials:

"I'm thrilled with this new pavilion for children - it's a safe, vibrant space where our children can explore and learn outdoors, fostering creativity and joy in a way that

feels natural and engaging. The eco-friendly design of the pavilion, made from sustainable materials with innovative creative elements integrated, makes this playground a true haven for play and discovery. As the kindergarten director, I see this as a wonderful step toward a greener future for our children, and I'm grateful to all involved for bringing this innovative project to life. We would like to have more like this one on the territory of our kindergarten and others as well." - *Victoria Cravțov, Principal of the Kindergarten no. 100.*

"This innovative pilot pavilion at Kindergarten No. 100 is a shining example of how we can combat climate change while creating safe, joyful spaces for our children. The pavilion's eco-friendly design, crafted from sustainable and child-safe materials, not only shields our little ones from rising temperatures but also inspires hope for a greener, more resilient future for Chișinău and the Danube region. Together, through projects like this, we're building a better world—one step at a time." - *Irina Gutnic, Deputy Mayor of Chișinău Municipality.*

Lessons from the pilot:

The pilot demonstrated the importance of integrating climate adaptation into school infrastructure to improve comfort and safety for children. Early and active involvement of stakeholders, including municipal authorities, educators, and the community, proved essential for project success and sustainability. Challenges such as navigating approval processes and ensuring long-term maintenance highlighted areas for improvement. The experience offers valuable insights that can be transferred to other urban settings facing similar UHI challenges, promoting the replication of green, safe, and climate-resilient designs in public spaces to enhance urban living conditions.

Pilot Heviz — Sun Sails

Location: Deák square, Heviz

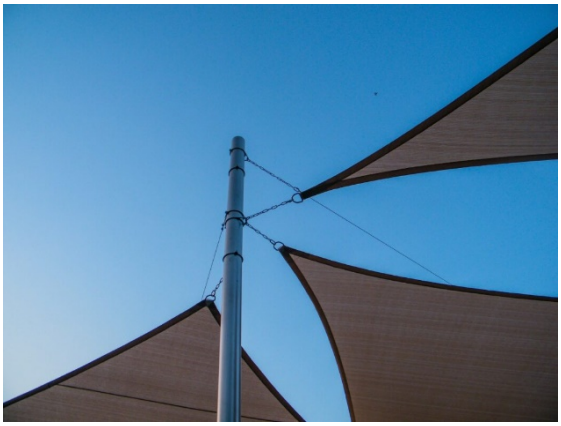
Description:

The pilot implemented a white shading intervention using sun sails in a newly built public square in the city of Hévíz. The square lacked natural shading, which made it particularly vulnerable to heat stress during peak summer periods. The square had been developed as a multifunctional space for events, markets and daily pedestrian use, but it was paved almost entirely with impermeable stone and had no meaningful natural shading.

Because the square is located at the end of a pedestrian street with shops and restaurants, and directly next to an entrance to the Thermal Lake of Hévíz, it is exposed to high foot traffic and queuing in summer. At the same time, dense underground utilities running under the square made in ground planting and the previously considered combined green intervention technically impossible. For these reasons, a non-intrusive, above-ground shading solution was selected. Following stakeholder consultations and budget assessments, sun sails were selected as a feasible and effective white measure to immediately improve thermal comfort. The installation took place over the spring–summer period of 2025.

Local engagement:

The pilot was designed with the involvement of urban planning and development, local businesses, civil society representatives, citizens, the project team, and city authorities. Input was gathered through a local Climate Sandbox workshop and through ongoing consultations with the city's technical departments and planners.



Testimonials:

"Since the sails went up, the square finally works in the middle of the day. We can pause in the shade, let the kids rest, and enjoy the events" - *Krisztina Bolla, 38, local resident (Hévíz).*

"Given the underground utilities and full paving, sun sails gave us fast, flexible shade with little disruption. Visitor feedback has been consistently positive, and daytime events run far more smoothly." - *Tamás Pállfy, Tourism Officer, Municipality of Hévíz.*

Lessons from the pilot:

The pilot demonstrates that even small-scale low-tech measures can have meaningful impact when carefully placed and designed. Other cities with similar spatial or budgetary limitations may benefit from exploring white measures such as sun sails as a complementary strategy. Lessons learned include the importance of early stakeholder engagement, flexibility in design, and the potential value of adding monitoring components for future pilots.

