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ASPHER



Integrating Health into Climate Adaptation at the Subnational Level

Climate-Health Briefing

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Key messages

Key messages for subnational policymakers

- Subnational authorities play a key role in reducing climate impacts on health. However, they need practical support, including funding and technical assistance, to embed health in adaptation planning, coordinate across sectors, and identify vulnerable groups and places.
- This brief provides practical guidance to help local and regional authorities act on the most pressing climate hazards (heat and flooding) across adaptation planning, spatial planning, green and blue infrastructure, emergency preparedness and response.
- Climate risk and vulnerability assessments are the starting point for integrating health into adaptation: they help identify which hazards matter most, which people and places are most exposed, which health systems are under pressure, and where climate risk overlaps with social vulnerability. Tools like the Regional Adaptation Support Tool (RAST) can help authorities integrate these considerations across the full planning cycle.
- Spatial planning and built environment decisions are crucial for reducing health risks from climate hazards like heat and flooding. Steering development away from hazard-prone areas; climate-proofing schools, care homes and hospitals; and keeping access routes safe can reduce or prevent loss of health.
- Green and blue infrastructure can reduce heat exposure, support flood management, improve air quality and create places that support physical activity and mental well-being. Its health benefits are maximised when planning and investment decisions target places of high social vulnerability.
- Heat is the biggest climate-related health threat for many places in Europe. Local authorities play a key role in planning, coordinating and operationalising activities in heat-health action plans. The plans need to be built on clear governance, warning-to-action links and targeted protection for people and places at higher risk.
- Flooding is the second biggest threat to health. Local and regional authorities can strengthen the health dimension of flood resilience by identifying where vulnerable communities and services are, avoiding development in risk areas, securing continuity of care and utilities in the event of flooding, making warnings and evacuation arrangements inclusive, and supporting recovery in ways that prioritise vulnerable people first.

1. Introduction

1.1 Context of the brief

This brief is an output of the European Climate and Health Observatory. It supports local and regional authorities in integrating health into climate adaptation planning and implementation.

Climate risks increasingly affect health and wellbeing across Europe. There is growing recognition that adaptation needs to address health systematically. The consultation on the planned European Climate Resilience and Risk Management Integrated Framework called for health, including heat impacts on health, to be integrated across relevant plans and policies (EC, 2025a). It also called for stronger climate proofing of urban environments, buildings and infrastructure, and greater technical assistance and capacity building for local and regional authorities.

The brief draws on the [ASPHER / EEA survey on subnational decision makers' knowledge needs on climate and health](#), which gathered 173 responses from professionals and elected officials across 20 European countries ([European Climate and Health Observatory, 2026a](#)). The survey provided practical insights into the knowledge and capacity needs of subnational authorities and helped shape the focus of this brief (see findings summary in Section 1.4).

1.2 Who is this brief for and how can it help?

This brief is for local and regional policymakers (e.g., in spatial planning, built environment, civil protection), decision makers, and climate adaptation officers who shape adaptation policies, coordinate action across sectors, and support the selection and implementation of adaptation measures. It is also relevant to officials working on adaptation in authorities without a dedicated adaptation team.

This brief is designed to help. It offers practical, actionable guidance to support local and regional authorities in turning awareness into action, covering heat and vulnerable populations, climate-related health risks, green infrastructure and spatial planning, emergency preparedness, and monitoring and evaluation.

It is organised around four thematic areas:

- Spatial planning and the built environment
- Green infrastructure and nature-based solutions
- Heat health preparedness and action
- Flood resilience and health protection

Across all four, the brief highlights vulnerable groups to consider, health co-benefits of actions, and potential trade-offs (including the risk of maladaptation) to be aware of. It can be used flexibly to integrate health into adaptation plans, identify and prioritise climate-health risks, strengthen preparedness and cross sectoral coordination, or assess and improve existing action.

The approaches to risk assessment, spatial planning, green infrastructure and governance outlined in this brief apply to all climate hazards. Heat and flooding receive particular attention because they are the climate hazards most frequently reported as affecting health across European cities and regions (see Section 5 and 6). Local and regional authorities have key responsibilities in planning, housing, emergency management and public health that shape how well communities are protected from both hazards. Sections 5 and 6 describe the main health impacts, practical actions throughout the planning and response cycle, and the stakeholders to involve.

1.3 Why does health belong in subnational climate adaptation planning?

Climate change is already affecting health across Europe through heat, flooding, wildfires, drought and their knock-on effects on health systems, infrastructure and essential services (Blom *et al.*, 2025; [EEA, 2024a](#)). At national level, health ranks as the second most frequently reported sector affected by climate change in adaptation reporting across Europe, making it an important priority for action ([EEA, 2026a](#)). Climate adaptation is, in practice, a public health task.

Subnational authorities are increasingly on the frontline. As Figure 1.1 shows, health ranks as the third most affected sector at subnational level ([European Climate and Health Observatory, 2026b](#)). Heat is the dominant climate threat to health, with water-related hazards a close second, and outdoor workers, low-income households, older people, children and other vulnerable health groups facing the greatest risk. Yet only 22% of measures in their climate action plans actually addressed health ([European Climate and Health Observatory, 2026b](#)). The gap between recognising the problem and acting on it remains wide.

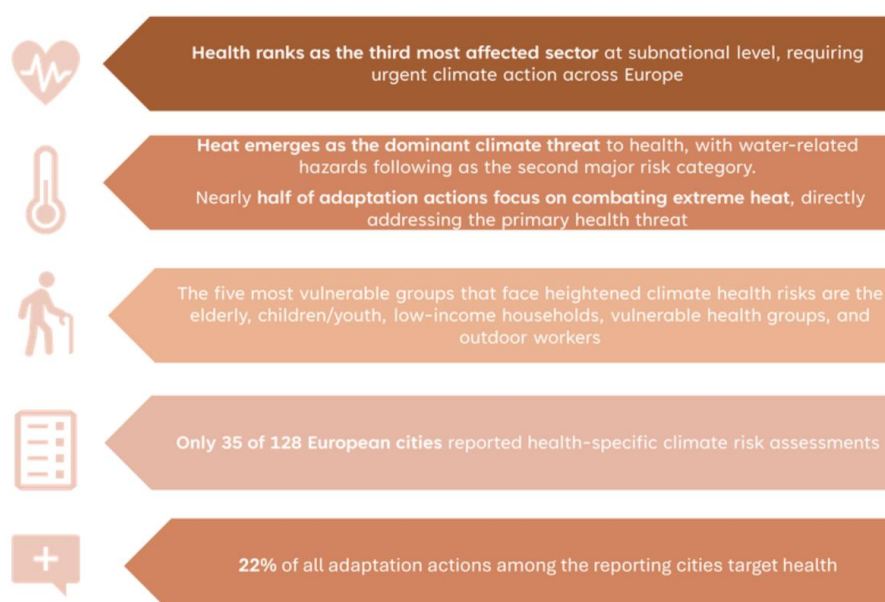


Figure 1.1 Key findings from the analysis of climate-health adaptation efforts reported by 128 European cities to the Carbon Disclosure Project (CDP). Find the full analysis [here](#).

Local and regional authorities have real power to narrow this gap. Cities shape where people live, how buildings are designed, where green space is located and how services are delivered such as public transport and emergency response ([EEA, 2024b](#)). Regions can coordinate across municipalities and bring together public health, infrastructure and strategic spatial planning to address the deeper drivers of vulnerability (WHO, 2026a). In many countries, they are increasingly expected and required to lead: Some, such as Croatia, Greece and Ireland, place a legal duty on local and regional authorities to plan for adaptation; others, such as Bulgaria, Finland and France, embed it in wider planning, water or environmental policy ([EEA, 2026a](#)).

1.4 What knowledge and skills do local and regional authorities need most?

To inform this brief, ASPHER and the EEA surveyed professionals and elected officials working on climate adaptation, environment and public health at local and regional level. The survey received 173 responses from 20 European countries, mainly from policy officers in climate adaptation, environment and public health departments. Elected officials accounted for almost one quarter of respondents. The

survey is not representative of all local and regional authorities in Europe but still provides valuable insights into practical knowledge and support needs. More information is available on the [European Climate and Health Observatory page](#).

The results paint a mixed picture. Awareness of climate related health risks is high. Many authorities already have basic adaptation structures in place: 61% reported a dedicated climate department, 60% had an adaptation plan and 23% were developing one ([European Climate and Health Observatory, 2026a](#)). But health is explicitly integrated into adaptation plans in only 43% of responding authorities. Knowing the risks and acting on them are still two different things.

Respondents pointed to heat, impacts on vulnerable populations, flooding and air pollution as the areas where they need most support (Box 1.1). They reported lower capacity for more demanding tasks: particularly the use of economic assessment tools and the monitoring and evaluation of adaptation measures, including equity-related aspects. Smaller municipalities face particular pressure, due to limited technical capacity and financial resources.

