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D.2.2.2: REPORT ON THE PILOT IMPLEMENTATION

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Table of contents

THE SUMMARY:

Heatwaves are becoming stronger and more frequent across Central Europe. They make life in cities harder, increase health risks for children and the elderly and reduce comfort in public spaces. The Ready4Heat project set out to test practical ideas in four different cities, to show how both people and places can adapt. The pilots were not large-scale constructions, but small steps with big impact: creating shade, lowering indoor temperatures, building cooperation and making communities stronger.

The four cities tried different approaches. In Slovenia, Maribor focused on children's safety by placing pergolas with climbing plants in kindergartens. These structures not only create shade but also turn outdoor play into a healthier and more enjoyable activity. In Germany, Worms looked beyond physical measures and built a strong community network, linking local services and citizens to share knowledge, coordinate help and make sure vulnerable groups are not left alone during heatwaves.

In Austria, the city of Weiz tested technology as a solution, installing a solar-powered cooling system in a senior home. This showed how renewable energy can protect elderly residents from overheating while keeping energy costs and emissions low. Finally, in Hungary, Hajdúböszörmény planted dozens of "green islands" across the city – benches with pergolas, trees and plants that provide shade and cooler places for people to rest in the summer.

These pilots all faced challenges. Plants need time and care to grow; contracts and procurement can cause delays and community networks require long-term commitment. But they also proved that change is possible. Even modest actions can reduce heat stress, improve comfort and inspire people to take part in climate adaptation.

The project shows also a bigger picture - there is no single solution for heat. Instead, different methods can work together such as green spaces, smart technology and strong communities. What matters most is that solutions fit local needs, are cared for over time and are supported by the people who use them.

INTRODUCTION:

The aim of this document is to present the results of the pilot actions carried out in the Ready4Heat project. It explains what was done in each pilot city, why these actions were important and what partners learned from them. The report also provides the background of the evaluation, showing how pilot activities can help cities and communities prepare for and adapt to more frequent and intense heat waves.

Heat waves are one of the most pressing climate challenges in Central Europe. They affect people's health, especially children, the elderly and those with chronic illnesses. They also reduce the quality of life in cities, where built-up areas trap heat and limit cooling. Ready4Heat was designed to test practical solutions at the local level, combining technical measures, nature-based solutions and community engagement. By evaluating these pilots, partners can better understand what works, what needs to be improved and how to transfer these experiences to other places.

The purpose and scope of this document are to give an overview of all four pilot actions – in Slovenia (Maribor), Germany (Worms), Austria (Weiz) and Hungary (Hajdúböszörmény). It covers the objectives, the implementation steps and the first results of each action. It also points out the challenges that occurred during implementation, including time deviations and the ways in which they were addressed. The pilot evaluation will be carried out in detail within the project deliverable D.2.3.1 – Evaluation of the pilot

actions, which will summarize the findings and lessons learned. The evaluation phase will continue until October 2025, ensuring that monitoring results from two consecutive summers are included.

The context of heat wave challenges is clear - Central European cities face rising temperatures and increasing risks to vulnerable groups. Addressing these risks requires both technical and social responses. The Ready4Heat pilots show that small-scale but well-designed measures can make a difference in protecting people and creating healthier environments.

Key features from each pilot action include:

Maribor (Slovenia)

Installing pergolas with climbing plants in kindergartens showed how green shading can improve comfort for children. Early results highlight the importance of plant care and engaging staff in maintenance.

Worms (Germany)

A local heat protection network was created, bringing together health services, municipal actors and community organisations. This network proved that cooperation and knowledge sharing are key to protecting vulnerable groups.

Weiz (Austria)

Renewable energy and cooling solutions were introduced in a public building. This demonstrated how technical measures can reduce indoor heat and improve comfort, while also lowering energy use.

Hajdúböszörmény (Hungary)

The city built 47 green islands in public spaces and institutions. These islands provide shade and improve the local climate, but they also showed the importance of long-term care, maintenance and involvement of local stakeholders.

Together, these pilot actions demonstrate that different approaches – from green infrastructure to energy efficiency and community networks – can all contribute to heatwave resilience. The experiences documented here will support other cities in designing effective measures and transferring the solutions.

PILOT ACTIONS:

The Ready4Heat project tested pilots in four Central European cities to show how local communities can better cope with extreme heat. Each pilot focused on a different approach – from green infrastructure to technical cooling systems and social networks, but all shared the same goal: protecting people, especially the most vulnerable, from the dangers of heatwaves.

In Maribor (Slovenia), two kindergartens received wooden pergolas planted with climbing plants. The aim was to create shade, reduce overheating on playgrounds and offer children a healthier outdoor environment. Kindergarten teachers reported that children enjoy the new shaded areas and spend more time outside. While the full effect will only be visible once the plants mature, early measurements already show a positive impact on comfort and microclimate. A key lesson is that regular plant care and the involvement of staff are essential for long-term success.

In Worms (Germany), the focus was on people and cooperation. The city created a local heat protection network that brings together health services, municipal departments, care institutions and volunteers. This

network organizes training, events and information services such as maps of cool places and a heat hotline. The pilot showed that structured cooperation and shared responsibilities are crucial for protecting vulnerable groups like the elderly. It also highlighted the importance of long-term planning, so that the network can continue beyond the project.

In Weiz (Austria), the pilot combined renewable energy with comfort in a senior home. A photovoltaic system was installed together with a solar-assisted cooling unit in the dining hall, a space often affected by heat stress. The aim was to test how sustainable technologies can provide relief for elderly residents while keeping energy use and costs low. Although delays in procurement slowed progress, the system is now ready for monitoring. The pilot will provide valuable data on how solar-powered cooling can be integrated into care facilities across Europe.

In Hajdúböszörmény (Hungary), the city created 47 “green islands” (benches with pergolas, trees and climbing plants) in public spaces and around institutions such as schools and retirement homes. These islands offer shade, improve the local climate and increase biodiversity. Residents welcomed the new spaces and began to use them for rest and recreation. Challenges include the need for constant maintenance, watering and protection against vandalism, but the pilot clearly showed how even small patches of greenery can make cities more liveable in hot summers.

These pilots demonstrate that there is no single solution to heat stress. Green shading, social networks, technical cooling and urban vegetation all play a role. The key findings ensure that success depends not only on technology, but also on people: their involvement, commitment and capacity to maintain and expand what has been started.

Slovenia:

Brief overview of the pilot action, its objectives and key findings

The Municipality of Maribor implemented measures to mitigate excessive sun exposure and overheating at playgrounds in two kindergartens. Two wooden pergolas were installed at kindergartens in Maribor planted with climbing vegetation to improve outdoor thermal comfort—one at Vrtec Ivana Glinška, Ribiška ulica 11 and one at Enota Žvrgolišče, Focheva 51. Both locations were selected for their high sun exposure and frequent outdoor activity by children.

The goal of the pilot action was to assess the effectiveness of pergolas in creating a comfortable outdoor environment during hot summer months while also fostering educational opportunities for children. Objectives: to evaluate the effectiveness of shading pergolas in reducing sun exposure and overheating as well as promoting sustainable practices using locally sourced materials and low-maintenance plants.

The pergolas each provide approximately 25 m^2 of shaded area and were planted with climbing vegetation (kiwi and grapevine) in the beginning of 2024 to support long-term natural shading.

Implementation process - concept phase, public procurement phase, implementation phase and evaluation phase

Implementation process: first the concept on the pilot action was developed (D.2.1.2) where target groups and the territory were defined, the key performance indicators (KPIs) and the methodology of measurement of KPI’s were foreseen. Then the pergola was designed, the selected material was wood of Slovenian origin. Permission of Culture Heritage Agency of Slovenia was obtained due to the fact, that the kindergartens were

in historical city center and in protected areas. Public procurement process started in 2023; the pergola was installed in the end of 2023.

For monitoring temperature and other weather phenomena a measuring station with an external and internal unit was installed, data is collected continuously. Data collection commenced in October 2023 and continues until autumn 2025 to capture pre- and post-installation conditions accurately. This enables a comparative analysis to assess the effectiveness of the pergolas in mitigating heat exposure.

Involvement of stakeholders and benefits to target groups

While planning the pilot activity we have involved experts at municipal education department and investment department viewing several locations of kindergartens in the town to identify which kindergarten is most exposed to extreme heat. We have discussed with kindergarten teachers on the location of the pergola, where shading is most needed. The teachers were in favour to install the vegetated pergola at the playground for the youngest children and the playground where most children play. We have had several meetings with teachers while installing the pergola to discuss about maintenance of the seedlings – kiwi and vine. We have engaged a gardener to look after the plants and give instructions to teachers how to water and prune the kiwi and vine. Additionally, the teachers were also participating in advanced trainings to learn about how and when children need protection in extreme heat.

In the kindergarten at Ribiška location 68 children are benefiting from the pilot action, 90 parents and 11 teachers who are working in this kindergarten.

In the kindergarten at Focheva location 215 children are benefiting from the pilot action, 190 parents and 55 teachers who are working in this kindergarten.

The pergola brings clear benefits to the stakeholders involved. For children, it provides a safe, shaded outdoor environment, reducing exposure to heat and allowing them to continue playing and learning outside even during hot days. Parents benefit from increased confidence that their children are protected from extreme heat while in kindergarten care. Teachers gain both a healthier work environment and new knowledge on heat protection, which they can apply in their daily routines. For the municipality, the pergola serves as a practical example of a nature-based cooling solution that can be replicated in other public spaces, strengthening resilience to climate change and demonstrating the value of cooperation between education, health and environmental sectors.

The timing of pilot activities

During the month of July 2023, municipal experts for kindergarten education have visited 6 most exposed kindergartens of the town to identify which kindergarten need most shading in the playground. In autumn 2023 we prepared the public procurement for construction and installation of the pergola, which was installed in beginning of 2024. The seedlings of kiwi and vine were planted immediately to start growing in spring 2024. The maintenance (watering, pruning) was explained to kindergarten caretakers, responsible for maintenance in spring 2024 and in spring 2025. The gardener was regularly checking the growth also during summer 2025.

Impact on temperature reduction / Cooling of Premises / Explanation of green infrastructure placement and impact on local temperature regulation

Although the greenery has not yet matured, the pergolas already contribute some physical shade and improved usability of play areas. To assess their effect and the baseline conditions, **weather stations (HP2000 7-in-1)** were installed at both sites, recording microclimatic data continuously.

