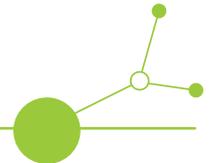# D.3.1.1 Solutions recommended to improve sustainability of heat measures

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Deliverable:	D 3.1.1
Authors:	
Contributors:	Marco Elischer, Marcus Engelbrecht
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Reviewed by:	Wolfgang Hofstetter, Katja Karba
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Content

EXECUTIVE SUMMARY AND CONTEXT

Heatwaves in cities are becoming more frequent, longer and more dangerous. They pose serious risks to public health, especially for older people, children, people with chronic illnesses and those working outdoors. The German city of Worms addressed this growing challenge through a pilot solution that does not rely mainly on new infrastructure or expensive technology, but on people, cooperation and better organisation. Within the Ready4Heat project, Worms established a Municipal Heat Protection Network that brings together the city administration, health and social services, childcare facilities, civil society organisations and other key local actors.

The main objective of the pilot was to improve local preparedness for heat events and to reduce heat-related health risks for vulnerable groups. Instead of isolated actions, Worms developed a structured cooperation model with clearly defined roles, a shared cooperation charter, thematic working groups and practical tools. These include a map of cool places, a heat hotline and targeted training for staff working in care, childcare and social institutions. The pilot demonstrated that even with limited financial resources, significant impact can be achieved when responsibilities are clear and actors are well connected.

Based on the experience in Worms, four key recommendations emerge that are transferable to other municipalities. First, **heat protection should be treated as a public health and organisational issue**, not only as a technical one. Second, **intermediary actors such as care institutions, kindergartens and social services play a crucial role** because they are in daily contact with vulnerable groups. Third, **cooperation should be formalised through simple governance tools to ensure continuity beyond project funding**. Fourth, **communication must be tailored to specific target groups** and focused on practical use rather than general awareness alone.

Heat adaptation is no longer optional; it is an urgent necessity. Climate change is increasing health risks, reducing urban comfort and putting pressure on municipal services. The Worms pilot is well aligned with wider policy frameworks such as Sustainable Energy and Climate Action Plans (SECAPs), the EU Mission on Adaptation to Climate Change and national health and adaptation strategies. At the same time, its relevance goes far beyond the pilot city. Urban heat is a regional and transnational challenge that requires systemic, cooperative and long-term responses. The experience of Worms shows that municipalities can start acting immediately by building networks, strengthening capacities and sharing responsibility for heat resilience.

Local context – Worms

This policy brief builds on the pilot activity implemented in the city of Worms within the Ready4Heat project. The pilot addressed the growing challenge of heat stress in urban areas, with a strong focus on health protection and support for vulnerable groups such as older people, children and people in need of care. Instead of introducing a single technical solution, Worms tested a governance-based approach centered on cooperation, coordination and awareness.

The core of the pilot was the establishment of a Municipal Heat Protection Network, bringing together the city administration, health and social services, childcare facilities, civil society organizations and other local actors. The network created a structured framework for joint action during heat events, supported by practical tools such as training activities, a map of cool places, a heat hotline and a shared cooperation charter. This policy brief presents the key lessons from the Worms pilot and translates them into recommendations that can support other municipalities in developing effective, low-threshold and transferable heat protection measures.

HEAT MITIGATION MEASURE: MUNICIPAL HEAT PROTECTION NETWORK

This heat mitigation approach focuses on **strengthening social and institutional infrastructure** rather than relying primarily on physical cooling installations. The core idea is to reduce heat-related health risks by **activating and coordinating intermediary actors**, such as care institutions, childcare facilities, welfare organisations and municipal services, that already work daily with heat-vulnerable groups. By formalising cooperation, clarifying roles and improving information flows, municipalities can translate heat action plans into everyday protective practice, even where large-scale infrastructure investments are not feasible.