Box 1.1

What local and regional authorities need support with

The findings from the ASPHER / EEA survey suggest that local and regional authorities need practical support to:

- Make health a clear objective in adaptation planning and implementation;
- Strengthen coordination across climate, environment, planning, health, social care, emergency management and infrastructure departments;
- Identify vulnerable groups and aim at health equity in adaptation decisions
- Assess and address priority climate-related health risks, including heat, flooding, drought, extreme weather and vector borne diseases;
- Decide on and implement measures such as heat health action plans, early warning systems, green and blue infrastructure, flood resilient planning, emergency preparedness and risk communication;
- Monitor health-related outcomes and use evaluation results to improve adaptation over time.

2. Adaptation planning

This chapter shows how health can be embedded throughout the adaptation planning cycle. It covers:

- Using climate risk and vulnerability assessments to understand climate related health risks, identify priorities and inform the selection of measures
- Identifying vulnerable groups and places
- Maximising co-benefits of adaptation actions across policy areas, such as air quality and green space
- Recognising health trade-offs of adaptive actions and avoiding maladaptation
- Tailoring measures and communication to reach those most at risk

2.1 How to use the Regional Adaptation Support Tool (RAST)

Local and regional authorities can respond to impacts of climate change through dedicated adaptation strategies, or by embedding adaptation across existing plans and policies. Either way, effective adaptation planning rests on the same foundations: appropriate governance structures, climate risk and vulnerability assessment, communication and engagement, and adequate funding.

The RAST supports authorities across the full planning cycle (see Figure 2.1)



Figure 2.1 [Regional Adaptation Support Tool](#) steps

This brief uses the RAST as a reference point. Each thematic section links to a stage of this cycle, showing how health can be built into risk assessment, prioritisation, implementation and monitoring. For more information, see the [Regional Adaptation Support Tool \(RAST\)](#).

2.2 Governance structures with health at the heart

Effective climate-health adaptation requires clear leadership, defined roles, cross sectoral coordination and adequate resources (WHO, 2026a). Coordination is needed across levels of government and across departments, because climate related health risks cut across health, environment, spatial planning, infrastructure, social services and emergency management.

There is no single model for climate-health governance. Authorities can build on existing structures (see Example 2.1, Wales) or establish dedicated coordination mechanisms (see Example 2.2, Flanders.) Both these approaches connect sectors and levels of government, clarify responsibilities and give health a clear place in adaptation decision-making.

Example 2.1 Wales, integrating health and wellbeing across public policy

The [Well being of Future Generations \(Wales\) Act](#) provides a common framework for public bodies to pursue shared wellbeing goals, including a healthier and more resilient Wales. It promotes collaboration, a long term and integrated approach, participation and prevention. At local level, Public Services Boards bring together local authorities, health boards, fire and rescue authorities and Natural Resources Wales to assess local wellbeing and develop joint plans.

Source: [Well-being of Future Generations \(Wales\) Act 2015](#)

Example 2.2 Flanders, Belgium, dedicated climate health coordination

Flanders has established a working group bringing together actors from health, environment and other policy areas, alongside local authorities, primary care and other stakeholders. It aims to strengthen cross sectoral collaboration and provide a common basis for coordinating climate health risks, responsibilities and action.

Source: [WHO, 2026a](#)

Inclusive and participatory governance

An inclusive and participatory approach should be part of an enabling governance environment from the start. Stakeholder mapping can identify those with relevant expertise, responsibilities, interests, or lived experience of climate related health risks. This can include public health and healthcare professionals, social and care services, emergency services, community organisations, researchers and representatives of vulnerable groups. This network should ideally be involved in the full adaptation cycle, from awareness raising and risk assessment to implementation and monitoring.

Heat-Health Action Plans (HHAPs) provide a practical framework for preventing and responding to the health impacts of extreme heat. WHO Europe guidance (2026b) recommends a practical governance model, built in three elements: a lead authority to provide strategic direction, a multi-sectoral working group with clear roles and responsibilities, and an oversight mechanism to ensure continuity and review progress. These arrangements should build on existing structures, especially where resources or capacity are limited. See the Example 5.2 from Ludwigsburg in Chapter 5 on Heat Health Action Plans.

2.3 From climate risk and vulnerability assessment to action

Climate-health adaptation should begin with a clear understanding of how climate hazards affect health and which populations, places and systems are most at risk. Climate Risk and Vulnerability Assessments (CRVAs) can help authorities identify priority risks and vulnerable groups, set adaptation objectives, prioritise adaptation options, and identify where health needs to be integrated into existing plans and policies ([EEA, 2026a](#); JRC, 2026).

CRVAs bring together information on hazards, exposure and vulnerability (JRC, 2025). For health, this includes:

- direct and indirect climate impacts on health,
- population characteristics and inequalities, and
- the vulnerability of health services, critical infrastructure and other systems that support wellbeing ([European Climate and Health Observatory, 2026a](#)).

In some countries, CRVAs are mandated, supported or financed nationally, providing a basis for adaptation planning at local and regional levels ([EEA, 2026a](#)). However, dedicated health focused assessments are less common: in 2020, only 35 of 128 European cities reporting to CDP had conducted one, mainly in Western Europe ([European Climate and Health Observatory, 2026a](#)).

Assessments should draw on the best available climate, environmental, health, social and spatial data, alongside local and community knowledge ([EEA, 2024b](#)).

Stakeholder engagement is crucial to bring different perspectives, identify less visible vulnerabilities and ensure findings are relevant to decision making (JRC, 2025). This is illustrated in Example 2.3 below from Paris, where stakeholder engagement helped shape the heat-risk assessment from the outset.

Example 2.3 Paris, France, stakeholder engagement in climate health risk assessment

The IMPETUS4CHANGE project in Paris used a participatory approach to ensure its assessment of heat-related health risks responded to the needs of organisations involved in urban adaptation and planning. Stakeholders from public, voluntary and private sectors were consulted through interviews, webinars and workshops to identify priorities and information needs and to review the climate information being developed. Their input helped identify which health impacts and indicators matter locally, and how assessment results can better support adaptation decisions.

Source: [JRC, 2025](#)

2.4 Identifying vulnerable groups and places

Climate related health risks are not shared equally. Age, health status, income, housing, mobility, social support, access to services and working conditions all influence how people experience climate hazards. Occupational health also matters: e.g. workers in agriculture or construction face greater exposure because of where and how they work.

Assessing not only where hazards are greatest, but also which groups and places are most vulnerable and their capacity to cope, can reveal where climate risks overlap with poor housing, limited access to green and blue infrastructure, social isolation or barriers to essential services, helping authorities target action where it is most needed. Example 2.4 from Murcia, Spain below shows how this can be done in practice by combining climate risk data with social vulnerability, adaptive capacity and local stakeholder knowledge.

A justice lens is essential. Measures that improve resilience overall may not protect those most at risk and can, in some cases, reinforce existing inequalities. Official datasets on demographics, health, social care, housing, infrastructure and transport should be combined with stakeholder and community knowledge to ensure adaptation priorities reflect both measured risk and lived experience, including exposure to flood-prone or overheated areas and sensitivity linked to age, illness or poor housing.

Example 2.4 Murcia, Spain, assessing social vulnerability and adaptive capacity

Murcia's climate adaptation plan assesses climate hazards alongside social vulnerability and adaptive capacity. It combines indicators of exposure, sensitivity and potential impacts with factors such as poverty and unemployment. The assessment identified health, water management and urban planning as priority sectors. Expert interviews and stakeholder discussions validated the findings and identified local concerns. The approach shows how CRVAs can combine climate hazard data, social vulnerability, adaptive capacity and stakeholder knowledge to identify where adaptation action needs to be better targeted.

Source: [JRC, 2025](#)

Checklist

Identifying and protecting vulnerable groups

- ☐ Which groups are most exposed and least able to cope with local climate health risks?
- ☐ Which neighbourhoods, buildings or services should be prioritised to protect the vulnerable or exposed groups?
- ☐ Are vulnerable groups and places identified early enough to inform risk assessment, planning, preparedness and communication?
- ☐ Are planned measures accessible, affordable and realistic for the groups they are intended to protect?
- ☐ Are communication messages trusted, understandable and accessible to the groups they are intended to reach?
- ☐ Which groups may still be missed by standard communication or general services?
- ☐ Do planned actions reduce inequalities, or could they unintentionally increase them?

2.5 Co-benefits, trade-offs and maladaptation

Adaptation measures can affect health beyond the climate risk they target. Shading, urban greening, water-sensitive design and improved housing can reduce climate risks while also supporting mental wellbeing and improving the overall quality of living environment. Recognising these co-benefits helps authorities identify measures that protect health in multiple ways and make a stronger case for investment.