Measurements of **apparent temperature** during the summer months (May–July) show that:

The **Ribiška** location recorded significantly higher average values (e.g., 21.45 °C in 2024) than Žvrgolišče (20.64 °C in 2024).

In 2025, temperatures dropped more sharply at Ribiška (-6.2 °C), while Žvrgolišče remained more stable (-0.6 °C),

These differences reflect the **open, sun-exposed position** of Ribiška, compared to the **more shaded, naturally ventilated environment** at Žvrgolišče.

While current temperature reductions cannot be fully attributed to the pergolas alone due to seasonal variations and immature vegetation the data confirm that **Ribiška holds greater potential for future cooling benefits** as plant coverage expands. This supports the role of green infrastructure in localized temperature regulation, especially in urban educational settings exposed to heat stress.

Feedback or observations from stakeholders or beneficiaries, community engagement and response

Feedback from kindergarten teachers collected via structured questionnaires indicates positive experiences with the pergolas. Although the climbing plants have not yet fully matured, the pergolas already offer partial shade and improved comfort. Teachers noted that children enjoy spending time under the structures, especially during hot days. They reported increased outdoor time, calmer behaviour and reduced sun-related discomfort. Staff also emphasized the educational value of involving children in planting. The community welcomed the intervention, recognizing its long-term benefits for health and well-being.

Lessons learned and challenges faced

One of the main challenges was the limited immediate shading effect, as the climbing plants require several seasons to mature. While full coverage was not yet achieved in the first year, partial improvements were already observed. As part of the Maribor pilot, all planted seedlings (such as kiwi and grapevines) had to be pruned every year for at least three consecutive years. This was necessary to strengthen the plants so that later they will provide better shade and also bear higher-quality fruit. For this reason, it could not yet be expected lush canopies or dense shade at this stage.

Another lesson was the importance of careful placement of pergolas to ensure safety, accessibility and optimal orientation. Combining objective weather data with qualitative input from staff proved essential for evaluating user comfort.

Special emphasis must be given on the maintenance of the plants, since regular watering of seedings was a challenge at the beginning. Gardeners were monitoring the growth of plants and giving instructions about maintenance. One person at each kindergarten was given the responsibility to care for the plants.

Germany:

Brief overview of the pilot action, its objectives and key findings

The pilot project in Worms aimed to effectively address the growing health risks posed by heat stress – especially among older people – at the local level. The focus was on establishing a long-term, cross-sector network to raise awareness of the issue of heat and health. Close cooperation between municipal agencies, the health sector, voluntary organisations and committed individuals was intended to create a structure

that would have both a preventive and a supportive effect. The city centre of Worms was selected as an area particularly affected by heat stress. The key finding was that a committed network that implements measures and shares knowledge can make a decisive contribution to protecting vulnerable groups from the consequences of climate change – even beyond the pilot phase.

The Heat protection network in Worms is organized in several levels to ensure coordination and action:

- Administrative steering group
  - This is the top decision-making body, guiding the overall direction of the network.
- Network-Manager
  - Acts as the link between the steering group and the network members, ensuring communication flows both ways.
- Network Members
  - These are the organizations and institutions that participate in the network. They are involved in:
    - Network activities (joint projects, training, awareness-raising)
    - Information channel (sharing updates, alerts and knowledge).
- Target groups
  - The network members work together to protect the most vulnerable groups:
    - Kindergartens and young children
    - Senior citizens and persons needing care
    - Sick persons
    - People working outside.
- "Charta of Heat & Health Network Worms"
  - A common framework or declaration of commitment that all members follow.
- Meetings on sub-group level
  - Within the network, smaller working groups meet to address the needs of specific target groups.
- Implementation of measures in organizations
  - The outcomes of these subgroup meetings are put into practice in the respective institutions and organizations (e.g., kindergartens, care homes, workplaces).

Implementation process - concept phase, public procurement phase, implementation phase and evaluation phase

During the concept phase, climatic risks and social and demographic conditions were analysed. The city centre of Worms proved to be a suitable pilot area due to its structural layout, low level of greenery and older population. The aim was to reduce heat stress for vulnerable groups through coordinated measures.

During the procurement phase, the position of network manager was created and placed within the city administration's climate adaptation department. In addition, basic documents such as a network charter and guidelines for cooperation (Terms of reference) were developed.

During the implementation phase, the 'Climate & Health' working group was established, consisting of municipal actors from the fields of health, prevention, senior citizen work and climate change adaptation. Initial concrete measures were planned, including information services, events, training courses for multipliers and the design of heat protection services such as a 'map of cool places', a 'heat hotline' and advisory services.

Before implementation, qualitative and quantitative criteria for measuring success were defined. These included the number of organisations involved, measures implemented, participant numbers at events and the response rate for information materials. Meeting minutes, participation lists and digital reach served as documentation. The indicators, which were difficult to assess in advance, may have been set too conservatively and were all achieved or exceeded.

Involvement of stakeholders and benefits to target groups

The Worms pilot actively involved a wide range of stakeholders from the very beginning. More than 25 organisations joined the heat protection network and signed the charter, including municipal departments, health services, care institutions, kindergartens, NGOs and volunteer groups. Elderly residents, care staff, children, outdoor workers and citizens with chronic conditions were defined as the main target groups. They benefitted through tailored measures: participatory workshops for social institutions (Oct/Nov 2024), application trainings for federal funding (Nov/Dec 2024), expert workshops and campaigns for kindergartens (March, June and September 2025, plus surprise packages reaching over 20 Kitas) and targeted sessions for seniors and care staff (workshops and a scientific survey with over 40 participants). The national Hitzeaktionstag ("heat action day", 4 June 2025) gathered more than 50 participants on-site, combining training, a steering group meeting and a festive certificate handover. In total, several hundred citizens were reached directly, while services like the "map of cool places", "HEAL- shadow routing" and the "heat hotline" extended the benefits to the broader population. Stakeholders were not only participants but contributed their needs and expertise through working groups and surveys, ensuring that solutions were demand-driven and practical.

The timing of pilot activities

The pilot in Worms unfolded step by step over 2023–2025. In 2023, in-depth preparatory analyses of climatic and social vulnerabilities were carried out and the concept for the local heat protection network was developed. In 2024, an intensive exchange within the Climate-Health network and the funding of a Rikshah took place. From this groundwork with a network the network manager drafted a Terms of Reference and initiated the first working groups. By autumn 2024, the network organised application workshops and expert consultations to strengthen the capacity of social institutions. In 2025, the pilot entered its full implementation phase: in February and March, expert workshops launched participatory formats for social institutions and kindergartens; in spring, a series of local events and training sessions prepared multipliers. The central milestone was the launch of the network on 4 June 2025 during the nationwide Hitzeaktionstag, when Worms hosted an international Partner2Partner exchange with Austria and Slovenia, a specialist symposium, a Kita training and the official signing of the charter. Over the summer of 2025, the programme expanded with thematic events for seniors, outdoor workers, Kitas and associations, as well an excursion on the aesthetics of Climate Adaptation and student-led surveys in care homes. This sequence ensured that the pilot moved from planning and preparation to visible local action and international exchange, anchoring the network as a durable structure.

Impact of established permanent stakeholder structure / network details on the structure created / roles and responsibilities of stakeholders involved / future plans for sustainability and expansion of the network

As part of the project, a permanent network structure was established, coordinated by a network manager within the municipal administration. A network charter regulates the cooperation, goals and responsibilities of all participants. The central working group meets regularly every three months, supplemented by working groups on individual topics. In addition to municipal departments, the participants include volunteer initiatives, health authorities (health department) and advisory boards such as the senior citizens' council. The distribution of roles was designed in such a way that responsibility is shared among several parties in the long term. There are plans to expand the services offered to other districts in the future. An annual network conference is to ensure exchange, motivation and joint further development.

Feedback or observations from stakeholders or beneficiaries, community engagement, response and feedback

The participation of citizens and local institutions was an important part of the project. Public events, participatory activities and training courses were used to involve professionals and citizens alike. Feedback showed that some people were previously unaware of the issue of heat and health, but that there is great interest in specific information and support services.

Feedback from network participants was also overwhelmingly positive: structured cooperation, clear objectives set out in the charter and the opportunity to participate in the process were highlighted as particularly motivating factors. The joint development of measures promoted awareness of the need for local climate adaptation and built trust between participants.

Lessons learned and challenges faced

Valuable experience was gained during the pilot project, which will contribute significantly to the further development of municipal heat protection in Worms. One of the key lessons learned is the importance of topic-specific working groups for building a sustainable network. By dividing the participants into four specific groups – including care, childcare, medical care and outdoor work – it was possible not only to achieve depth of content, but also to strengthen the participants' identification with the process. These groups provided a forum for professional exchange, developed their own ideas for measures and actively contributed to the drafting of the heat protection charter. The participatory approach thus led to a high level of acceptance and commitment within the network.

The combination of physical measures – such as the establishment of a ‘heat shuttle’ – with education-oriented formats such as training courses or materials for multipliers also proved to be particularly effective. It made the topic of ‘heat and health’ visible, tangible and experiential in everyday life across all target groups. At the same time, it became clear that establishing a cross-sector network also presents challenges. For example, it became apparent that certain target groups – such as homeless people – have been difficult to involve so far due to a lack of stable network structures in this area. Similarly, establishing contact for cross-sector projects – for example, between medical professionals – proved to be difficult and time-consuming. This showed that although such collaborations have great potential, they require more time, communication and mediation to become viable.

Last but not least, the question of sustainability also poses a structural challenge: the permanent integration of the network into municipal structures and its political backing beyond the end of the project are necessary prerequisites for continuing the work that has been started in the long term. Initial steps have already been taken in this direction, such as planning an annual network meeting, integrating the working groups into existing cooperation formats and developing a sustainability plan. Overall, it can be said that

the establishment of a local heat protection network should be understood as a learning process – characterised by dialogue, adaptation and continuous development.

Austria:

Brief overview of the pilot action, its objectives and key findings

The municipality of Weiz implemented a pilot action to explore the feasibility and effectiveness of a solar-powered cooling solution for buildings, with a particular focus on facilities serving vulnerable populations. The pilot was carried out at the Seniorenzentrum Weiz, a care facility operated by Volkshilfe, which houses 113 elderly residents and employs around 120 staff members.