In Worms, this governance-based approach was piloted through a Municipal Heat Protection Network, including a cooperation charter, working groups and support tools such as a heat hotline and a map of cool places. The pilot illustrates how **actor-centred coordination** can function as a mitigation measure by improving preparedness, response capacity and situational awareness during heat events.

Expected co-benefits include improved public health outcomes, better protection of vulnerable populations, strengthened cross-sector cooperation, low implementation costs compared to infrastructure-heavy solutions and higher institutional resilience through learning and trust-building.

KEY STEPS FOR IMPLEMENTATION

Implementing actor-centred heat mitigation is less about launching a single measure and more about building a reliable process that connects policy, practice and everyday routines. Experience shows that success depends on early political anchoring, clear benefits for participating actors and sustained relationship work. The following steps describe a transferable pathway that municipalities can adapt to their local context.

These steps show that actor-centred heat mitigation relies less on technical infrastructure and more on coordination capacity, facilitation skills and trust-based relationships. Required resources are modest, mainly staff time, communication tools and basic expertise, but continuity is essential. External programmes such as EU funding can play a decisive enabling role by providing time, legitimacy and political cover for this form of voluntary yet vital municipal action.

1. **Political and institutional anchoring**
   Embed the approach in an existing Heat Action Plan or adaptation strategy; assign a lead department and a permanent coordination role to signal continuity and responsibility.

2. **Targeted identification of intermediary actors**
   Focus on organisations with daily access to vulnerable groups (care, health, childcare, outdoor work, welfare), prioritising reach and operational relevance over broad participation.

3. **Clarification of mutual benefits**
   Define concrete benefits for each stakeholder group (e.g. relief for care staff, legal

certainty for employers, pedagogical support for educators, visibility and recognition for organisations).

4. **Formalisation through light governance tools**
Use simple instruments such as a cooperation charter and self-assessment to clarify roles, expectations and information flows and to stabilise engagement beyond personal motivation.

5. **Differentiated communication and core messages**
Develop tailored key messages for each group (e.g. "protecting those who depend on us", "heat protection is occupational safety"), rather than one generic public narrative.

6. **Hands-on networking and facilitation**
Invest time in direct outreach: calling, visiting, hosting small working meetings and supporting actors in their own contexts. Personal contact is a critical success factor.

7. **Learning, reflection and continuity**
Create regular moments for feedback and adaptation (annual meetings, seasonal reviews), combining qualitative insights with basic indicators to institutionalise learning.

ACTORS AND STAKEHOLDER ENGAGEMENT

Actor-centred heat mitigation **should prioritise intermediary actors** who already interact daily with heat-vulnerable groups. Municipalities rarely reach these groups directly; therefore, engagement is most effective when it builds on existing professional routines, mandates and trust relationships. Stakeholder engagement is recommended as a **benefit-oriented cooperation model**, not as generic participation.

Key stakeholder groups should be differentiated early, as their accessibility, motivations and capacity to engage vary significantly. Social and welfare organisations, care providers and childcare institutions are generally easy to activate when cooperation offers concrete operational benefits. These benefits can include support in accessing funding programmes for heat protection measures, expert input tailored to their setting, ready-to-use guidance, or relief for staff during heat events. For educational contexts, the provision of practical materials and pedagogical tools is particularly effective and represents a low-threshold entry point.

Health actors (hospitals, medical practices) and care providers should be engaged through existing professional or statutory networks, as this reduces additional coordination effort and increases legitimacy. For these groups, benefits should be framed around preparedness, continuity of care and system relief during peak heat periods.

Outdoor-working sectors (e.g. municipal services, agriculture, construction-related actors) are **harder to reach** and should be addressed as a distinct working group. Engagement is recommended through occupational safety, work protection and productivity arguments. Here, cooperation benefits should focus on legal clarity, practical guidance and peer exchange rather than awareness alone. This group typically requires more active facilitation, direct outreach and repeated contact.