Adaptation can also create unintended trade-offs. If ignored, these trade-offs can lead to maladaptation, creating new vulnerabilities, reinforcing inequalities or locking places into unsuitable solutions. Poorly designed measures could harm the health of the people they aim to protect. Examples include:

- **Displacement:** Neighbourhood greening can drive up housing costs, pushing lower-income residents into areas with worse heat exposure and air quality. Barcelona prevented this in its Superblock programme by pairing new green spaces with strict social housing protections ([EEA, 2025a](#)).
- **Deepening energy poverty:** Energy-efficiency retrofits can raise rents or other housing costs. For vulnerable tenants, that can mean less money for cooling, bills and other essentials. France limits this risk by capping renovation-related rent increases at 15% of costs ([EEA, 2025a](#)).
- **Shifted health risks:** Flood protection can reduce risk in one part of a river network while increasing flow and flood pressure elsewhere. In Padova, for example, floodgate operation is used to divert water from the Bacchiglione into the Brenta to balance the discharge load across branches of the network, showing how protection in one place can shift hazard to another (Mela *et al.*, 2020). Applying a health and equity lens from the outset ensures trade-offs are managed and risks are not simply shifted to other groups.

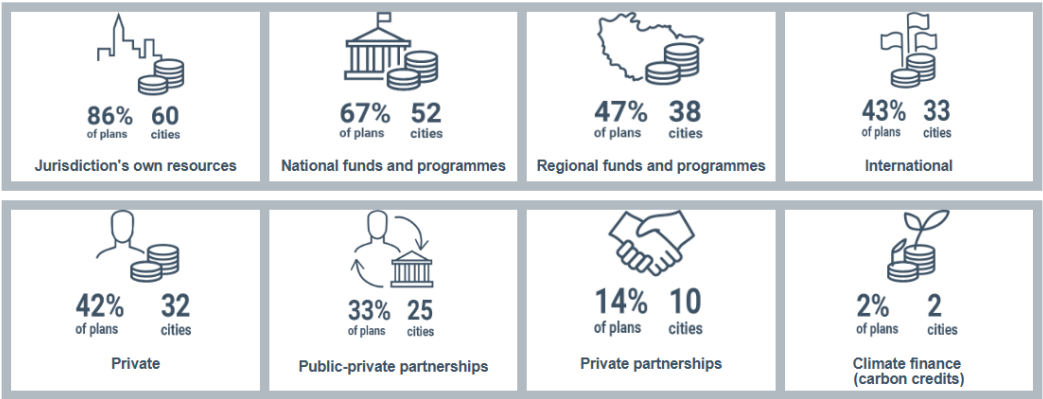


Resources

- **European Climate and Health Observatory:** Provides examples of climate-health adaptation measures and their potential co-benefits in European cities. Available at: [Climate-health adaptation at the local level: insights from European cities.](#)
- **REGILIENCE Maladaptation Self-Assessment Tool:** A practical tool to help identify and avoid maladaptive responses when planning and implementing adaptation measures. Available at: [REGILIENCE Maladaptation Self-Assessment Tool.](#)

2.6 Funding and financing climate-health measures

Access to financial resources emerged as a key challenge in the survey, with around two-thirds of respondents identifying a lack of funding as an area where additional support is needed for climate-health adaptation planning ([European Climate and Health Observatory, 2026a](#)). Smaller municipalities often face particular difficulties due to limited financial and staffing capacity, lower access to dedicated adaptation funding and grants, or challenges in carrying out climate risk assessments ([EEA, 2026b](#)). Evidence from the EU Mission on Adaptation also highlights financing challenges at the implementation stage. Based on data reported by 70 local and regional authorities to CPD in 2025, while 90% had an adaptation plan in place, implementation continues to depend largely on authorities' own resources and access to external finance remains a challenge ([EEA, 2026c](#)). Most cities combine multiple funding sources rather than relying on a single one: own resources fund 86% of climate action plans that cover health (60 of 65 reporting cities), complemented by national programmes (67% of plans) and regional programmes (47%) (see Figure 2.2).



Source: data reported by European cities to CPD in 2024.

Figure 2.2 Types of financing for climate adaptation plans covering health (2024)
Source: [EEA, 2026b](#)¹

Beyond providing information on funding and financing opportunities, more technical support could help municipalities develop investment-ready climate-health projects.

¹ Disclaimer: This visualization analyzes responses to the question: Report details on the climate action plan or strategy that addresses mitigation, adaptation (resilience) and/or energy-related issues in your jurisdiction - Funding sources and financial instruments to finance plan. Although a larger number of cities responded to the question, this analysis focuses on a subset of 63 cities from 21 countries, whose reported plans address or cover health.

Guidance from the Mission Implementation Platform highlights the importance of project preparation, including risk assessments, prioritisation of measures, cost estimates, implementation planning and combining different funding sources (EC, 2024a). The Committee of the Regions similarly stresses the need for stronger technical assistance, capacity-building and improved access to innovative financing mechanisms, including blended finance, public-private partnerships, insurance mechanisms and pooled investment approaches (CoR, 2024). Such support may be particularly valuable for smaller municipalities with limited financial and administrative capacity.

Examples of climate-health investments that may require dedicated financing

- Heat-health action plans and early warning systems, including forecasting tools, communication systems and targeted outreach to vulnerable groups.
- Cooling spaces and climate shelters, requiring investment in public buildings, accessibility and operational capacity during heat episodes.
- Climate-resilient hospitals, care homes and schools, including cooling measures, flood protection and resilient energy and water systems.
- Healthy housing and overheating reduction programmes, such as building retrofits, shading, insulation and ventilation improvements.
- Urban greening and blue infrastructure, including trees, parks, green corridors and water features that reduce heat exposure and improve health outcomes.
- Flood resilience measures for healthcare and social-care facilities, ensuring continued access to essential services during extreme weather events.

The examples 2.5 and 2.6 illustrate that climate-health adaptation often involves investments across multiple sectors, including public health, housing, urban planning, social care, education and disaster risk management. As a result, financing may need to combine different funding sources and programmes rather than relying solely on dedicated adaptation budgets.

Example 2.5 Bilbao, Spain Financing urban resilience through a public-private partnership

Bilbao used a public-private partnership to redevelop the flood-prone Zorrotzaurre peninsula, combining public and private investment of more than EUR 21 million. Alongside flood risk reduction, the project supported wider urban regeneration, including green and public spaces that contribute to a healthier urban environment. The project is expected to reduce potential flood damages by 31-100%, depending on flood severity. It illustrates how adaptation measures with health co-benefits can be financed through partnerships that combine public and private resources.

Source: Committee of the Regions, 2024.

Example 2.6 Paris, France, long term financing for cooling at city scale

Paris' Climate Bond raised €300 million, with €60 million allocated to adaptation. It financed targets including 20,000 trees and 30 hectares of new parks. Maintenance could not be financed through the bond and remained the city's responsibility, underlining the importance of linking green infrastructure targets to long term maintenance budgets.

Source: Source: [Climate-ADAPT](#), 2023



Resources

- [Mission Adaptation Funding and Financing Database](#) (EC, 2024b)
Searchable database of European, national and regional funding and financing opportunities relevant to climate adaptation. The database helps authorities identify suitable grants, loans, technical assistance programmes and other financing options based on project needs and maturity.
- [Funding and Financing Guide to Support Regional Climate Adaptation](#) (EC, 2024a)
Practical guidance on developing adaptation projects, building a strong investment case, estimating costs, preparing funding applications and combining different funding sources.
- [Adaptation financing mechanisms for action at local and regional levels](#) (CoR, 2024)
Overview of financing approaches available to local and regional authorities, including grants, public-private partnerships, blended finance, green bonds, insurance mechanisms and pooled investment funds.
- [Climate-ADAPT: Funding opportunities for adaptation](#). Information on EU funding programmes relevant to adaptation, including LIFE, Horizon Europe, Cohesion Policy Funds, Interreg and the European Investment Bank.

2.7 Tailoring measures and communication

Adaptation measures can fail to protect those most at risk, if they are not accessible and suited to different groups and places. A warning, cooling space, evacuation plan or public information campaign may be effective in general but still miss people who face barriers to accessing or acting on it ([EEA, 2025a](#)).

Local and regional authorities should identify predictable gaps in protection and adaptation measures and deliver and communicate accordingly. This may include accessible and multilingual communication, targeted outreach through health and social care services, welfare checks during heat events, support for schools, care homes and hospitals, arrangements for outdoor workers, and working with trusted intermediaries such as pharmacists, social workers and community organisations. In Drenthe, Netherlands a regional StoryMap was created to communicate climate-related risks and impacts in a visually compelling way (see Example 2.7).

Example 2.7 Drenthe, Netherlands, making climate risk information locally relevant

Drenthe's Adaptation Picture is a regional StoryMap presenting climate risks, impacts and adaptation options through accessible visual information. It shows how tailored visualisation can translate complex climate data into locally relevant content for different stakeholders, supporting dialogue and informed adaptation decisions.

Source: [MIP4Adapt, 2024a](#)



Resources

- [Preparing society for climate risks in Europe: lessons and inspiration from Climate-ADAPT case studies \(EEA, 2024c\)](#): a collection of practical examples showing how adaptation can be tailored to different climate risks, sectors, communities and vulnerable groups across Europe.