The pilot system was installed in the main dining room of the facility, a 106 m^2 space that serves multiple functions throughout the day, including mealtimes, social gatherings and events. Due to its south-facing glass wall, proximity to the kitchen and limited shading options, the room is subject to significant heat stress during summer months. Prior to the project, the room was equipped only with a recirculating air ventilation system without cooling capacity.

The pilot introduced a solar-assisted cooling system powered by a photovoltaic (PV) array. The system was successfully installed and commissioned on 24 September 2025, marking the transition to its operational phase. Monitoring of temperature and energy data was initiated immediately after commissioning. The system is designed to improve thermal comfort while minimizing energy consumption and operational costs.

The overarching goal of the pilot was to test and demonstrate the feasibility of a self-sufficient, solar-powered cooling solution for care facilities, comparing its energy performance and cost-effectiveness to conventional cooling systems and district cooling alternatives. The implementation process confirmed that renewable energy-based cooling can enhance comfort for vulnerable groups while reducing operational costs and emissions.

Although the full monitoring phase started after the summer season, the demonstration objective was fully achieved. The system is operational, baseline data confirm its performance and the pilot successfully proved the technical and institutional feasibility of such solutions.

Implementation process and the timing of pilot activities - concept phase, public procurement phase, implementation phase and evaluation phase

The pilot action was implemented between July 2023 and September 2025. It followed a structured, multi-phase approach involving concept development, procurement, installation and evaluation.

The concept phase included stakeholder workshops involving the municipality, Volkshilfe, the building owner, technical experts and consultants. Feasibility analyses compared multiple cooling options (fans, split units, shading, component activation and district cooling). A structural analysis of the building verified the load-bearing capacity of the roof and ensured the safe integration of the PV system.

Procurement for the PV system was completed in September 2024 and procurement for the cooling system was finalized in February 2025. The project experienced some administrative delays during the preparation phase. Nevertheless, the City of Weiz decided to proceed independently with the implementation at its own risk, demonstrating a strong commitment to completing the pilot and ensuring its successful realization.

The PV system (6.09 kWp) and the Daikin VRV 5 S-series cooling system were successfully installed and technically commissioned in September 2025. Following commissioning, real-time monitoring began,

combining measured indoor temperature and energy data with performance projections to estimate expected cooling efficiency under peak conditions. This hybrid evaluation method supports comprehensive assessment of the system's performance.

Involvement of stakeholders and benefits to target groups

Stakeholder involvement was central throughout all phases. Representatives of the City of Weiz, Volkshilfe management, the building owner, service providers and external consultants jointly planned and coordinated the installation. Their cooperation ensured technical feasibility and institutional alignment.

The pilot directly benefits approximately 113 elderly residents, 120 staff members and numerous visitors and event participants, totalling more than 300 people who experience improved indoor comfort and safer conditions during heatwaves. The project also generated local visibility and interest within Weiz's broader climate initiatives, serving as an educational example of urban adaptation.

Ensuring the durability of the pilot

The durability and long-term functionality of the solar-powered cooling system in Weiz will be ensured entirely by the City of Weiz. The municipality formally assumed full responsibility for all aspects of operation, maintenance, insurance and liability of the installed system. This decision, recorded in municipal proceedings, guarantees continued operation and compliance with durability obligations for at least five years beyond the final payment and ensures that the pilot remains operational and properly maintained beyond the lifetime of the Ready4Heat project.

Through this commitment, the City of Weiz safeguards the functionality, safety and long-term value of the investment while integrating the system into its regular municipal infrastructure management. This approach secures the system's ongoing maintenance and positions it as a permanent element of the city's broader climate adaptation and energy transition strategy.

Impact on temperature reduction / Cooling of Premises / Impact on local temperature regulation

The pilot cooling system at the Volkshilfe Seniorenzentrum Weiz is designed to significantly enhance thermal comfort in the facility's main dining and lounge area, which is particularly susceptible to heat stress due to its architectural and functional characteristics. The room features a large south-facing glass façade that allows substantial solar gain and is directly adjacent to the kitchen, which contributes additional internal heat. Prior to the pilot implementation, the space lacks any active cooling system and relied solely on a recirculating air ventilation unit and external shading via awnings, which proved insufficient during peak summer conditions.

To address these challenges, a Daikin VRV 5 S-series split cooling system was installed, consisting of two concealed ceiling units (FXMA63A) with high external static pressure capability. These units are designed for ducted air distribution and are tailored to the room's geometry, ensuring uniform cooling across the entire space. Each unit provides a cooling capacity of 6.9 kW, resulting in a total system capacity of 12.7 kW. The combined airflow rate of 650 l/s enables rapid air mixing and effective temperature reduction, even during periods of high occupancy and thermal load. The air discharge temperature under cooling conditions is approximately 13.9 °C, which, in combination with the system's airflow and placement, is expected to maintain indoor temperatures within a range of 22–24 °C during peak summer conditions. This represents a substantial improvement over previously recorded temperature peaks and aligns with recommended comfort levels for elderly residents.

The outdoor unit (RXYSA4AY1) is mounted on the west facade of the building, above existing cooling aggregates. This location was selected to minimize acoustic impact and optimize refrigerant piping layout.

The system uses R-32 refrigerant, which offers high energy efficiency (SEER 7.9, SCOP 4.9) and a low environmental footprint, with a Global Warming Potential (GWP) of 675 and a total CO_2 equivalent of approximately 3.18 tonnes. The indoor units operate at a sound pressure level of 38–42 dB(A), making them suitable for sensitive environments such as care facilities.

The cooling system is complemented by a photovoltaic installation designed to offset its electricity consumption. The PV system is installed and consists of 14 modules of type AE CMD-108 Meteor 435Wp, with a total installed capacity of 6.09 kWp and a module efficiency of 22.05%. Based on typical solar irradiation values for the region of Weiz, the system is expected to generate approximately 7,003.5 kWh of electricity annually. This renewable energy production will directly reduce the operational costs of the cooling system and contribute to lowering the facility's carbon footprint. The roof structure was statically verified to support the additional load of 15 kg/m² and the mounting system was engineered to withstand local wind and snow loads in accordance with ÖNORM standards.

The system is operational and it is monitored using temperature sensors and smart meters to enable real-time tracking of cooling performance and energy consumption. These measurements will be compared to baseline data, allowing for a quantifiable assessment of temperature reduction, energy efficiency and overall system effectiveness. The integration of high-performance air conditioning technology with renewable energy generation ensures that the pilot action not only meets the immediate cooling needs of the facility but also contributes to long-term sustainability and climate resilience.

Feedback or observations from stakeholders or beneficiaries, community engagement, response and feedback

Throughout the development and implementation of the pilot action at the Volkshilfe Seniorenzentrum Weiz, stakeholder collaboration played a central role. The cooperation with the building owner and the local operational management of the senior centre was constructive and goal-oriented. Both parties actively supported the planning and technical coordination of the pilot system, including site inspections, infrastructure assessments and logistical arrangements.

Since the City of Weiz is the official project partner and beneficiary, it decided to proceed with the installation independently and take over all responsibilities related to operation, maintenance, insurance and liability of the installed system, thus ensures the pilot's long-term sustainability.

Cooperation with technical service providers and contractors was generally successful in terms of system design and component selection, although coordination during procurement and installation required additional effort from the municipal project team to meet funding and technical standards.

Overall, the feedback from all stakeholders was positive. They expressed strong support for the pilot's objectives, particularly its focus on improving thermal comfort for elderly residents while integrating renewable energy. The project also raised awareness and generated interest within the local community, especially in the context of Weiz's broader energy and climate initiatives.

Comprehensive feedback from residents, staff and partners will be included in Deliverable D.2.3.1 – Evaluation of the pilot action, complementing the technical performance data with qualitative insights into user satisfaction and community perception.

Lessons learned and challenges faced

The Weiz pilot confirmed the feasibility and practicality of self-sufficient solar-powered cooling systems in municipal care facilities. It also revealed that institutional and contractual coordination may present greater challenges than technical implementation.

Key lessons include:

- The importance of finalizing agreements early and defining clear maintenance responsibilities.
- The need for consistent communication between municipal, private and NGO stakeholders.
- The value of municipal leadership in ensuring project completion despite administrative hurdles.

From a technical and social perspective, the pilot demonstrates how renewable energy-based cooling can be successfully implemented in socially sensitive environments. Its demonstration effect is fully achieved. The system is operational, monitored and replicable for similar facilities across Central Europe.

Hungary:

Brief overview of the pilot action, its objectives and key findings

In Hajdú-Bihar County, the average annual temperature has risen more than the national average in recent decades. In addition to warming, climate change has led to more frequent temperature extremes, with the number of hot days in our county increasing by an average of 14–16 days compared to 1981. According to climate models, the number of hot days is expected to increase by up to 90% in some areas of the county by 2050. All this has a strong influence on the climate of Hajdúböszörmény, especially the urban heat island effect and the local microclimate. Due to the flat terrain of the city and the heat island effect in several parts of the city, it is particularly sensitive to extreme heat.

The primary goal of the pilot project was to examine how effectively the city could reduce the urban heat island effect using nature-based solutions, improve human comfort in public spaces and make public spaces more resistant to heat.

To this purpose, the city of Hajdúböszörmény has set a target of creating 47 cooling green islands at 23 locations, partly in public areas (housing estates, playgrounds, main squares, bus stops, beaches and community spaces) and partly in the courtyards of public institutions (nurseries, kindergartens, primary schools, secondary schools and retirement homes).

The bench and trellis were made of spruce by the contractor. The benches measure 1.5 m3. The island measures 4 m3.

Two spherical saplings were planted around and in the vicinity of the islands and 15 % evergreens (Pinus mugo, Taxus bacc. 'Fastigiata', Thuja occ. 'Danica'), 20 % perennial flowers (lavender, Salvia, Pannisetum, Gaulteria, Hemerocalis, Geranium. Verbena bonariensis, Anemona , Gailardia, Echinacea , Thymus,), 50 % annual flowers (Begonia semp., Vinca, Ipomoea, Heliotropium, Helianthus a., Rudbeckia), 15 % climbing plants.

The city chose institutions that are frequently visited by the project's target groups (institutions caring for young children, retirement homes, medical clinics). All 47 cooling islands have been completed. Each island consists of a bench and a pergola built above it, on which the city grew climbing plants and surround it with young trees, complemented by mostly drought-tolerant perennial flowers for shade and cooling. The locations of the islands were selected based partly on the urban heat stress map created as part of the project and partly on the opinions and suggestions of representatives of vulnerable groups and stakeholders.