Transdisciplinary research–practice cooperation should be treated as further strategic stakeholder category. Partnerships between municipalities, applied research institutions and technical organisations can validate on-the-ground actions through external expertise, translate local practice into credible evidence and

increase legitimacy vis-à-vis political decision-makers and funding bodies. Universities and research institutes can function as intermediaries between municipal practice and national or European funding landscapes, supporting access to innovation funding, evaluation resources and methodological guidance. At the same time, their external impulses and reflexive perspective can help stabilise learning processes, challenge routines constructively and increase the likelihood of long-term uptake beyond project cycles. Cooperation with applied research partners (e.g. in social work, public health or geoinformatics) and technical networks (such as municipal climate alliances) is therefore recommended not as an add-on, but as an enabling layer that strengthens governance capacity, supports evidence-informed decision-making and embeds local heat mitigation efforts in wider policy and knowledge frameworks.

Stakeholder engagement **should be organised through thematic working groups** aligned with target groups (e.g. care, health, childcare, outdoor work). These working groups can be integrated into existing networks where possible, with heat protection introduced as an additional shared topic. Municipalities should take the role of process initiator and facilitator, while enabling stakeholders to co-develop measures relevant to their own organisational context.

Early and broad involvement is recommended because it (1) improves feasibility through practice-based knowledge, (2) creates ownership and self-efficacy among participants and (3) distributes responsibility across sectors. Engagement works best when it combines structured formats with hands-on relationship work, including direct calls, on-site visits and small-group meetings.

COMMUNICATION AND AWARENESS

From a transfer perspective, the key recommendation is to treat communication as a reinforcing loop: differentiated messages empower actors, recognition sustains engagement and visibility strengthens networks. Municipalities can thus build awareness while simultaneously stabilizing cooperation structures for long-term heat resilience.

Communication for heat mitigation **should be designed as differentiated, positive and recognition-based**, rather than as a one-size-fits-all awareness campaign. The primary goal is not only to inform, but to **enable and motivate intermediary actors** to act as credible messengers within their own contexts.

Municipalities should avoid generic messaging and instead develop **distinct core** messages for each stakeholder group. For care and welfare organisations, communication should emphasise protecting those who depend on support and relieving staff during extreme heat. For childcare and education settings, messages should focus on safe learning and play environments. For outdoor-working sectors and employers, heat protection should be framed as occupational safety and productivity. This differentiation increases relevance and uptake.

Communication should involve multiple actors with clearly defined roles: the municipality ensures consistency and coordination; network members act as trusted communicators; media partners provide visibility; and professional communication support can help translate technical content into accessible formats. Effective channels can include local press, targeted mailings, workshops, digital tools (e.g. heat hotlines, maps of cool places) and on-site formats within institutions.

Visible and positive messaging is strongly recommended. Public recognition, such as certificates linked to a heat protection charter, public signings, or official acknowledgements, should be used deliberately to build trust, motivation and long-term commitment. Recognition signals that engagement is valued and positions heat protection as a shared societal responsibility rather than an additional burden.

Communication should also highlight **what organisations are already doing well**, rather than focusing solely on risks or deficits. This solution-oriented framing fosters acceptance and reduces resistance, especially in contexts with limited resources. At the same time, communication materials should be practical and usable, enabling intermediaries to pass on information without additional effort.

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TRANSFERABILITY AND SCALABILITY

Actor-centred heat mitigation **is highly transferable** because it relies primarily on governance capacity rather than large-scale physical infrastructure. The approach can be adopted in municipalities of different sizes, provided a small set of enabling conditions is met.

Conditions for success include basic political support for heat adaptation as a public-health priority, the existence (or development) of a Heat Action Plan or comparable strategy and the designation of a responsible municipal unit with coordination capacity. Financial requirements are comparatively low: a modest, stable operational budget for facilitation, communication and stakeholder support is usually sufficient.