3. Mainstreaming climate-health adaptation into spatial planning and the built environment

Spatial planning and built environment policies concerning urban design, housing, and transport are central to progressing climate-health adaptation. They are also key areas within the competences of local and regional authorities, giving them important levers to influence where and how people live, their exposure to climate hazards, the quality of buildings and public spaces, and their access to services, green space and active travel (TCPA, 2026).

This chapter focuses on integrating health and climate resilience into spatial planning, design, renovation and infrastructure decisions. A [resilience-by-design approach](#) considers climate risks, health impacts, vulnerable groups and long-term spatial choices together from the outset. This helps ensure that new development, regeneration and investment reduce future risks rather than lock in vulnerability, while creating healthier and more resilient places.

Checklist

Mainstreaming health into spatial planning and the built environment

- ☐ Does a plan or development reduce exposure to climate hazards, including heat and flooding, having regard to current and future climate projections?
- ☐ Does a plan or development support healthy, climate resilient housing and buildings, including overheating prevention, passive cooling, energy efficiency and resilience to extreme weather?
- ☐ Does a plan or development create healthy and climate resilient neighbourhoods, with access to green and blue spaces, essential services, and safe walking and cycling routes?
- ☐ Are vulnerable groups considered in planning and housing decisions? Could the measure unintentionally increase inequalities through affordability, displacement or unequal access to benefits?
- ☐ Are essential services and social infrastructure located and designed to remain safe, accessible and operational during extreme events?
- ☐ Does transport and infrastructure planning maintain access to essential services during climate related disruptions?

3.1 Planning, zoning, and land use

Spatial planning is a key entry point for integrating climate adaptation at subnational level ([EEA, 2026a](#)). Planning, zoning, and land use decisions can either reduce climate related health risks or lock in exposure and vulnerability for decades ([EEA, 2024b](#)). Steering new development away from hazard prone areas is a key first step (see Example 3.1, Noordwijk). This means considering current and future exposure to flooding, wildfire, landslides, coastal erosion and heat, alongside how the location and design of development affects health (See example 3.2, Toulouse, Example 3.3, Stuttgart, and Example 3.4 High Path Estate).

Example 3.1 Noordwijk, Netherlands, planning for future climate risks

In planning the Bronsgeest new district, Noordwijk assessed future risks from waterlogging, drought and heat stress before defining spatial and design requirements. Assessing climate risks before setting design requirements, rather than after development decisions have been made, helps ensure safe and healthy living conditions from the outset.

Source: [Climate Adaptation Platform Netherlands](#)

Example 3.2 Toulouse, France, refreshing the city

Through its Toulouse + fraîche plan, the city developed and tested measures to reduce urban heat stress: shading, greening, soil desealing, lighter coloured surfaces, improved water management and changes to public spaces and municipal activities. Together, these measures reduce heat exposure and improve thermal comfort while improving the quality of public spaces.

Source: [MIP4Adapt, 2024b](#)

Example 3.3 Stuttgart, Germany, green blue infrastructure for cooling and air quality

Stuttgart uses green ventilation corridors, parks and green spaces to improve air circulation and address both heat and air pollution risks. Spatial planning helps protect these ventilation pathways and integrate them into the wider urban structure, showing how green infrastructure and land use planning can work together in areas where heat and air pollution overlap.

Source: [Climate ADAPT, 2020](#)

Example 3.4 High Path Estate, Merton, healthy and climate resilient regeneration

The regeneration of the High Path Estate used a Health Impact Assessment to inform the local plan and identify how regeneration could improve health and reduce inequalities. The assessment considered accessibility and active travel, access to green and open space, social infrastructure, employment, food growing, and air and noise pollution. The approach shows how health can be embedded in regeneration from the planning stage, with attention to the needs of the existing community.

Source: [TCPA, 2018](#)

3. Mainstreaming climate-health adaptation into spatial planning and the built environment

Planning and urban design also shape everyday conditions that influence health and resilience: access to green and blue space, active travel, shade, essential services and safe public spaces. Approaches such as compact, mixed-use neighbourhoods and healthy placemaking can reduce exposure while generating wider health benefits ([EEA, 2024b](#)). Planning concepts, such as the 15-minute city promote active travel, improve air quality and access to green space, and create opportunities for social interaction (TCPA, 2021). Where appropriate, Health Impact Assessment can help identify potential health and equity impacts before planning decisions are made (Bird et al., 2024).

For existing neighbourhoods, planning can also support authorities to retrofit places for changing climate risks, particularly heat, through greening and shading, reducing sealed surfaces, improving water management and adapting public spaces (see Example 3.5, Vienna). A health lens should also consider who is exposed and how planning decisions affect health, vulnerable groups, essential services and critical infrastructure. This includes potential impacts on heat exposure-overheating, air quality, noise, physical activity, mental wellbeing, access to green and blue spaces, mobility and essential services ([EEA, 2024b](#); [EEA, 2025a](#)).

Example 3.5 Vienna, Austria, integrating climate resilience into urban planning

Vienna uses climate data and vulnerability assessments to inform new development and neighbourhood re-design. Measures include trees and shaded streets, green spaces and roofs, permeable surfaces, water sensitive design and climate-adapted building requirements. Investment in flood retention infrastructure and the New Danube flood bypass has reduced the risk of flooding affecting homes, services and infrastructure.

Source: [MIP4Adapt, 2024c](#)

3.2 Housing and renovation

Housing is a central climate-health issue. People spend much of their time indoors, and housing type, quality, ownership and location all influence exposure to heat, cold, damp, flooding and poor air quality. Housing policy, building standards, renovation programmes and rental regulations should be part of a healthy homes approach, linking housing quality, health and climate resilience.

Overheating is an increasing concern, particularly for lower income households, renters and people living in Central Eastern or Southern Europe ([EEA-EF, 2026](#)). Building and housing policies should address overheating and thermal comfort as temperatures rise. Depending on the building and site context, this can include external shading, natural ventilation, passive cooling, green infrastructure and sustainable drainage (see example 3.6, Stiefingtal and example 3.7, Reggio Emilia). Affordability, accessibility, and energy poverty concerns should be considered alongside climate measures.

For existing housing, renovation, and retrofit programmes can improve resilience through passive cooling, shading, flood protection and, where appropriate, efficient active cooling. Priority should be given to climate vulnerable and socially disadvantaged housing. The surrounding neighbourhood also matters: access to trees, green space, services and safe walking and cycling routes can complement improvements to the home itself (WHO, 2018).

Example 3.6 Stiefingtal, Austria, climate resilient building guidelines

Stiefingtal developed local building guidelines for new construction and renovation covering shading, passive cooling, natural ventilation, energy efficiency and protection from climate hazards. Developed with local stakeholders and technical experts, the guidelines provide practical direction for municipalities, planners and builders.

Source: [MIP4Adapt, 2024d](#)

Example 3.7 Reggio Emilia, Italy, passive cooling in social housing

Two social housing buildings in Reggio Emilia were retrofitted with ventilated and air permeable roofs to reduce heat gains and improve summer thermal comfort. Monitoring showed lower ceiling temperatures and reduced cooling energy use, demonstrating how passive cooling can be integrated into housing retrofit programmes to reduce overheating and reliance on mechanical cooling.

Source: [Climate ADAPT, 2026](#)

Making renovation accessible and equitable

Renovation programmes also need to address the financial, administrative and information barriers that prevent households from improving their homes. Particular attention should go to residents more vulnerable to indoor climate risks, including older people, people with disabilities and people with chronic health conditions ([EEA-EE, 2026](#)). Local and regional authorities can provide or support one stop shops technical advice, financial guidance and proactive outreach, particularly for low income and climate-vulnerable households (see Example 3.8, Ghent, Belgium and Basque Country, Spain) .

Example 3.8 Ghent, Belgium and Basque Country, Spain, one stop shops for equitable renovation

In Ghent, De Energiecentrale provides personalised renovation advice and support to vulnerable, low-income households residing in private dwellings, specifically single-family homes and condominiums. It includes financial and administrative guidance, working with social partners to reach households facing barriers (financial, administrative, logistical, access) to renovation. In the Basque Country, Opengela combines technical, financial and administrative support through neighbourhood offices, with outreach in deprived areas. Both cases show how integrated, locally accessible support can make climate resilient renovation more accessible to households most at risk.

Source: [ETC ST, 2025](#)

3.3 Social and health infrastructure

Schools, care homes, and healthcare facilities require particular attention in climate adaptation planning. They serve people who may be especially vulnerable to climate-related health risks, and their continued operation is essential during extreme weather events. Children, older people, patients and care-dependent residents may have less capacity to protect themselves from heat, flooding, or service disruption. These facilities may also need to provide additional support or shelter during emergencies.