The development of the concept began in March 2023 and, after a lot of consultation and coordination, lasted until March 2024. In Hungary, only those with public procurement qualifications can carry out the procedure. Therefore, in December 2023, a public procurement officer was hired to initiate the public procurement procedure. There were two activities that required a public procurement procedure. These procedures were initiated on December 20, 2023. The winner was selected in February 2024. The contracts were signed on February 20, 2024.

The islands were installed between March 29 and June 20, 2023. This is when the plants and trees were planted and the wooden benches were built.

The care and watering of the seedlings began immediately after planting, as it was very hot during the summer. Unfortunately, after planting, we found that a small portion of the plants had been stolen from a few islands. Maintenance was also ongoing, as screws had been removed in some places, so our colleagues replaced them. In 2025, we assessed the dead and stolen plants, which we intend to have replaced by a contractor procured through public procurement.

Experience gained so far and measurement results show that the cooling islands will achieve their goal, but it will take some time for the planted vegetation, especially trees and climbing plants, to provide adequate shade. However, the pilot action demonstrated that shading and with it influencing air humidity can create a more comfortable climate in public spaces, streets, squares and parks serving everyday life. Urban vegetation is far from just having an aesthetic role; it can also effectively mitigate heat stress during the warm seasons.

The pilot action also contributed to achieving objectives such as increasing the urban green space; shortening the distance, a resident has to travel/walk to a green space; creating public spaces that residents can make better use of in the summer; increasing the number of recreational spaces for outdoor recreation; increasing the number of trees in the urban area; overall increase in urban biodiversity.

Implementation process - concept phase, public procurement phase, implementation phase and evaluation phase

Idea - In planning the project, the city also aimed to implement practical activities that actively contribute to addressing the challenges of climate change and adaptation processes. The city therefore opted for a pilot action that was considered useful in several aspects; partly because it offered an opportunity to reduce the urban heat island effect and partly because it could contribute to improving the population's sense of human comfort as well as increasing green spaces and urban biodiversity. This is how the idea of cooling green islands emerged. Although the city originally planned to design the islands so that the plants would be placed in containers connected to them, this solution was ultimately changed for reasons of long-term sustainability and the plants were planted in open ground. This factor also influenced the potential locations of the islands to some extent.

Planning - For the implementation of the islands, the city consulted with local experts (chief architect, horticultural managers, designers, contractors, green NGOs) for their assistance and insights. It was important that the design of the islands would be acceptable to everyone and that the appropriate plants would be planted. Based on the experts' years of experience, a list of trees and plants to be planted was selected and a durable, weather-resistant wood was chosen for the structural constructions.

Visual design – The city enlisted the help of experts affiliated with the municipality in designing the islands. After informing the experts about the project requirements, they developed ideas for the implementation of the islands. They presented several versions and after careful consideration, plans for islands that could be implemented at the sites were drawn up.

Procurement procedure - The city announced a concept incorporating the expectations of experts, city leaders and project staff as part of a procurement process to prepare the implementation and visual plans.

The procurement was successful and the plans presenting two types of representations of the islands were completed on time. This was important because there were sites where it was not possible to install more islands next to each other (at 180 angles), so a 90-angle plan was also needed. The designs were commented on by city leaders, project staff, focus group members, project partners and institution leaders and professionals specializing in plants and green spaces.

Selection and assignment of contractor - Once the plans were ready, the selection of the contractor could begin. As the preliminary estimated value did not exceed the public procurement threshold, a three-bid procedure was conducted. Within this framework, the city identified the companies that would be able to carry out such a work process. The city examined their scope of activities and areas of interest. Then, a detailed call for tenders was prepared, along with a proposal for the Public Procurement Committee operating within the local government. The Committee discussed the proposal and recommended sending out a detailed call for tenders to the three companies. The companies returned the call for tenders on time, allowing the proposal concluding the tender process to be prepared for the Public Procurement Committee. The Commission accepted the winning tender and recommended that the Mayor of the City conclude a contract with the contractor. Following the conclusion of the contract, the winning contractor began manufacturing the bench components and purchasing the plants. The project team continuously monitored and evaluated the manufacturing process. When the first prototype was completed, the city leadership also viewed and evaluated it.

Installation - After the proposed improvements, the installation of the islands and the planting of the plants was started. During the installation, there were cases where the location that was previously considered suitable had to be changed. In such cases, the city always examined the focus group's suggestions and the residents' requests to decide where the island could be appropriately placed. The planting of the 47 islands was completed by June 2024, taking three months.

Temporary solution for shading - Trees and climbing plants need time to grow and develop a canopy that provides the necessary shade. Therefore, in consultation with the international project management and with the involvement of a horticultural expert, it was decided that until the trees mature, the islands would be planted with fast-growing, spreading plants to provide some shade in the first summer. As a temporary solution, the city opted for runner beans. This plant lived up to our expectations in the first year, as it grew beautifully over the pergolas on the islands, providing shade for those resting there. The city planted the climbing plant again in the second year, as the tree canopy had not yet reached the required size.

Maintenance - Maintaining and watering the cooling green islands is a key task for the municipality which is trying to involve the staff of institutions and civil organizations in the implementation. The project provides funding for maintenance, so the city can replace plants that have died or been stolen and commission companies to participate in maintenance. The city checks the islands weekly, or daily, if necessary, for damage and watering.

Evaluation - The benches, trees and other plants were installed/planted in accordance with the planned objectives. The selected locations fit well into the environment in terms of functionality: the benches offer comfortable, shaded or semi-shaded resting places, while the planted biodiverse vegetation adds aesthetic and ecological value. Overall, the work was carried out according to schedule, making efficient use of available resources. Local businesses were successful in winning the tenders for implementation, thus strengthening social cohesion.

Strengths

- The locations were selected considering the opinions of representatives of the target groups, stakeholders and experts, as well as the appearance and usability of the sites.
- Thanks to the islands, people are making better use of locations that were previously only used for transit traffic due to their exposure to heat.

- Feedback from residents and users has been very positive.
- The plants and trees are diverse, with species adapted to the local climate being planted. The islands not only provide shade and improve the microclimate but also increase urban biodiversity.
- The benches are stable, aesthetically designed and fit well with the surrounding environment.
- Construction work was carried out professionally with minimal environmental impact.
- The involvement of a well-established local green NGO in the activities was very useful.

Options for development

- Watering and caring for newly planted vegetation require extra attention during the first year and this must be ensured in the long term.
- Installing waste collection bins near the island's seating areas would reduce the risk of littering in the area.
- Placing information boards about the history of the area or plant species, local wildlife and pollinators can increase community value and enhance the visitor experience.

Impact on temperature reduction / cooling of the location / explanation of green infrastructure placement and impact on local temperature regulation

During the first phase of the project, a climate analysis of Hajdúböszörmény was completed, which gave the city a heat map of the city. This tool, which filled a significant gap, allowed the city to see where significant temperature differences and hot spots occur within the city, as well as which areas are most affected by heat. The map clearly illustrates that Hajdúböszörmény is generally highly exposed to heat stress, which is facilitated by its low altitude and continental climate. Among other areas, the problem affects the town's main square and its surroundings, the densely populated and built-up parts of the town center and the main urban roads, while the suburban areas are less sensitive to temperature increases. This information was also considered in the placement of the cooling islands.

Another consideration in the placement of the islands was that they should be located in places where the population in general and members of the vulnerable groups identified in the project frequently visit (e.g., educational institutions, clinics, retirement homes, health visitor services); they are located in more frequented parts of the city (community areas, main square, bus stops, etc.) or are identified as hot spots on the map.

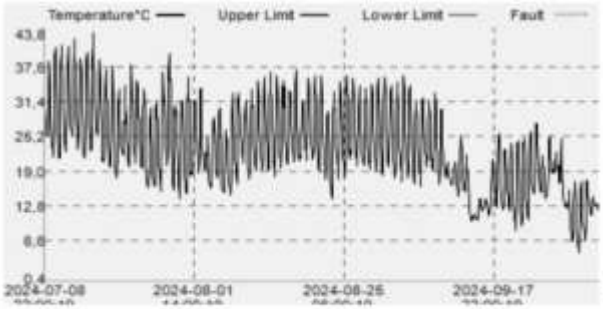
In general, the city installed cooling islands suitable for resting and refreshing oneself in the summer heat in partly unshaded green areas and partly unshaded, paved public areas. Our goal was to improve the local microclimate and provide refreshing shade.

Based on the results and experiences, cooling islands (once the plants start growing after planting and reach a certain canopy density) actively contribute to improving the local microclimate and human comfort.

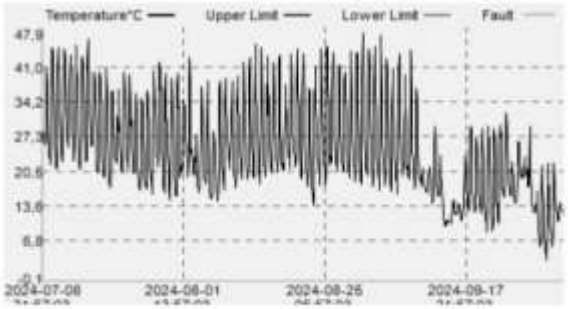
In general, it can be concluded that plants planted on islands improve the climatic conditions of their immediate environment through evaporation, which has a cooling effect. The canopy of trees and climbing plants provides shade from direct sunlight and limits radiation. Since heat radiation is significantly reduced in the shade, the thermal comfort of those staying there is also improved. Measurements show that temperatures are more favourable in shaded areas.