Key barriers primarily concern institutional rather than technical issues. These include limited staff time, fragmented responsibilities across departments and uncertainty about long-term funding once external projects end. Such barriers can be overcome by clearly anchoring coordination responsibilities, integrating the approach into existing administrative routines and framing the measure as a cost-effective complement to infrastructure-based adaptation. Another barrier is uneven stakeholder engagement: some groups (e.g. outdoor-working sectors) require more intensive facilitation. This can be addressed through targeted benefits, tailored messages and sustained relationship work.

The approach scales well across municipal contexts. In small towns, implementation can start with one or two thematic working groups (e.g. care and childcare) and a small coordination structure, building on informal networks and direct personal contact. In medium-sized and larger cities, multiple working groups can operate in parallel, supported by formal governance tools (charters, self-assessments) and linked to district-level or sector-specific structures.

Scaling does not require linear expansion, but layered integration. Actor-centred governance can start as a pilot network, then be linked to complementary measures such as shading of public spaces, tree planting, cooling islands or heat-aware spatial planning. Over time, it can be embedded into urban development, public health planning and climate adaptation strategies. Regional and national support instruments, e.g. funding programmes, templates and technical guidance can further accelerate replication and reduce transaction costs for municipalities.

POLICY RECOMMENDATIONS

At municipal level, cities should formally recognise actor-centred heat mitigation as a core implementation pathway within Heat Action Plans and climate adaptation strategies. It is recommended to designate a responsible unit (e.g. climate adaptation, health or environment) and to assign a permanent coordination role. Municipal councils should allocate a small annual budget line for facilitation, communication and stakeholder support, acknowledging that social governance is a form of adaptation infrastructure. Urban planning departments should integrate cooling and heat-protection considerations into public-space design, while coordination units ensure that social actors are systematically involved.

Municipalities should also institutionalise cooperation through light governance tools (e.g. charters, working groups, recognition mechanisms) and include qualitative indicators, such as preparedness, cooperation density and stakeholder reach, in adaptation monitoring. Supporting intermediary actors through advice, materials and access to funding is recommended to increase effectiveness and continuity.

At regional and national level, governments should adapt funding schemes to better support governance-based adaptation, not only capital-intensive measures. This includes providing flexible operational funding, templates for cooperation agreements and technical guidance for municipalities. Heat protection should be embedded more strongly in public health frameworks, occupational safety regulations and education and care standards. Regional authorities can play a coordinating role by facilitating knowledge exchange, offering training and aligning sectoral policies relevant to heat resilience.

At EU level, actor-centred heat mitigation aligns directly with the European Green Deal, Cohesion Policy objectives and the EU Mission on Adaptation to Climate Change. EU programmes should continue to support municipalities through funding instruments that enable staffing, transnational learning and experimentation, such as Interreg and Horizon Europe. It is recommended to recognise governance-based pilots as legitimate adaptation measures and to strengthen pathways for transferring local practice into EU-level guidance, monitoring and capacity-building frameworks. By doing so, the EU can help cities turn voluntary, project-based initiatives into durable components of urban climate resilience.

LESSONS LEARNED

Actor-centred heat mitigation offers high impact at comparatively low cost, but its success depends on avoiding several common pitfalls. Municipalities should treat the following lessons as practical guidance for implementation, not as abstract reflections.

A first key challenge is **underestimating coordination effort**. While the approach avoids major infrastructure investments, it requires continuous facilitation, relationship work and internal coordination. Municipalities should avoid treating networks as self-running structures; without a clearly assigned coordinator and sufficient time resources, momentum declines quickly.

A second challenge concerns **uneven stakeholder accessibility**. Some actor groups (e.g. care providers, childcare institutions, welfare organisations) are relatively easy to engage when concrete benefits are offered. Others, particularly outdoor-working sectors or medical professionals, are harder to reach and require targeted entry points, repeated contact and tailored framing. Municipalities should avoid assuming equal engagement dynamics across sectors. Adopting a lens of intersectionality while designing such network approaches can help to grasp the complex lived-reality of vulnerable groups and enables the creation of just and accessible offers.