For schools in particular, rising temperatures present a growing challenge. High temperatures negatively affect children's well-being and their ability to concentrate, and extreme heat can even force school closures. As heatwaves become more frequent and last longer, the likelihood of extreme temperatures falling outside the summer holidays is increasing. According to UNICEF, over 900,000 pupils in Europe had their education disrupted by heatwaves in 2024 ([European Climate and Health Observatory, 2026c](#)). The heat exposure of schools [data viewer](#) explores the probability of high temperatures occurring now and in the future during the school year across Europe (see Box 3.1).

Box 3.1

Heat in Europe's schools: a growing threat

Extreme heat is increasingly disrupting the school calendar. Educational facilities require urgent adaptation to protect pupils and teachers:

- Today: Over 16,600 schools (4.2%) already experience days above 30°C during term time.
- By 2050: This doubles to over 34,400 schools (8.6%) under a high-warming scenario.
- By 2100: One in four European schools (25%) will face days above 30°C during the school year and over 13,700 will endure extremes above 35°C.
- Shifting risks: The vast majority of these hot days (up to 82%) will strike before the summer holidays begin, meaning adaptation may eventually require rethinking the timing of school holidays alongside physical building upgrades.

Source: [European Climate and Health Observatory, 2026c](#)

Local and regional authorities should treat social and health infrastructure as priority sites in adaptation planning. This includes assessing exposure to climate hazards, the resilience of buildings and access routes, and the ability to maintain essential services during extreme events. Adaptation measures may include shading, ventilation and cooling, climate resilient outdoor spaces, flood protection, emergency power and water security, and continuity and emergency access arrangements (see Example 3.9, Poznań).

For new facilities, authorities should avoid locations where climate risks cannot be adequately mitigated. For existing facilities, adaptation should address both physical resilience and continuity of care particularly where vulnerable groups depend on these services. Climate and health considerations should therefore be incorporated from the outset when facilities are sited, designed, renovated and operated.

Example 3.9 Poznań, Poland, climate resilient and healthy schoolyards

Poznań is transforming schoolyards and kindergarten grounds by replacing sealed surfaces with trees, permeable and green areas, rain gardens and natural play spaces. These measures reduce heat and improve rainwater management while creating better spaces for play, outdoor learning and contact with nature. Projects involve students, teachers and parents, linking climate adaptation with children's health and wellbeing.

Source: [MIP4Adapt, 2024e](#)

Cooling spaces and heat shelters

During heatwaves, heat shelters and cooling spaces can protect people who cannot keep their homes cool. Municipalities can identify suitable locations such as libraries, museums, community centres and parks. Mapping should be combined with clear information on location, opening times, accessibility, drinking water and other facilities. Mapping alone is not sufficient: spaces must be open when needed, adequately equipped and accessible. Information should be regularly updated, particularly for seasonal facilities (see Example 3.10, Valencia and Example 3.11, Warsaw).

Example 3.10 Valencia, Spain, Climate Shelters Network

Valencia has developed a network of climate shelters using existing facilities such as libraries and social service centres. Sites are assessed for thermal comfort, accessibility and basic amenities. The initiative combines mapping, stakeholder engagement, pilot testing and public communication, showing how authorities can plan cooling provision as a network rather than relying on ad hoc responses during heatwaves.

Source: [EU Covenant of Mayors, 2025](#)

Example 3.11 Warsaw, Poland — cooling spaces and heat preparedness

Warsaw has created a network of 150 publicly accessible cooling spaces in municipal buildings across the city. The spaces are open to all residents and are listed by district, with opening hours published online and in a city map viewer. The initiative shows how local authorities can combine heat preparedness with trusted public services, using libraries, cultural centres, sports facilities, social services and municipal offices as places of refuge during hot weather.

Source: [Warszawa 19115, 2026](#)

3.4 Safe mobility and access to services

Ensuring people can reach essential services safely during extreme weather is part of mainstreaming health into the built environment. Healthcare, social care, schools, public transport, and cooling spaces can become difficult to access when walking routes are unshaded, transport stops overheat or access routes flood. These risks are greater for older people, children, people with disabilities, low-income households and residents of poorly connected areas ([EEA, 2026a](#))².

Local and regional authorities should use spatial planning, street design, and transport policies to maintain safe, accessible and climate resilient connections to essential services. Measures can include shaded and accessible walking and cycling routes, drinking water points and rest areas, climate resilient transport stops, flood resilient access routes and reliable emergency access (see example 3.12, Vienna).

The **Lancet Countdown in Europe Cities report** highlights limited provision of heat-resilient cycling infrastructure across European cities. Across 885 cities, average tree canopy cover along cycling routes was 17.2%, rising to 30.5% on dedicated or shared pedestrian-cycle routes (Chen-Xu et al., 2026). Increasing shade along active travel corridors can reduce heat stress, encourage walking and cycling, and improve access to essential services during periods of extreme heat.

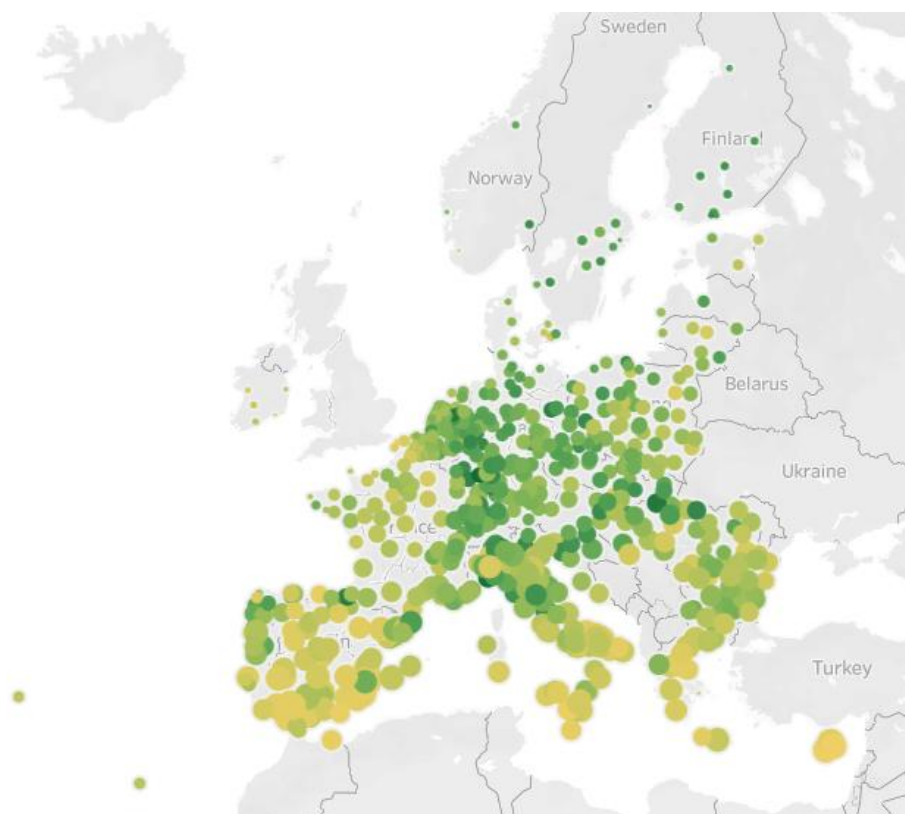


Figure 3.1 Share of shaded cycling paths (see the interactive viewer in the European Climate and Health Observatory [here](#))

The aim is not simply to improve mobility, but to keep essential journeys possible during extreme weather, particularly for people reliant on walking, cycling and using public transport.

² EEA (2026) [Climate resilience in Europe, 2025 – progress and challenges](#). Luxembourg: Publications Office of the European Union. doi:10.2800/5228240.

Example 3.12 **Vienna, Austria, climate adapted public transport stops**

Vienna tested green roofs on bus stops to reduce heat exposure for passengers. Measurements showed stops around 1 to 1.5°C cooler than conventional stops, illustrating how small changes to transport infrastructure can improve thermal comfort and support safer mobility during heat.

Source: [MIP4Adapt, 2025](#)



4. Maximising health benefits of green and blue infrastructure and nature-based solutions

Green and blue infrastructure (GBI) and nature-based solutions (NbS) can help local and regional authorities reduce climate-related health risks and create healthier, more resilient places. They can reduce heat exposure, support water management and flood resilience, improve air quality, and provide opportunities for physical activity, mental well-being and social interaction (see Box 4.1 for EU policies supporting NbS).

These benefits matter most where they are needed most: in urban and peri-urban areas where heat, sealed surfaces, poor air quality and flood risk overlap, and where access to green space is already unequal. Fewer than half of Europe's urban residents live within 300 metres of a green space ([European Climate and Health Observatory, 2025](#)). See Section 4.5 for more information).



What do we mean by GBI and NbS?

Green and blue infrastructure is "a strategically planned network of natural and semi-natural areas with other environmental features, designed and managed to deliver a wide range of ecosystem services, while also enhancing biodiversity (EC, 2013). This includes green spaces, trees, forests, wetlands, rivers, lakes and urban water bodies ()".