Results at the green islands near Széchényi School:

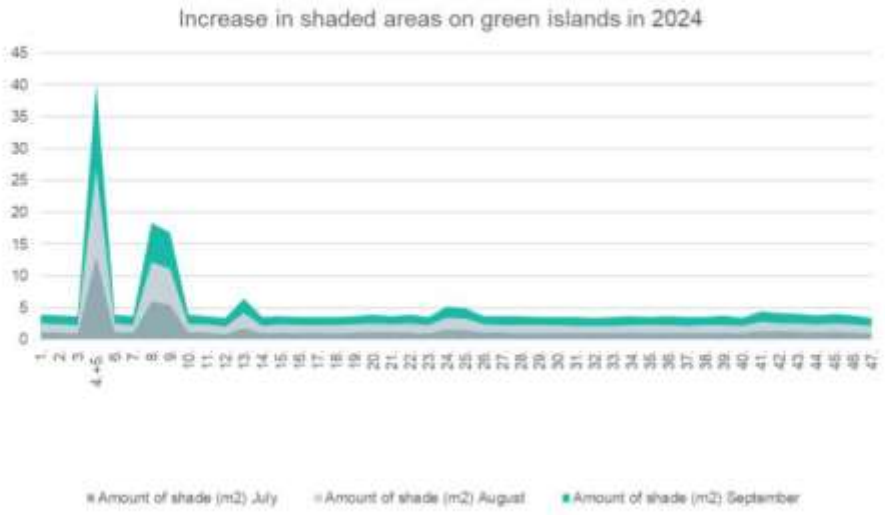
Temperature data in the shaded zone



Temperature data in the sunny zone



Results:



Feedback and observations from stakeholders or beneficiaries, community engagement and response

The city involved stakeholders, representatives of vulnerable target groups, in the process from the very beginning. At the start of the project, during a 2x4 workshop (D.1.3.1) led by a facilitator and supported by the technical project partner, representatives of vulnerable groups and stakeholders shared their insights, experiences and needs related to heat, heat waves and heat stress. The city later used this information to design cooling islands and select installation sites, among other things.

The stakeholders participated actively and with high interest in the joint brainstorming session, considering the topic and the problem to be important, timely and urgent, both as private individuals and as

stakeholders. All target group representatives were very open to possible solutions and actively supported the idea of creating cooling islands.

As several islands were located in or near institutions related to the stakeholders, the stakeholders have a more or less continuous overview of the usability and utilization of the islands. Based on the questionnaire conducted during the project, the users of the islands had a positive opinion of the cooling islands.

Several representatives of vulnerable groups found the solution so promising that they have begun identifying opportunities within their respective institutions to implement similar nature-based solutions.

Lessons learned and challenges faced

Challenges

- **Continuous monitoring and maintenance of cooling islands:** An appointed person is required to oversee the condition of all 47 cooling islands, regularly checking their status and notifying the competent persons if any action is needed (e.g., watering, plant replacement, bench repairs). In Hajdúböszörmény not only does natural vegetation loss occur, but there have also been repeated incidents of theft, bench vandalism and plant cutting in public spaces.
- **Engaging healthcare professionals:** It is difficult to involve or engage medicals working with chronically ill patients in the activities. In our view, the high workload of the invited doctors prevents them from allocating time to participate in such forums, workshops and other activities.
- **Public procurement procedures:** Conducting public procurement procedures in Hungary currently takes a significant amount of time, typically 2 to 3 months. This can lead to longer delays in implementation, especially if the procedure fails and must be relaunched.

- **Project cost approval**: Costs incurred during the Interreg Central Europe project are only approved by the Hungarian programme office after thorough review and justification. This process can be really time-consuming and often results in delays in the disbursement of approved amounts to project partners.
- **Challenges with educational institutions during summer:** Due to the limited summer opening hours of educational institutions, it can be a challenge to find a public facility willing to take responsibility for watering the plants or granting contractors access to do so.
- **Mobile App for heatwave alerts:** As part of the city's heatwave warning system, a mobile phone application is available that sends alerts during heatwaves and provides advice on how to cope with extreme heat. Although the app has been widely promoted through various channels (online platforms, local media, festivals, public institutions, QR codes, direct mail, etc.), user uptake has remained relatively low so far.

Lessons learned

- It is advisable to actively involve stakeholders representing vulnerable groups in the planning and preparatory processes, as they can provide valuable insights to aid successful implementation.
- For stakeholders such as doctors or outdoor workers, it is necessary to find meeting times for workshops and collaboration that allow participation in events without interfering with their worktime.
- The cooling islands placed within the institutions participating in the project are easier to manage in terms of maintenance and upkeep because, on the one hand, they are located in closed and guarded areas, making them less vulnerable to vandalism or theft. More problems arise with cooling islands placed in public spaces, primarily due to the lack of custody.
- Broader network of stakeholders is important for maintenance of the infrastructure
- Careful consideration should be given to selecting appropriate tree species. It is important to plant species that are tolerant to urban conditions, including drought and polluted air. To assist with the selection, the 'List of Public Space Street Trees,' updated and published biennially by the Hungarian Association of Ornamental Gardeners, provides guidance on tree species suitable for road and street planting (link: https://www.diszkerteszek.hu/zoldfelulet-varosi-zold/).
- The plants on the green islands can be supported during periods of prolonged drought by mulching and covering the soil in their immediate surroundings; without these measures, the soil dries out more quickly, placing the plants under less favourable conditions.
- Looking ahead, the City of Hajdúböszörmény is planning to build on the success of the pilot through its "Green Böszörmény" program, which will introduce additional ways to make the city more climate resilient, such as planting more trees, building systems to collect rainwater and using nature in other ways. The project has shown the problems people face and has helped the community to be more environmentally friendly.
- When using grant funds, it is necessary to consult in advance with the relevant supervisory authorities on all major decisions or emerging issues to prevent potential problems with financial reporting later.

CHALLENGES AND RECOMMENDATIONS:

Implementing four Ready4Heat pilot actions brought valuable results, but also several challenges that provide lessons for future projects. These challenges were both practical and organizational and they reflect the importance of planning, maintenance and stakeholder cooperation when dealing with climate adaptation.

One of the main challenges was related to nature-based solutions in Maribor and Hajdúböszörmény. Green pergolas and cooling islands need time before trees and plants provide enough shade, which meant that immediate results were limited. Regular watering and plant care also required strong commitment from staff and institutions. In some cases, vandalism and plant loss invested extra work. A key recommendation is to ensure clear responsibility for long-term maintenance and to involve local schools, NGOs and residents in caring for the greenery. Planting should be done as early as possible in the season and drought adopted and resistant species should be prioritized to reduce the burden of care.

In technical pilots such as Weiz, delays in procurement and difficulties with contracts slowed down the process. This shows the importance of preparing legal agreements early and ensuring that all partners – municipalities, building owners and service providers commit to their roles before installation begins. A recommendation for future projects is to establish clear governance structures and communication channels among stakeholders, so that responsibilities and timelines are better coordinated.

In social pilots such as Worms, building a strong network proved highly effective, but it was not without obstacles. Engaging certain vulnerable groups, like homeless people or very busy professionals, was difficult. It also became clear that sustaining a network requires more than enthusiasm, it needs long-term political and institutional support. For future initiatives, it is recommended to integrate such networks into official city structures, secure stable funding and keep stakeholders engaged through regular activities and clear benefits.

Despite these challenges, the pilots had a clear impact on heat wave mitigation. Pergolas and green islands created cooler microclimates and more pleasant public spaces. Solar-powered cooling in Weiz demonstrated how renewable energy can lower indoor temperatures for vulnerable groups. The Worms heat protection network showed that coordination and awareness-raising can protect citizens even before emergencies occur. These actions reduced exposure to heat and improved comfort for children, the elderly and the wider community.

TIME DEVIATIONS:

In the case of the pilot actions in Maribor and Hajdúböszörmény, where nature-based solutions were implemented, the plants and trees were highly dependent on seasonal and weather conditions. To obtain meaningful and reliable results from the monitoring, it was necessary to cover two consecutive vegetation periods. This requirement created a time deviation compared to the original application form.

Originally, the pilot implementation was planned to end in February 2025, but following the recognition of this need, the timeframe was postponed to the end of August 2025, as also indicated in the updated Monitoring plan.

By extending the pilot implementation period, the project provided the opportunity to achieve more robust data and to capture the full effects of the green infrastructure measures under different seasonal

conditions. This adjustment was therefore essential for increasing the effectiveness and credibility of the pilot results.

Importantly, this deviation applies to all pilot actions, not only to the two nature-based solution pilots. The extension will ultimately ensure that the final evaluation is based on more complete evidence and will strengthen the transferability of the solutions.

JOINT ACTIVITIES:

As part of the development of pilot actions, partners engaged in structured joint interactions between project partners. These exchanges mainly took place during project meetings and later planned Partner2Partner exchange visits, where partners commonly explored solutions and co-designed the pilot actions.

All partners actively contributed to the implementation of the pilot actions. The process was integrated into existing project formats, such as partner meetings, online sessions and exchange visits, which served as point for sharing progress, discussing challenges and refining concepts.

Each interaction followed a common pattern: a partner first presented the status and progress of their pilot, followed by an open debate in which all participants could share opinions, provide feedback and suggest improvements. This step-by-step approach ensured that every pilot benefitted from the joint expertise of the consortium, while also fostering mutual learning and alignment across countries.

In addition, the following joint activities reflecting the content of the discussion and the progress in the project pilot implementation.

Joint activity in Graz (March 2024)

As part of the 6th joint activity, held during the 3rd project meeting in Graz (AT) on 6. –7. March 2024, partners worked together on how to design, monitor and evaluate their pilot actions. The focus was on agreeing common approaches for indicators, data collection and evaluation methods, ensuring that each pilot could contribute to shared learning within the project.

In Weiz, the discussion focused on combining renewable energy and indoor comfort in an elderly home. Partners jointly explored how to set up a good comparison by monitoring cooled and uncooled rooms, using both temperature data and visitor information as indicators. Together they agreed that extending the monitoring over two summers would allow for more reliable results and a stronger evaluation of the pilot's impact.

Hajdúböszörmény presented the design of its planned "green islands," and the consortium discussed how to balance ambitions with available budgets. The group worked together on improving the choice of indicators, agreeing that only clear and measurable ones should be kept. Joint advice also helped the city to adjust the ratio of shrubs and trees without changing the pilot's overall goals, making sure the concept stays realistic while still ambitious.

For Worms, the conversation focused on creating a stakeholder heat protection network. Partners contributed by sharing experience on how to structure networks, draft Terms of Reference and define roles

and membership rules. This joint reflection helped shape a flexible framework that can grow over time, while also agreeing on indicators that track the strength of the network itself, such as membership numbers, cooperation agreements and produced outputs.

When partners shared these local cases, the joint activity became more than a round of updates. It allowed partners to co-develop methods, align evaluation standards and share governance models. This joint approach makes sure that each pilot is useful not only for its own city, but also as part of a bigger set of solutions that other regions can use.