A third challenge is **overloading participation with abstract goals**. Engagement works best when meetings and working groups generate immediate value for participants, such as access to funding advice, practical materials, expert input or peer exchange. Municipalities should avoid participation formats that primarily serve reporting or visibility purposes without tangible benefits for stakeholders.

Experience also shows that **generic communication does not work well**. One-size-fits-all messaging should be avoided. Instead, differentiated core messages and recognition mechanisms (e.g. certificates, public acknowledgement) are recommended to sustain motivation and trust.

What consistently works well is early involvement, clear benefit articulation and visible appreciation of engagement. Direct outreach—calling, visiting, listening—should be prioritised over passive invitations. Formalisation through light governance tools (charters, working groups) helps stabilise cooperation, but only when combined with ongoing relationship management.

If starting again, municipalities should invest even earlier in mapping stakeholder benefits, clarifying internal responsibilities and planning for continuity beyond initial funding. For other municipalities, the main takeaway is that actor-centred heat mitigation succeeds when treated as a long-term governance task, not as a short-term project.

KEY FINDINGS AND CONCLUSIONS

Actor-centred heat mitigation delivers multiple benefits: improved protection of vulnerablised groups, reduced pressure on health and care systems, high public acceptance and strong cost-effectiveness. Limitations relate mainly to coordination capacity and continuity, not to technical feasibility or scalability. When embedded in intersectional thinking, transdisciplinary cooperation and European support frameworks, this approach offers municipalities a robust pathway to transform voluntary initiatives into a core component of equitable, preventive and resilient urban heat adaptation.

Actor-centred heat mitigation emerges as an effective, feasible and equitable pathway for urban climate adaptation. Strengthening social and institutional infrastructure enables municipalities to act preventively, reduce heat-related health risks and remain operational during extreme heat events. By building on existing organisations, professional routines and networks, this approach delivers immediate public-health benefits while reinforcing long-term urban resilience.

First, governance-based heat mitigation is effective precisely because heat is an organisational and societal risk, not only a meteorological one. Experience shows that heat becomes a crisis when coordination, communication and decision structures fail. Actor-centred networks help clarify responsibilities, align routines and reduce cascading effects across health care, education, social services and critical infrastructure. This makes the approach particularly relevant for preparedness, prevention and crisis management.

Second, success depends on early, differentiated and just stakeholder involvement. Measures work best when intermediary actors are involved from the outset and when cooperation is structured around clear, context-specific benefits. Applying an intersectional lens helps municipalities understand overlapping vulnerabilities related to health, age, income, housing, work and mobility and supports the design of accessible and fair protection offers. Tailored benefits, differentiated messages and visible recognition are decisive for acceptance, uptake and continuity; especially when stakeholder accessibility varies strongly between sectors.

Third, long-term impact requires institutional anchoring and learning-oriented governance. Actor-centred networks remain effective only when coordination roles, modest but stable resources and routine formats for reflection and adjustment are secured beyond project funding. Municipalities benefit from treating heat adaptation as a continuous learning process: seasonal evaluation, scenario-based preparedness and regular exercises help stabilise action under real-world stress conditions.

Fourth, transdisciplinary and European cooperation significantly increase effectiveness and scalability. Partnerships with applied research institutions and technical organisations validate local action, provide external expertise and translate practice-based knowledge into evidence-informed policy. European programmes and transnational exchanges create legitimacy, learning spaces and continuity, enabling cities to transform pilots into durable governance structures aligned with EU climate, health and resilience objectives.

Beyond these four core findings, several additional insights are relevant for municipalities considering similar approaches. Heat protection works best when prevention is prioritised over reaction, supported by clear emergency routines and trained actors at organisational level. Low-threshold measures, such as checklists, training formats, heat officers, or simple digital tools, often achieve high impact relative to cost. Data-informed decision support, including vulnerability analyses and dashboards, strengthens prioritisation and accountability when linked to concrete use cases in care, education and planning.