Nature-based solutions use, protect, restore or manage ecosystems to address societal challenges while benefiting people and biodiversity (EC, 2026).

Box 4.1

EU policies supporting nature-based solutions

- [EU Biodiversity Strategy for 2030 \(2020\)](#): supports investment in GBI and integrating nature-based approaches into urban planning.
- [Nature Restoration Regulation \(2024\)](#): requires Member States to ensure no net loss of urban green space and tree canopy cover by 2030.
- [European Water Resilience Strategy \(2025\)](#): supports nature-based approaches to strengthen water resilience, including landscape water retention and sponge city measures.

Authorities should integrate GBI and NbS into spatial planning, public space design, infrastructure investment and climate adaptation, not treat them solely as environmental interventions (see Box 4.2). However, more green space does not automatically mean more equitable health benefits. Improvements can increase neighbourhood attractiveness and, in some cases, housing costs, and displacement pressures. Authorities should consider, who benefits, potential trade-offs and unintended effects. A health and equity lens is therefore essential. It helps authorities ask: who benefits, who is left out, and whether new green space is actually usable, safe and accessible for the people who need it most.

Box 4.2

Green space helps most when it is reachable, usable, and local

- **Access is uneven:** Less than half of Europe's urban population lives within 300m of a green space — and lower income neighbourhoods consistently have less of it, and what exists is often of poorer quality.
- **Design for multiple benefits:** Well-designed green spaces cool streets, manage stormwater, improve air quality and provide places for physical activity and social interaction — all at once. Schoolyards can double as community cooling spaces during heatwaves. Retention areas can serve as recreational space.
- **Design for all users:** Children, older people and people with reduced mobility benefit most when green space has safe paths, seating, toilets, shade and good maintenance. Spaces that feel unsafe or are hard to reach are not used — and unused green space delivers limited health benefits.
- **Participation matters:** Involving residents in planning and management increases use, sense of ownership and trust — and helps ensure spaces meet local needs.

Green space improves health most when it is accessible, designed for multiple uses and shaped with the people who will use it.

Examples of inclusive green space design across Europe

[Malmö, Sweden](#): Greening of a built-up neighbourhood to improve living conditions and everyday access to nature.

[Paris, France](#): Green schoolyards that support children's health and, when opened during heatwaves, benefit the wider community.

[Flemish Brabant, Belgium](#): Green schoolyards designed with and for children, improving play, learning and outdoor use.

[Zagreb, Croatia](#): A therapeutic garden and urban regeneration project that supports inclusion and well-being.

[Antwerp, Belgium](#): “Tuinstraten” (garden streets), showing how street-scale greening can improve local liveability.

[Getxo, Spain](#): Opening an urban park to the public to widen access to urban nature.

[Tallinn, Estonia](#): A garden for the senses, showing how design can support accessibility and different needs.

[Genova, Italy](#): A collective garden project that strengthens social connection and access to green space.

Source: [EEA, 2022b](#)

Checklist

Maximising health benefits from GBI and NbS

- ☐ Does a plan or development reduce exposure to climate hazards, including heat and flooding, having regard to current and future climate projections?
- ☐ Which climate health risks can the intervention address? Could it reduce heat exposure, flooding or other local risks?
- ☐ Does the design provide accessible and usable green and blue spaces, including cooler places and opportunities for physical activity and social interaction?
- ☐ Can it deliver multiple health and environmental benefits, such as improved air quality, active travel, mental wellbeing, biodiversity or water management?
- ☐ Who has access and who benefits? Are communities most vulnerable to climate health risks adequately served?
- ☐ Could the intervention have unintended effects, such as displacement, increased housing costs or unequal access?
- ☐ Have potential health risks including allergens, vector-borne diseases, injury or water quality been identified and addressed through design and maintenance?
- ☐ Is there a long-term plan for maintenance and management?

4.1 Cooling

Trees, parks, shaded streets, green corridors and water features can reduce temperatures and improve outdoor thermal comfort, particularly in dense areas with little vegetation and extensive sealed surfaces ([Climate-ADAPT, 2021](#)). Cooling measures are particularly relevant in streets, squares, schoolyards, care facilities, transport stops and routes to essential services. Their effectiveness depends on where they are located, how they are designed and maintained, and who can access them.

Cities are using different approaches to move from individual projects to systematic investment in urban cooling: setting measurable green space targets, combining regulation with financial incentives, and embedding green infrastructure requirements in development decisions. See examples from Barcelona (Example 4.1), Hamburg (Example 4.2), Berlin (Example 4.3), and Vienna (Example 4.4).

Example 4.1 Barcelona, Spain, targets, trees and equitable cooling

Barcelona's Superblock programme combines reduced traffic with more trees, green space and shade in dense neighbourhoods. The city has set a target to increase green space per inhabitant by 1 m² between 2016 and 2030, with attention to areas with limited green space and greater vulnerability. Modelling estimated the programme could reduce ambient temperatures by up to 1.2°C on hot days.

Source: [Climate ADAPT, 2025](#)

Example 4.2 Hamburg, Germany, green roofs as a city-wide policy

Hamburg's Green Roof Strategy combines a city wide target with financial incentives, regulation, stakeholder engagement and technical support, aiming for 100 hectares of green roofs including greening at least 70% of new buildings and suitable renovated roofs. The strategy shows how planning requirements and financial support can increase uptake at scale.

Source: [Climate ADAPT, 2022](#)

Example 4.3 Berlin, Germany, making green infrastructure a planning requirement

Berlin's Biotope Area Factor (BAF) embeds a minimum proportion of ecologically effective green surfaces into development requirements, achievable through trees, vegetation, green roofs and permeable surfaces, with requirements varying by land use. Rather than funding individual projects, the BAF makes green infrastructure part of new development and regeneration systematically.

Source: [Climate ADAPT, 2020](#)

Example 4.4 Vienna tested green roofs on bus stops to reduce heat exposure for passengers.

Measurements showed stops around 1 to 1.5°C cooler than conventional stops, illustrating how small changes to transport infrastructure can improve thermal comfort and support safer mobility during heat.

Source: [MIP4Adapt, 2025](#)

4.2 Water-sensitive urban design

Nature-based solutions can reduce flood exposure and runoff while creating greener, more resilient places. Wetlands, permeable surfaces, restored streams, retention areas, green roofs and de-sealed public spaces all help manage stormwater, and when well designed, they also cool streets, support biodiversity, and provide spaces for recreation and everyday activity ([Climate-ADAPT, 2026](#)).

This matters for health. Flooding damages homes, disrupts access to healthcare and essential services, and raises the risk of waterborne diseases. Urban pluvial flooding, where drainage systems cannot cope with excess water, is a growing risk in highly sealed cities. If the drainage system is connected with sewer network, after heavy rain the combined sewer overflows release sewage into surface water bodies, with direct consequences for water quality and public health ([EEA, 2024c](#)).

4. Maximising health benefits of green and blue infrastructure and nature-based solutions

Greening 35% of EU urban surfaces could reduce stormwater runoff by 17.5% (Quaranta et al, 2021). Local and regional authorities can integrate water-sensitive design into streets, parks, schoolyards, housing areas and public facilities (See Example 4.5, Copenhagen). Appropriate design and maintenance are essential to avoid unintended health risks, including water-borne diseases, drowning hazards and groundwater contamination ([Climate-ADAPT, 2016a](#) ; [EEA, 2026d](#)).

Example 4.5 Copenhagen, Denmark, multifunctional blue green infrastructure

Copenhagen's Cloudburst Management Plan uses parks, streets, retention areas and other public spaces to manage heavy rainfall while improving the urban environment. The long-term plan covers around 300 projects, combining surface-based blue-green measures with conventional drainage infrastructure to retain or direct stormwater while creating greener and more attractive public spaces. The approach shows how flood-risk management and health and wellbeing benefits can be delivered together through public-space investment.

Source: [Climate ADAPT, 2016b](#)

4.3 Mental wellbeing

Green and blue infrastructure and nature-based solutions can support mental wellbeing by providing greener, cooler, and attractive places for relaxation, social interaction and everyday activity ([EEA, 2026d](#)). These benefits are particularly important in dense neighbourhoods with limited access to high-quality public space. After climate-related events, contact with nature may help to restore wellbeing. Authorities should therefore consider mental wellbeing alongside cooling, air quality and other health benefits when planning green and blue infrastructure.

4.4 Equity and maladaptation risks

GBI and NbS do not automatically deliver equitable health benefits. Investment may concentrate in advantaged areas, while neighbourhoods with greater heat exposure, poorer housing or limited green space receive less. Evidence also points to limited access to green space and tree cover around some schools, healthcare facilities, and other places used by vulnerable groups ([European Climate and Health Observatory, 2025](#)).

Data from the Lancet Countdown in Europe Cities report show that tree loss outweighed tree gain across 851 European cities. By 2020, only 116 cities (13.6%) had reached 30% tree canopy cover, a widely used benchmark for urban greening associated with improved cooling, environmental quality and health outcomes (Chen-Xu et al., 2026). This highlights the considerable potential for expanding urban tree cover to reduce heat exposure and improve health and wellbeing in many European cities.