Joint activity in Hajdúböszörmény (November 2024)

As part of the 8th joint activity, organised within the 4th project meeting in Hajdúböszörmény (HU) on 6. and 7. November 2024, the partnership worked together on the further development of the pilot actions. Instead of just giving updates on how each pilot is going, the main focus was on working together to define how the pilots are being used, monitored and evaluated. This makes sure that each action helps to achieve the overall Ready4Heat methodology.

The activity was designed as a joint workshop. Partners were divided into two working groups to exchange experience and co-develop approaches. The first group (SI–HU) concentrated on the implementation of nature-based solutions and monitoring methods. Partners agreed on how to track indicators in the same way every time, agreed on common approaches to data extrapolation and jointly defined the monitoring framework for the “green islands” pilot. They also made sure that everything was documented visually in the same way and that the reports were all written in the same way so that they could be compared.

The second group (AT–DE) focused on pilots related to governance and infrastructure. Partners commonly addressed challenges linked to procurement and financial oversight, while at the same time shaping the structure of stakeholder networks to guarantee long-term sustainability. In this group, the German pilot also benefitted from a Partner2Partner exchange, where the Terms of Reference for the stakeholder network were discussed and validated with the wider consortium.

Joint activity in Maribor (April 2025):

As part of the 9th joint activity, held during the 5th project meeting in Maribor (SI) on 9. – 10. April 2025, partners came together to reflect on how the pilot actions are being developed and what lessons can already be drawn for wider use. The discussions were about more than just individual progress updates. They focused on working together to look at what had been achieved, the challenges that had been faced and what could be done in the future. By comparing experiences, partners began to find common ground for the pilot solutions that will be used as the project's transferable outcomes.

In Maribor, the installation of a wooden pergola with climbing plants in a kindergarten yard was used as an example of how nature-based shading solutions can be tested and improved. Together, partners explored the importance of monitoring plant growth, ensuring proper watering and clarifying responsibilities for long-term maintenance. This shared thinking showed that it's important to plan early with local workers if we want our projects to last and be helpful.

Worms presented their stakeholder heat protection network, which combines community workshops, digital tools, training sessions and upcoming public events such as the "Heat Action Day." In joint discussion, partners highlighted how this approach combines prevention, education and citizen engagement, while also recognising the ongoing need to strengthen civil society involvement. The exchange highlighted how collaboration across different sectors can increase resilience and create models that are relevant beyond Worms.

The Weiz pilot, which links renewable energy with improved indoor comfort in an elderly home, opened discussion on how technical solutions and building adaptations can be planned and monitored effectively. By sharing lessons about procurement and construction delays, the partners were able to identify common challenges and ways to anticipate them in future projects. This cooperation helps ensure that results from Weiz can be adapted into guidance for similar initiatives elsewhere.

In Hajdúböszörmény, the creation of 47 green islands started a wider conversation on how nature-based solutions are maintained and scaled up. Partners discussed the importance of securing local commitment, ensuring regular supplies and dealing with plant survival in different seasons. This exchange also helped shape future plans, with the city showing its "Green Böőszényem" programme as an example of how small pilot actions can grow into larger strategies.

This joint activity helped partners move from local reporting to shared learning. By reflecting on achievements, difficulties and future goals, they are shaping pilot solutions that benefit their own cities and can be applied in other European regions. Draft pilot solution baselines composed during the joint activity:

Pilot learnings -> pilot solutions:

SI:

- Constant and regular communication
- Give responsibilities to contact person (coordinator)
- To plant earlier
- Education process with kids
- Bees – to learn how to live with the nature, biodiversity

DE:

- Keep the stakeholders always engaged

AT:

- Long process when working with the energy infrastructure
- Do it on your own building

HU:

- To provide a good quality of material (to choose wisely and in a good condition)

- Broader network of stakeholders is important for maintenance of the infrastructure
- Engagement of the stakeholders, maintaining the ownership

P2P partner exchange:

Partner2Partner (P2P) exchange events took place either alongside project meetings – such as in Hajdúböszörmény and Maribor, where they were organized directly in the field – or as stand-alone events, as in Worms (4.6.2025) and Weiz (24.9.2025). These exchanges were structured as study visits, followed by partner evaluations of the respective pilot actions.

Feedback form Hajdúböszörmény:

The evaluation of the feedback form filled out by project partners are giving us the following feedback:

Hajdúböszörmény: The feedback from partners about the Hungarian pilot action – the installation of green islands in Hajdúböszörmény – was very positive overall. In terms of first impressions and design, all respondents found the green islands visually appealing and agreed that they blend in very well with the surroundings. This shows that the initiative not only adds greenery to the city but also fits naturally into the local environment.

Regarding functionality and purpose, partners agreed that the green islands are effective in promoting sustainable behaviour among residents. The main benefits identified were the increase of urban green spaces, the improvement of air quality and the reduction of the urban heat island effect. These results confirm that the pilot addresses key climate adaptation goals.

From a technical and operational perspective, partners evaluated the green islands as very accessible for all groups, including children and the elderly. They also agreed that the materials and technologies used are sustainable and resilient, which suggests that the pilot is well designed for long-term use and durability.

On the question of transferability, partners mostly saw the concept as highly feasible in their own regions, though one noted that some minor adjustments might be necessary. The most common obstacle foreseen was budget constraints, while one partner reported no obstacles at all. This indicates that while financing could be a challenge, the model itself is considered adaptable and useful for other cities.

In terms of community impact, partners highlighted a very positive effect on raising awareness about sustainable development. They also agreed that the project contributes significantly to strengthening social cohesion in the local community, as people come together around shared green spaces.

When asked about improvements, suggestions included creating more green areas and implementing additional awareness campaigns to further involve the community. All respondents gave the project the highest rating (5 out of 5) for overall implementation. Additional comments stressed the importance of planting even more trees and vegetation in future phases, while one respondent felt that everything was already well addressed.

Feedback form Maribor:

Partners gave very positive feedback on the wooden pergola installed at the kindergarten in Maribor. In terms of visual appeal and integration, almost all respondents rated it as very appealing and agreed that it blends in naturally with the playground and surrounding environment. This suggests the pergola not only adds functional shade but also improves the overall look of the space.

When asked about the functionality and purpose, partners highlighted several important roles: providing shade and cooling for children, promoting nature-based solutions in cities and creating opportunities for outdoor learning. Most felt the pergola fully meets the needs of kindergarten children, though one noted that some minor improvements could still be made to optimize its use.

Regarding construction quality and sustainability, the pergola was generally rated as very high quality and durable. Most partners felt the materials were fully sustainable and eco-friendly, though one suggested there is room for small improvements. This shows that the pilot is both robust and aligned with climate-friendly design principles.

On accessibility and safety, all respondents agreed the pergola is very accessible for children of different age groups. Most considered it very safe, with no risks, while a few noted that minor safety enhancements could be useful.

In terms of transferability, partners widely agreed that the pergola concept could easily be replicated in other cities and countries, though some adjustments may be needed depending on local building regulations, budget constraints, or community acceptance. The main challenges mentioned were budget limitations and securing permits, with a few also pointing to stakeholder acceptance as a possible issue.

The feedback on community impact was mostly very positive. Respondents agreed that the pergola raises awareness about sustainable development and significantly enhances outdoor learning for children. Most also agreed that it increases awareness about the benefits of nature-based solutions in urban planning, although a few felt this effect was only moderate.

For improvements, many suggested adding educational elements such as information boards or interactive features, as well as enhancing seating or play areas under the pergola. Some also recommended planting more greenery around it. Overall implementation was rated highly, mostly 5 out of 5, with only two giving it a 4, showing that partners were generally very satisfied with the pilot.

In the additional comments, partners shared constructive suggestions. They recommended adding an information board to explain why the pergola was installed and involving parents and kindergartens in climate and heat adaptation education. One observed that the pergola's height might allow sun rays to pass through during late spring and early summer, which could reduce shading efficiency at certain times. Overall, the pergola was described as a nicely realized project that will fulfil its purpose more fully as the plants grow and mature.

On site P2P visit - Worms:

On June 4, 2025, the City of Worms officially launched its Heat Action Network, representing a key milestone in implementing joint pilot action within the Ready4Heat partnership. The launch was organised in parallel with a Partner2Partner (P2P) exchange, bringing together partners from Austria, Germany and Slovenia to collectively learn how local networks for heat protection can be set up, expanded and sustained.

The event illustrated how cooperation between local actors and international partners can drive climate adaptation. Worms presented how its municipality, kindergartens, senior homes and emergency services work together to protect vulnerable groups, while international partners contributed by linking these local experiences to their own pilot contexts.

The joint webinar with the Austrian city of Weiz, organised with Climate Alliance and KLUG, highlighted that the lessons from Worms reach far beyond one city. More than 120 participants from across Germany took part, showing the relevance of transnational learning and exchange.

Through expert roundtables and participatory workshops, partners jointly explored how the Worms network is structured, how capacity building is organised and how formal commitments can secure long-term engagement. One important element was the training for kindergarten staff, which illustrated how professional knowledge and community engagement can be combined in practice.

The signing ceremony that concluded the event symbolised not only Worms' local commitment, but also the shared vision of the Ready4Heat partnership that pilot actions are developed jointly, tested locally and shaped into solutions that can be transferred across regions. The Worms exchange therefore served as a living example of how cooperation helps turn individual initiatives into models for wider use.

On site P2P visit - Weiz:

As part of the joint pilot implementation, a Partner2Partner (P2P) exchange visit took place in Weiz on 24. September 2025. The meeting was organised around the installation of the new air conditioning system at the elderly home in Weiz, which together with the photovoltaic (PV) system represents the Austrian pilot. The visit gave partners the chance to see first-hand how renewable energy and cooling solutions can be combined to improve comfort for vulnerable groups while reducing energy demand.

The exchange was hosted by the City of Weiz, with participation from representatives of the LP and PP6 and PP7. Partners observed the installation process directly on site, which allowed them to discuss technical details, challenges encountered during procurement and construction and the expected benefits once the system is in operation. The joint reflection also included how the monitoring will be set up, comparing indoor comfort and energy performance over the summer months.

Beyond the technical aspects, the P2P exchange in Weiz highlighted the importance of cooperation between local authorities, technical providers and international partners. Together, they considered how the lessons from Weiz can be shared with other cities, particularly around planning, contracting and ensuring long-term durability of the pilot.