Pilot Varaždin — Mali plac

Location: Varaždin

Description:

The pilot was implemented at Mali plac, a small urban square in Varaždin, identified as one of the city's urban heat islands. The location had not undergone any investment or upgrade since its construction in the 1980s, which left the space outdated, lacking shade, and uncomfortable for citizens during the summer months. The Development Agency North, in cooperation with the City of Varaždin, designed and executed an infrastructural intervention based on "white measures" aimed at mitigating the urban heat island effect. The intervention included the construction of three new canopies providing much-needed shade during peak summer heat. The space was additionally equipped with new urban furniture such as benches, tables, and swings, making it more attractive, functional, and user-friendly for the local community. The pilot activities were prepared and implemented throughout 2025, with the installation works completed during the summer period to ensure immediate impact in the hottest season. Resources were provided through the Be Ready project, combining technical expertise, municipal support, and targeted infrastructural investments.

Local engagement:

The pilot was developed and implemented through broad stakeholder involvement to ensure scientific validity and community relevance. Two workshops brought together key institutions, including the University of Zagreb (Faculties of Geotechnical Engineering and Science), the Red Cross, the Institute for Spatial Planning of Varaždin County, HEP, the Architects' Association of Varaždin, Parkovi Varaždin, and the Regional Energy Agency. The general public and core project partners—Development Agency North, the City of Varaždin, and 3E projekti

(responsible for technical implementation) - were also actively involved. This collaborative approach strengthened the local coalition, ensuring alignment with community needs, strategic planning objectives, and supporting the replicability and long-term sustainability of the pilot.

Testimonials:

"It was really needed — during the summer it was almost impossible to sit here because of the heat. Now we finally have shade, and people come back to the square again." – *Local citizen.*

"The Mali plac pilot showcases our commitment to climate resilience by testing green solutions to reduce urban heat. Initial feedback is promising, and the project serves as a model for future improvements in public space and environmental sustainability across the city." – *Emanuela Grđan, public official.*

Lessons from the pilot:

The pilot demonstrated that even small-scale, low-cost interventions can bring visible improvements in addressing urban heat islands. A key lesson learned is the importance of early and continuous involvement of residents, as their input strongly influences the acceptance of the final solution. Engaging the community from the outset helps ensure that interventions are both technically effective and socially embraced. Another lesson is that cross-sector cooperation—involving universities, municipal companies, professional associations, NGOs, and local authorities—provides valuable expertise and strengthens the relevance and sustainability of solutions.

The pilot therefore offers significant potential for learning transfer. Other municipalities can adopt similar white-measure approaches to mitigate heat in urban areas, while also replicating the participatory and cross-sector model of planning and implementation.

6. Conclusion

Across the 10 Be Ready pilot cities, urban acupuncture interventions were implemented at multiple strategic micro-locations, covering a combined intervention area of several thousand square metres in dense urban cores, public squares, transport nodes, educational facilities, and neighbourhood spaces. The pilots directly benefit thousands of daily users, including residents, commuters, children, elderly people, and visitors, particularly in areas identified as highly exposed to UHI effects.

The implemented measures—ranging from green façades, tree planting, rain gardens and green roofs to water-based cooling systems, misting installations, shading structures, and reflective surfaces—demonstrated tangible improvements in thermal comfort, shading availability, and microclimate quality. In several pilots, measurable surface and ambient temperature reductions were observed locally, while others provided immediate perceived cooling effects, especially during heatwaves. Beyond physical cooling, the pilots enhanced biodiversity, improved stormwater management, and increased the usability of public spaces during hot periods.

Equally important, all pilots were developed through strong local stakeholder engagement, reaching hundreds of actively involved participants and many more indirect beneficiaries. The pilots confirmed that small-scale, targeted interventions, when combined with participatory design and cross-sector cooperation, can deliver high-impact, replicable solutions for urban heat adaptation. Together, the Be Ready pilots provide a robust evidence base for scaling up climate-resilient measures within cities and transferring tested approaches across the Danube Region and beyond.

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1. *City of Zenica, page 7 - 8*
2. *City of Niš, page 9-10*
3. *Capital City Podgorica page, 11-12*
4. *City of Kranj page 14 – 15*
5. *Municipality of Ratiboř, page 16 – 17*
6. *Municipality of Galati, page 18 – 19*
7. *Sofia Development Association, page 21 – 22*
8. *Chișinău Town Hall, page 23-24*
9. *Municipality of Hévíz, page 25-26*
10. *Varaždin, page 27-28*