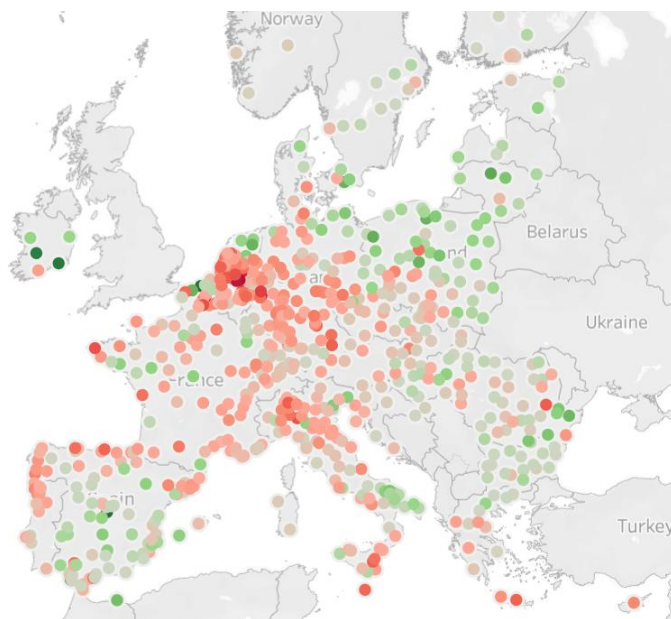


Figure 4.1 Relative change in urban tree cover 2000-2006 ([Chen-Xu et al., 2026](#); see the interactive viewer in the European Climate and Health Observatory [here](#))

Urban greening can contribute, alongside other factors, to rising housing costs, gentrification or unequal access to new amenities ([EEA, 2025a](#)). Authorities should consider these pressures and involve affected communities in decisions, particularly where neighbourhoods already face housing affordability pressures (see example 4.6, Nantes and 4.7, Barcelona) ([EEA, 2025a](#)).

Authorities should also assess potential maladaptation and unintended health effects. Poorly designed or maintained measures may fail to reduce exposure, create risks such as allergens or vector-borne disease, or reinforce existing inequalities (WHO, 2025). Health, equity and long-term access should therefore be considered from the outset, alongside design, maintenance and wider spatial, housing and social policies ([EEA, 2025a](#)).

Example 4.6 Nantes, France, linking greening with affordable housing

Nantes combines urban greening with measures to protect affordability. Municipal guidelines require 56% of new housing to be public or social housing, while development projects include community participation. This helps ensure that lower income residents can benefit from improved neighbourhoods without being priced out.

Example 4.7 Barcelona, Spain, protecting residents alongside urban greening

Barcelona has combined its Superblock and Green Axes programmes with measures addressing social housing, rents, tourist accommodation and protection of local businesses. The city has sought to involve groups that can be underrepresented in planning processes and to monitor neighbourhood change, showing how greening can be combined with measures that protect affordability, local services and inclusion.

Source: [EEA, 2025a](#)

5. Spotlight: Heat and health

Extreme heat is the leading climate threat to health in Europe. It accounts for around 95% of deaths from weather and climate extremes on the continent ([EEA, 2025b](#)). Around 70,000 heat related deaths were estimated in 2022 and just under 48,000 in 2023 (Ballester et al., 2024). At subnational level, heat was the most frequently reported hazard affecting the health sector in 2024, identified by 86 of 105 responding European cities (CDP data in [European Climate and Health Observatory, 2026b](#)).

Heat does not affect everyone equally. Older people, children, people with chronic conditions, low-income households, people in poor quality housing, those experiencing homelessness and outdoor workers all face greater health risks. In cities, the urban heat island effect further increases exposure. In cities, the urban heat island effect can further increase exposure. Data from the **Lancet Countdown in Europe Cities 2026 report** show how widespread this phenomenon is: across 820 European cities, the average city experienced 7.7 days per year with an urban heat island intensity exceeding 1.5°C between 2003 and 2020 (Chen-Xu et al., 2026). Figure 5.1 shows the intensity of urban heat island for European cities. The EEA estimates that 46% of urban hospitals and 43% of urban schools sit in areas at least 2°C warmer than the regional average ([EEA, 2022a](#)).

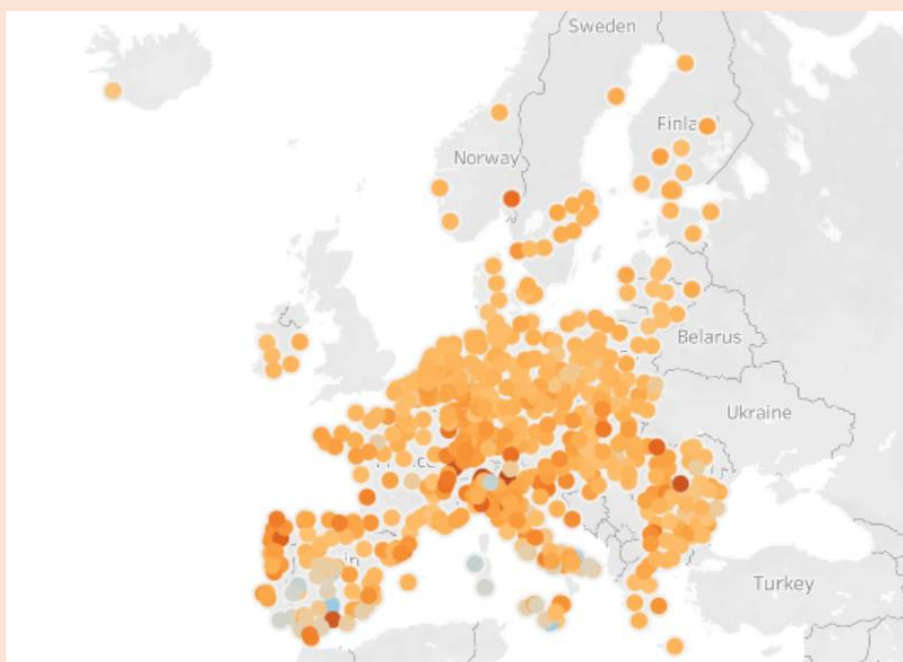


Figure 5.1 Mean UHI intensity by city ([Chen-Xu et al., 2026](#); see the interactive viewer in the European Climate and Health Observatory [here](#))

Local and regional authorities can determine how exposed communities are and how well protected they will be through spatial planning, housing, green infrastructure, public health and emergency management levers. Heat and health action should connect with the approaches in Chapters 2, 3 and 4, not sit alongside them as a separate activity.

What is a Heat Health Action Plan?

A local Heat Health Action Plan (HHAP) links warnings to concrete actions and responsibilities. It should build on existing public health, emergency management and social care structures. The most effective plans combine clear governance, warning-to-action links, targeted protection for people and places at higher risk, ready-to-use communication, continuity of care, heat exposure reduction, and regular monitoring, evaluation and learning (see Example 5.1, Maribor and Example 5.2 Ludwigsburg). Drawing on WHO Europe guidance (2026b), HHAP should:

- Assign a lead body and clear responsibilities
- Link warning levels to specific response actions
- Identify vulnerable groups and high-risk locations
- Prepare targeted communication and outreach before the hot season
- Arrange access to cooling spaces
- Protect health and social care services during events
- Reduce indoor heat exposure in key buildings
- Review and update after each major heat event.

Who to involve?

- Public health departments, to lead or co-lead heat and health planning
- Hospitals, primary care, care homes, pharmacies and home care providers, to prepare services and identify high risk individuals
- Social care services, to reach isolated and vulnerable residents
- Emergency management services, to connect heat response to wider emergency arrangements
- Housing authorities, to address indoor heat, especially in social housing
- Schools and childcare services, to protect children and prepare protocols
- Employers and occupational health services, especially for outdoor workers
- Community organisations and trusted intermediaries, to reach people who may not respond to standard communication

Example 5.1 Maribor, Slovenia

Maribor developed a Heat Action Plan in response to rising temperatures, more frequent hot days and more tropical nights. It brings together heat risk analysis, stakeholder cooperation, communication and targeted measures for groups at higher risk, including older people, children, pregnant women, infants, outdoor workers and people with existing health conditions. The case shows how local heat risk information can anchor a plan that connects preparedness with longer term action.

Source: [MIP4Adapt, 2025c](#)

Example 5.2 Ludwigsburg, Germany

In 2024, Ludwigsburg district launched a Heat Health Action Plan covering 19 towns and 20 municipalities, led jointly by the local health office and District Medical Council. A multisectoral working group spans health, social care, hospitals, pharmacists, civil protection and education. The plan establishes a heat warning cascade and targeted actions for key stakeholders, showing how coordination can work across a complex administrative landscape.

Source: [WHO, 2026b](#)

What can local and regional authorities do?