CONCLUSION:

The Ready4Heat pilot actions proved that practical, small-scale measures can make a real difference in protecting people from the dangers of extreme heat. Each city approached the challenge in its own way, but together they showed that technical, social and nature-based solutions all have a place in building resilience.

In Maribor, pergolas with climbing plants brought shade and comfort to children in kindergartens, creating healthier play areas and valuable learning opportunities. In Worms, a heat protection network connected institutions, professionals and citizens, showing how cooperation across sectors can protect vulnerable groups. In Weiz, the combination of solar energy and cooling technology improved indoor comfort for elderly residents while keeping energy use sustainable. In Hajdúböszörmény, the creation of 47 green islands turned public spaces into cooler and more welcoming places, increasing biodiversity and community well-being.

Taken together, these actions highlight several key achievements:

Health protection - Children, the elderly and other vulnerable groups gained safer environments during hot days.

Innovation - Cities tested new approaches, from solar-powered cooling to community-based networks.

Green transformation - Urban spaces became greener, more attractive and more resilient to climate change.

Community involvement - Citizens, institutions and local stakeholders played an active role, ensuring that solutions fit local needs.

The importance of these achievements lies not only in their immediate benefits, but also in their transferability. Other cities across Central Europe can adapt these models to their own context, whether by planting more greenery, introducing cooling technologies or building networks for heat protection. The pilots also showed the value of monitoring and evaluation, which provide evidence to guide future actions and policies. The evaluation data will be demonstrated in D.2.3.1. project document.

Looking ahead, the next steps are clear. Cities should expand the tested solutions, the networks and secure long-term political and financial support. They should also continue to involve citizens and vulnerable groups in planning and caring for new measures. Regional and national authorities can play a role by integrating these practices into broader climate adaptation strategies and supporting municipalities with funding and knowledge exchange.

The call to action is simple: every city can act now to prepare for hotter summers. When combining green spaces, technical innovation and strong community networks, local authorities can make environments safer, healthier and more enjoyable. Ready4Heat has shown that even modest interventions can create visible improvements.

ANNEXES:

PHOTOS:

Maribor (Slovenia):

Location 1 of pergola in Maribor

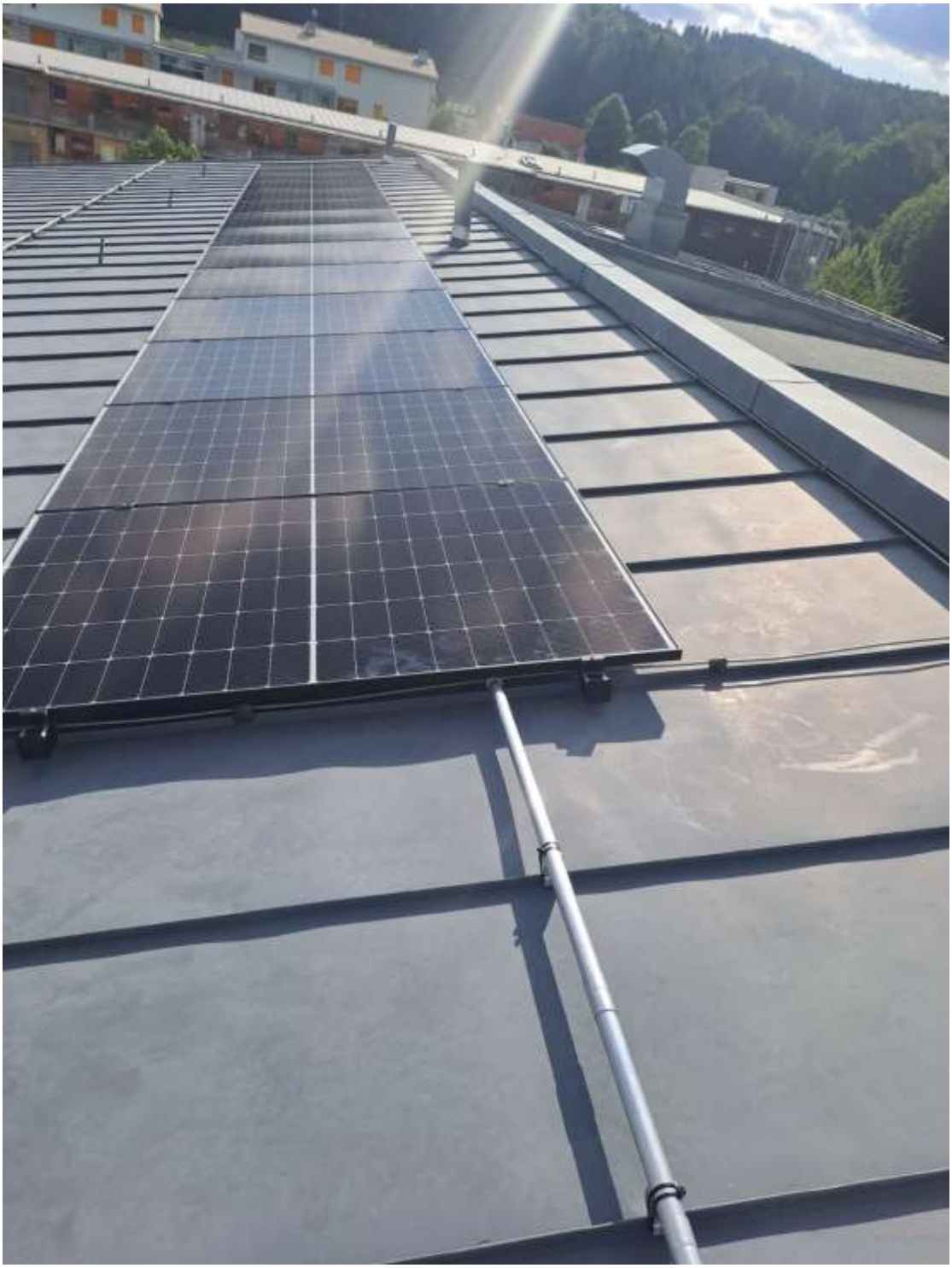
Location 2 of pergola in Maribor

Worms (Germany)

Official signing of the Heat protection charter and a certificate ceremony, June 2025

Meeting and the workshop of the city heat network, June 2025

Weiz (Austria)



PV system on the roof of the senior home in Weiz

Inverter of PV system

Outdoor unit of air condition

Indoor unit of the air-conditioning

Hajdúböszörmény (Hungary)

Green island in Hajdúböszörmény

Green island in Hajdúböszörmény

PHOTOS of PLAQUE

Maribor (Slovenia):

Weiz (Austria)

Hajdúböszörmény (Hungary)


Ready4Heat
A lakosság védelme a hőségtől
Zöld árnyékoló szigetek létrehozása
A projektet az Interreg KÖZÉP-EURÓPA program támogatja az Európai Regionális Fejlesztési Alap társfinanszírozásával.
www.interreg-central.eu/projects/Ready4Heat
2.040.000 €
Projekt teljes költségvetése
1.632.000 €
ERFA támogatási összeg
2023.03 -2026.02.
Projekt megvalósítási időszaka

OTHER EVIDENCE MATERIAL

Additional data, charts, maps, or supplementary information (if applicable)

Worms (Germany)

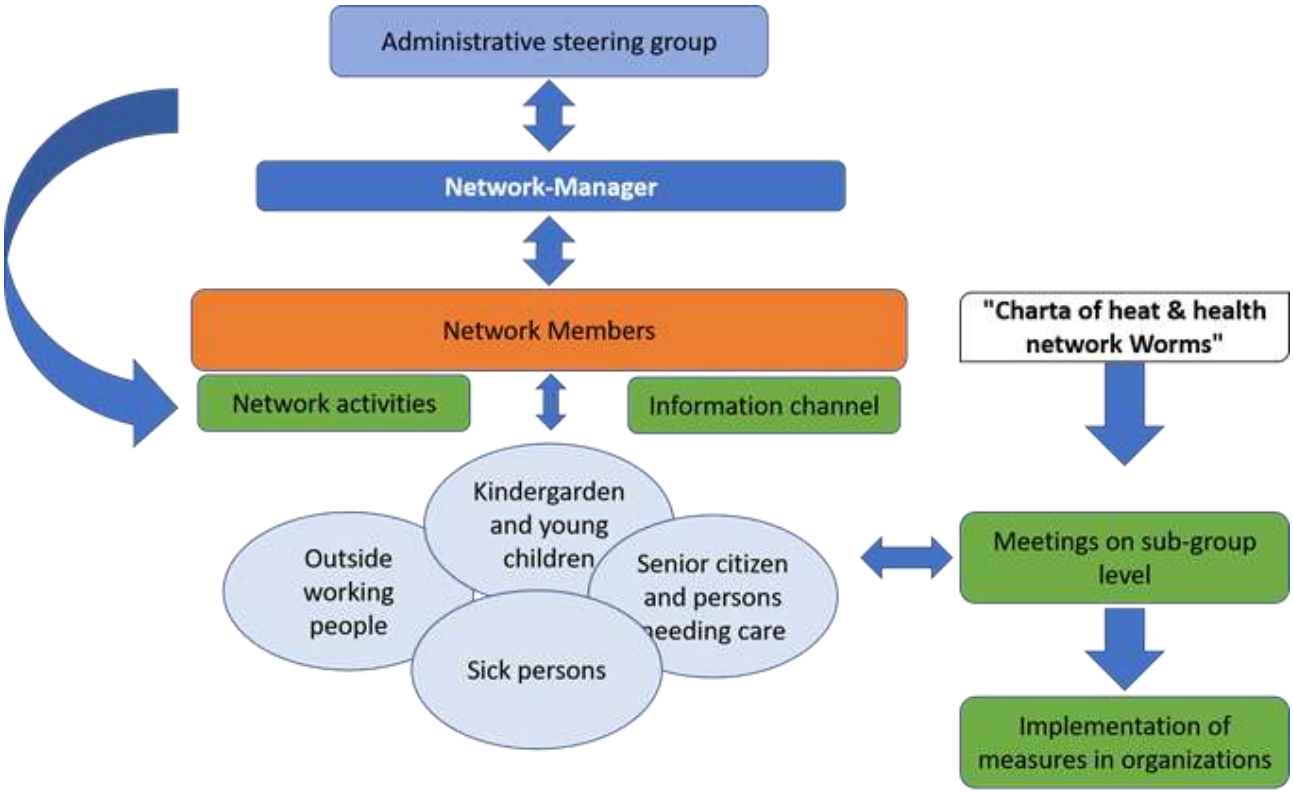
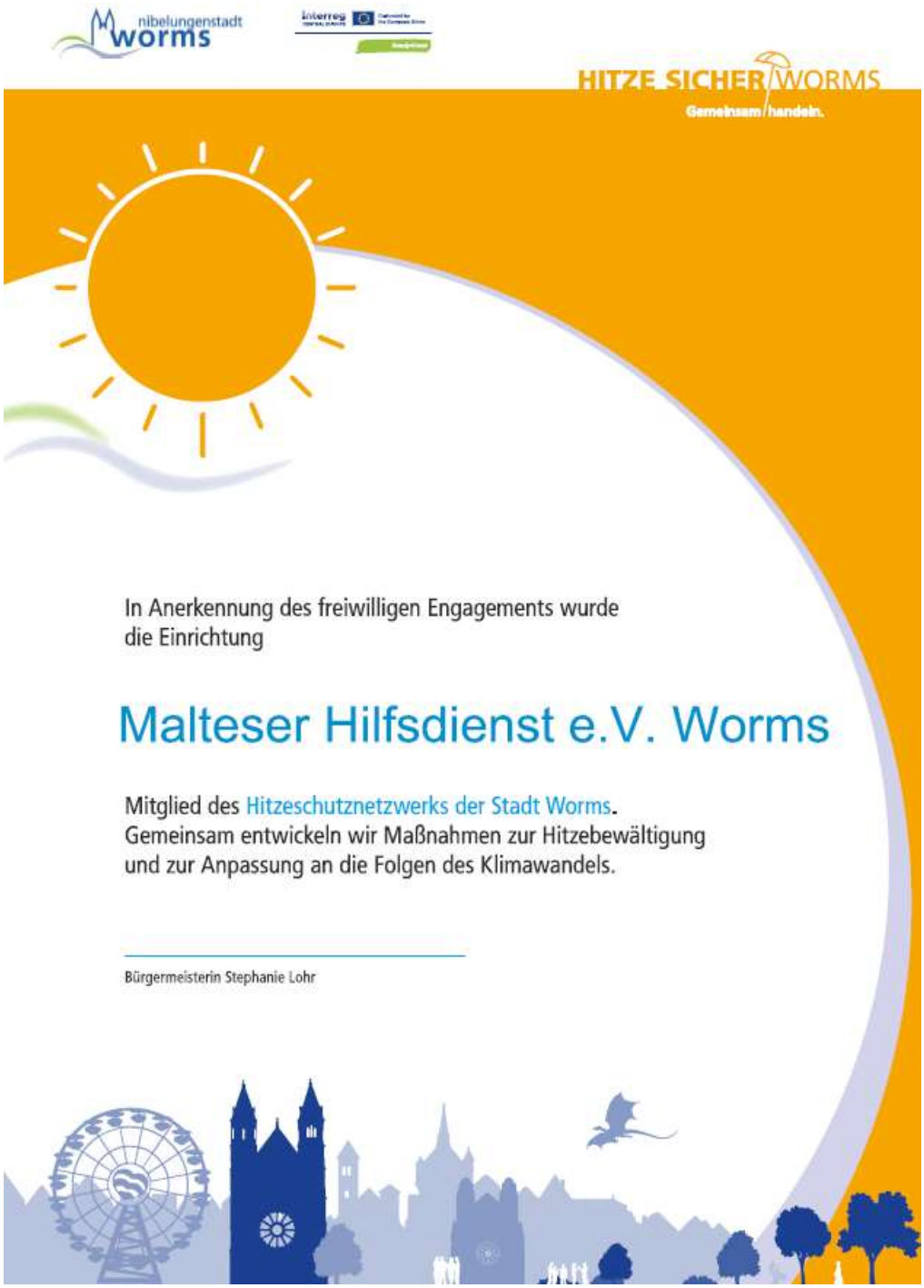


Chart of the heat and health Worms network



Example of the member certificate in the frame of the Worms heat network

Charta des Wormser Hitzeschutznetzwerk

HITZE SICHER WORMS
Gemeinsam handeln.

Präambel

Angesichts zunehmender Hitzewellen und der wachsenden Herausforderungen durch den Klimawandel ist es das Ziel der Stadt Worms, ihre Bevölkerung, insbesondere gefährdete Gruppen, bestmöglich zu schützen. Diese Charta bildet den Rahmen für eine enge Zusammenarbeit zwischen den Mitgliedern des Hitzeschutznetzwerks. Gemeinsam erklären wir uns bereit, Maßnahmen zur Hitzebewältigung und zur Anpassung an die Folgen des Klimawandels zu entwickeln und umzusetzen. Neben der Klimaanpassung sehen wir auch den Klimaschutz als wesentliche komplementäre Aufgabe an, um zukünftige klimatische Veränderungen so gering wie möglich zu halten.

Ziele und Vorhaben

1. Koordination und Netzwerkaufbau

   Das Klimaanpassungsmanagement der Stadt Worms fungiert als Koordinationsstelle des Hitzeschutznetzwerks. Diese zentrale Rolle sorgt für eine effektive Zusammenarbeit zwischen den beteiligten Einrichtungen, Organisationen und Multiplikatorinnen. Alle Partnerinnen des Netzwerks erklären sich zum regelmäßigen Austausch im Netzwerk bereit.

2. Informations- und Warnweitergabe

   Die Mitglieder des Hitzeschutznetzwerks verpflichten sich, bei offiziellen Hitzewarnungen der Stadt Worms oder des Deutschen Wetterdienstes die Informationen an ihre Klienten, Bewohnenden und Mitarbeitenden weiterzugeben. Unser gemeinsames Ziel ist es, die Bevölkerung rechtzeitig vor den Gefahren von Hitzeperioden zu schützen.

3. Beratung und Unterstützung

   Das Netzwerk bietet seinen Mitgliedern vertiefte Informationen und ggf. Beratung zu Themen des Hitzeschutz sowie der Anpassung an den Klimawandel. Hierzu lädt die Netzwerkkoordination in regelmäßigen Abständen ein. Die Mitglieder des Netzwerkes teilen Informationen und Fachwissen kollegial miteinander.

4. Ganzheitliche Klimaanpassung

   Das Thema Hitzeschutz ist Teil einer ganzheitlichen Klimaanpassung. Die Mitglieder des Netzwerks streben an, mittelfristig Klimaanpassungspläne zu erstellen und umzusetzen, um ihre Standorte und Betriebsabläufe auf zukünftige klimatische Herausforderungen vorzubereiten. In diesen Anpassungsplänen priorisieren wir naturbasierte Lösung, welche möglichst unter Beteiligung der Klienten entwickelt werden.

Unser gemeinsames Ziel ist es, eine resiliente und zukunftssichere Stadt zu schaffen, in der alle Menschen, insbesondere die verletzlichsten Gruppen, bestmöglich vor den Folgen des Klimawandels geschützt werden. In individuellen Vereinbarungen zur Mitgliedschaft im Hitzeschutznetzwerk der Stadt Worms können weitere Ziele der Zusammenarbeit vereinbart werden.

Charta framework for close cooperation between the members of the heat protection network

Vereinbarung zur Mitgliedschaft im Hitzeschutznetzwerk

Diese Vereinbarung dient der formalen Zusammenarbeit zwischen der Stadt Worms und der jeweiligen Einrichtung als Mitglied des Hitzeschutznetzwerks Worms. Ziel der Mitgliedschaft ist es, durch gemeinschaftliche Maßnahmen die Resilienz gegenüber Hitzeperioden zu stärken und vulnerable Gruppen zu schützen. Das Netzwerk unterstützt die beteiligten Einrichtungen dabei, präventive Hitzeschutzmaßnahmen umzusetzen und deren Nutzer*innen rechtzeitig vor klimatischen Extremereignissen zu informieren. Alle Mitglieder erklären Ihre Unterstützung für die Charta das Wormser Hitzeschutznetzwerkes.

Ziele und Pflichten der Mitgliedschaft

Die Mitglieder des Hitzeschutznetzwerks erklären Ihre Bereitschaft;

- die Hitzeschutzmaßnahmen aller Mitglieder aktiv zu unterstützen.
- bei Hitzewarnungen schnellstmöglich Informationen an Mitarbeiterinnen, Bewohnerinnen und Nutzer*innen der jeweiligen Einrichtung weiterzugeben.
- zur Bereitstellung von Mitarbeitenden, die sich mit dem Thema Hitzeschutz befassen und an Veranstaltungen des Netzwerks teilnehmen.
- langfristig Klimaanpassungs- und Klimaschutzmaßnahmen in die eigene Einrichtung zu integrieren.

Leistungen des Hitzeschutznetzwerkes

Das Netzwerk bietet den Mitgliedern:

- Schulungen und Informationsmaterialien zum Thema Hitzeschutz und Klimaanpassung.
- Beratungsleistungen zur Umsetzung individueller Hitzeschutzmaßnahmen in den jeweiligen Einrichtungen.
- Unterstützung bei der Erstellung von institutionellen Klimaanpassungs- und Schutzplänen.

Individuelle Vorhaben des Mitgliedes für Klimaanpassung und Hitzeschutz

_____
_____
_____
_____

Das Netzwerk wird koordiniert durch das Klimaanpassungsmanagement der Stadt Worms. Es besteht aus dem Gesamtnetzwerk aller Mitglieder, welches sich mindestens einmal jährlich zu einer Veranstaltung trifft. In Arbeitsgruppen werden regelmäßig einrichtungsspezifische Themen bearbeitet. Arbeitsgruppen könnten durch die Netzwerkkoordination oder das Gesamtnetzwerktreffen gegründet werden. Die Mitgliedschaft im Hitzeschutznetzwerk Worms beginnt mit der Unterzeichnung dieser Vereinbarung und gilt zunächst unbefristet. Die Mitglieder verpflichten sich, alle im Rahmen der Zusammenarbeit erhaltenen Daten vertraulich zu behandeln. Dies umfasst insbesondere personenbezogene Daten sowie vertrauliche Informationen über Hitzeschutzmaßnahmen und -pläne.

_____ _____

Stadt Worms

Membership Agreement – ToR - general template

Weiz (Austria)

Location of AT pilot

Installation work of AT pilot