Prevention and long-term risk reduction

- Use spatial planning and building standards to reduce heat exposure in new development and renovation
- Plan for greening, tree planting and soil desealing, prioritising areas with high heat exposure and social vulnerability
- Retrofit schools, care homes, hospitals and social housing with passive cooling, shading and ventilation
- Embed heat health objectives in wider adaptation plans, housing strategies and infrastructure investment

Preparedness

- Develop or update a local Heat-Health Action Plan using 2026 [WHO Europe guidance](#)
- Set warning thresholds for heat linked to clear actions and assigned responsibilities
- Identify and publicise accessible cooling spaces using existing public facilities
- Develop outreach and check-in systems for people at higher risk
- Prepare communication materials in advance, ensuring they are accessible, multilingual and delivered through trusted channels
- Issue guidance on protecting health to care homes, hospitals, schools and employers in exposed sectors ahead of the hot season

Response

- Activate the Heat-Health Action Plan during a heat event when warning thresholds are reached.
- Coordinate health, social care, emergency management and other relevant services during the event
- Maintain continuity of health and social care services during the event.
- Keep cooling spaces open and accessible throughout the heat event.
- Use outreach and welfare checks to reach people who are isolated or harder to contact.
Coordinate health, social care, emergency management and other relevant services during the event

Recovery

- Review and update heat health action plans after each major heat event
- Monitor disruption to medication, treatment and ongoing care.
- Identify gaps in service continuity and access to support.
- Update the plan between seasons, using lessons learned to improve the next heat-season response.



Further resources

- **WHO Europe, 2026. *Heat–health action plans: guidance, second edition*.** Practical guidance for national, regional and local authorities on developing and implementing heat–health action plans, including governance, early warning systems, communication, protection of vulnerable groups, health system resilience and monitoring.
Available at: [Heat–health action plans: guidance, second edition](#).
- **EEA, 2026. *Climate-health adaptation at the local level: insights from European cities*.** Overview of adaptation actions reported by European cities, including examples of heat-health planning, urban cooling measures, governance approaches and support needs.
Available at: [Climate-health adaptation at the local level: insights from European cities](#).
- **Climate-ADAPT.** Repository of adaptation options, guidance documents, indicators and case studies on heat, health, urban planning, nature-based solutions and resilience.
Available at: [Climate-ADAPT](#).
- **Covenant of Mayors Europe, *Cities Refresh Network*.** Collection of practical city examples addressing urban heat through greening, shading, governance measures, cooling shelters and community engagement.
Available at: [Cities Refresh Network](#).
- **MIP4Adapt, *Quick Guides for Climate Adaptation: Heatwaves*.** Practical guidance for cities and regions on preparing for and responding to increasing heat risks, with examples of on-the-ground adaptation measures.
Available at: [Quick Guides for Climate Adaptation: Heatwaves](#).



6. Spotlight: Flooding and health

After heat, flooding is the second most frequently reported climate hazard affecting health at subnational level in Europe (CDP data in [European Climate and Health Observatory, 2026b](#)). Between 1980 and 2024, floods caused 4,668 deaths in the EU. Between 2008 and 2024, more than 340,000 people were displaced ([EEA, 2026e](#)). In 2024, heavy precipitation and flooding were reported as affecting the health sector by 47% of responding cities ([European Climate and Health Observatory, 2026b](#)).

Flooding is often treated as an infrastructure problem. However, it also causes health problems, directly through injury, drowning and contamination, and indirectly through disrupted healthcare, lost housing, interrupted medication, damaged water and sanitation systems, and mental health impacts that can persist long after the water recedes.

The risks fall unevenly. Older people, people with disabilities, children, people with chronic illness, low-income households and socially isolated people face greater difficulty preparing, evacuating and recovering. Local and regional authorities are central to changing this. They make spatial planning decisions that shape long term exposure, coordinate services that must keep functioning, and design the warning, evacuation and recovery arrangements that determine whether the most vulnerable are protected. Flood and health planning should connect with the approaches in Chapters 2, 3 and 4.

Flooding and health: from risk to action

Direct effects include injury, drowning, contamination and exposure to unsafe water and pollutants. Indirect effects can outlast the event: disrupted healthcare and social care, lost housing, interrupted medication and treatment, damaged water, sanitation and transport systems, and significant mental health impacts. Children are especially vulnerable: flooding can expose them to contaminants and disrupt school and family life, with lasting psychological effects.



What local and regional authorities can do

Prevention and long-term risk reduction

- Prevent new development in flood risk areas through spatial planning and zoning
- Require flood risk assessments for developments in exposed locations
- Use sustainable drainage, nature-based solutions and water sensitive design to reduce runoff (see Example 6.3, Augustenborg, Malmö)
- Invest in flood protection for hospitals, care homes, schools and other critical facilities
- Support property-level flood resilience for households in high risk areas
- Consider managed retreat or planned relocation where risks cannot be reduced in place ([EEA, 2024b](#))

Preparedness

- Map exposed communities, services and infrastructure, combining data with local and community knowledge
- Develop and test flood preparedness plans with health, social care, emergency and utility services
- Make plans inclusive: check that warnings, evacuation and shelter arrangements work for people with reduced mobility, language barriers or limited resources
- Set up continuity arrangements for hospitals, care homes, pharmacies and home care providers
- Require site level flood emergency plans for new developments where safety depends on emergency arrangements

Response

- Issue clear, timely warnings linked to predefined actions for residents, service providers and frontline staff (see Example 6.1, Navarra)
- Assign clear responsibilities for reaching people who need additional help
- Maintain access to health and care services, with contingency arrangements for staff, transport, power and water
- Coordinate across administrative boundaries, since floods do not stop at municipal borders

Recovery

- Provide targeted mental health support, prioritising displaced people, children, older people and those with existing conditions
- Monitor and address disruption to medication, treatment and ongoing care
- Prioritise safe housing and essential services for the most vulnerable
- Review what worked and update preparedness plans before the next event

Who to involve?

- Emergency management and civil protection services, to coordinate across all four stages
- Public health departments, to assess risks, monitor impacts and lead recovery
- Hospitals, clinics, care homes, pharmacies and home care providers, to maintain continuity
- Social care services, to identify and support vulnerable individuals
- Water, energy, sanitation and transport providers, to maintain essential services
- Housing authorities, to assess exposure and support recovery
- Schools and childcare services, to protect children and prepare continuity arrangements
- Community organisations and trusted intermediaries, to support outreach, welfare checks and recovery (see Example 6.2, Emilia Romagna)

Example 6.1 Navarra, Spain

After severe flooding, 17 municipalities in Navarra developed customised flood self-protection plans. Each plan defines local responsibilities, organises available resources and links early warning to emergency response. Digital monitoring tools, mass SMS alerts and social media communication are integrated into the approach. Plans are regularly evaluated and updated, and connect to the region's wider civil protection framework. The case shows how authorities can translate flood warnings into clear local action, and how cross municipal coordination can strengthen resilience where risks cross administrative boundaries.

Source: [MIP4Adapt, 2024g](#)

Example 6.2 Emilia Romagna, Italy

After the severe 2023 floods and landslides, the regional health system deployed psychological support teams, set up hubs in shelters and established a telephone support service. Older people, children, people with disabilities and those with psychiatric conditions were prioritised. The case shows why recovery planning must include mental health alongside infrastructure repair, and why targeting support to vulnerable groups matters.

Source: [Climate-ADAPT, 2024](#)

Example 6.3 Augustenborg, Malmö, Sweden

Augustenborg, a socially and economically disadvantaged neighbourhood, had recurrent flooding because its drainage system could not cope with heavy rainfall. As part of a wider regeneration programme, Malmö introduced an open sustainable drainage system with 6 km of channels, ten retention ponds, wetlands and more than 11,000 m² of green roofs. Flooding was substantially reduced and the neighbourhood gained new green and recreational spaces.

Source: [Climate-ADAPT, 2024](#)



Further resources

- **EEA, 2026. *Climate-health adaptation at the local level: insights from European cities*.** Overview of adaptation measures reported by European cities, including flood preparedness, governance approaches, nature-based solutions and support needs. Available at: [Climate-health adaptation at the local level: insights from European cities](#).
- **Climate-ADAPT, 2026. *Flood adaptation options*.** Repository of adaptation options, guidance documents, indicators and case studies on flood risk management, nature-based solutions, spatial planning and resilience. Available at: [Climate-ADAPT](#).
- **MIP4Adapt, 2026. *Quick Guides for Climate Adaptation: Coastal Floods*.** Practical guidance for cities and regions on reducing coastal flood risks, including preparedness, protection and governance measures. Available at: [Quick Guides for Climate Adaptation: Coastal Floods](#).
- **MIP4Adapt, 2026. *Quick Guides for Climate Adaptation: Flash Floods*.** Practical guidance for cities and regions on managing flash flood risks through integrated planning, preparedness and risk reduction measures. Available at: [Quick Guides for Climate Adaptation: Flash Floods](#).



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