PATHWAYS2RESILIENCE

Pathways2Resilience baseline assessment

Statutory City of Přerov

Prepared by:

Statutory City of Přerov

ASITIS s.r.o.

31-05

Funded by the European Union under grant agreement No 101093942. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or of CINEA. Neither the European Union nor the granting authority can be held responsible for them.

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Abbreviations and acronyms

Acronym	Description
P2R	Pathways2Resilience
AS	Adaptation Strategy
MAJ	Property and Municipal Services Department (Správa majetku)
TSMP	Technical Services of the City of Přerov (Technické služby města Přerova)
MAP	Municipal Adaptation Plan
SLDB	Sčítání lidu, domů a bytů (Population and Housing Census)
SECAP	Sustainable Energy and Climate Action Plan
NAP	National Adaptation Plan
NRP	National Recovery Plan
NECP	National Energy and Climate Plan
OPŽP	Operational Programme Environment
ITI	Integrated Territorial Investment
MEL	Monitoring, Evaluation and Learning
KEC	Key Enabling Conditions
KPI	Key Performance Indicator
SMEs	Small and Medium-sized Enterprises
NGO	Non-Governmental Organisation
GHG	Greenhouse Gases
NBS	Nature-Based Solutions
NPV	Net Present Value
ToC	Theory of Change
RMC	Resilience Maturity Curve
CRMC	Climate Resilience Measurement for Communities
GIS	Geographic Information System

Glossary

Term	Short definition
Resilience maturity	The level of development and preparedness a region or community has reached in terms of its ability to anticipate, prepare for, and respond to climate crises.
Climate risk	The potential for negative consequences due to uncertain outcomes of climate-related hazards, affecting lives, livelihoods, ecosystems, and infrastructure.
Climate resilience	The ability of systems, organisations and individuals to cope with and adapt to climate impacts while maintaining core functions.
Adaptation Strategy (AS)	A structured plan outlining how a city or region will adapt to climate change impacts.
Systems map	A visual representation of key systems, actors, interactions and barriers within the region relevant to climate resilience planning.
Key enabling conditions (KEC)	Critical factors such as governance, capacity, or data availability that influence successful resilience planning.
MEL (Monitoring, Evaluation and Learning)	A framework for tracking progress, assessing effectiveness, and learning from adaptation efforts.
Finance structuring	The organisation of financial resources and instruments to implement climate adaptation projects.
Stakeholders	Individuals, groups, or institutions affected by or able to influence climate adaptation planning and implementation.
Mitigation financing synergies	Opportunities to combine adaptation and mitigation funding for greater efficiency or impact.
Transformation pathways	Long-term scenarios showing how a region can transition towards increased resilience and reduced vulnerability.
Theory of Change (ToC)	A conceptual roadmap that outlines how and why a desired change is expected to happen in a given context.
Co-benefits	Additional positive outcomes (e.g., health, biodiversity) that result from implementing adaptation actions.
Barrier	Any condition or factor that hampers progress in implementing adaptation strategies or actions.
Climate neutrality	A state in which all greenhouse gas emissions are balanced by removals or offsets.
Nature-Based Solutions (NBS)	Adaptation actions that use ecosystems and nature to provide resilience benefits.

Disclaimer

1 Introduction

1.1 Local profile

Geographical scope

The statutory town of Přerov is located in the Olomouc Region, in the Upper Moravian Basin, approximately 21 km south-east of the city of Olomouc. It covers an area of 58.48 km² on both banks of the Bečva River, at an altitude of approximately 200 m above sea level. The highest points in the Přerov area are located in the northern part at an altitude of around 300 m above sea level, e.g. Čekyňský kopec (307 m above sea level).

The historic centre of the town has been declared a municipal heritage zone. The town is largely made up of apartment buildings and prefabricated housing estates from the 1960s and 1970s (e.g. Šírava and Předmostí). In terms of nature, the most valuable part of the town is the extensive complex of floodplain forests called Žebračka, followed by the Michalov municipal park and other smaller parks.

Přerov is an important transport hub for both rail and road networks.

The railway offers direct connections to Břeclav (and further to Vienna), Ostrava (and further to Poland) and the capital city of Prague. The route to Břeclav is further complemented by a connection to Brno (a line of great importance but with completely insufficient capacity).

Road network: Přerov is located on the unfinished D1 motorway, which is expected to be completed by the end of 2025. Class I and II roads provide connections to Olomouc, Lipník nad Bečvou, Bystřice pod Hostýnem, Kojetín, Hulín and Prostějov.

Industrial areas are concentrated near the Bečva River and the railway. The dominant companies based in Přerov are PRECHEZA, a.s. (chemical production), Meopta, a.s. (optics production), PSP, a.s. (engineering production) and Metso Czech Republic, s.r.o. (manufacturer of construction and mining technologies). Since 1990, there have been significant changes in the economic structure of the city. At the same time, there has been a significant improvement in the area of negative impacts of human activity on the environment.

Přerov has 13 local districts: Město, Předmostí, Lověšice, Kozlovice, Lýsky, Dluhonice, Újezdec, Čekyně, Henčlov, Popovice, Vinary, Žeravice and Penčice. However, most of the population (77%) is concentrated in the district of Přerov I – Město.

Thematic or sectoral scope

Thematically and sectorally, the project focuses on the water regime in the area and rainwater management, the agricultural landscape, biodiversity and the built-up (urbanised) area of the town.

The entire Přerov region has been experiencing **a** long-term **decline in groundwater reserves**, accompanied by increasingly frequent **hydrological extremes**. For this reason, flood control measures have already been implemented in the past. Almost half (47.5%) of the total area of the project area is arable land (2,773.7 ha). The character of the landscape, especially in the western part of the area, corresponds to intensively cultivated flat agricultural land, which is associated with very **low biodiversity.** Land improvement measures carried out in the past and the removal of hedgerows and landscape greenery have reduced the retention capacity of the landscape and, as a result of climate change, may further cause **the degradation of agricultural**

land. The open terrain with little mature vegetation contributes to the susceptibility of the soil to **water and wind erosion** – water erosion mainly in the northern and south-eastern parts of the town (Čekyně, Penčice, Vinary, Předmostí, Újezdec), wind erosion in the Žeravice and Dluhonice areas. During prolonged drought**, water resources** may be **disrupted, surface water quality may deteriorate** and **water shortages may** occur **in agriculture.**

In built-up areas of the city, climate change and **higher summer temperatures** have negative impacts on **human health**, especially among vulnerable groups, particularly when combined with higher air pollution. **Flash floods** threaten the health of residents and private and public property (buildings, sewers, drains, wastewater treatment plants). **Extreme temperatures**, for example, increase the demand for cooling buildings, increase the likelihood of damage to building structures and shorten their lifespan, lead to higher maintenance costs for urban green spaces, and increase the need to cool public spaces.

Key demographic and socio-economic data

Přerov is defined as a regional centre in the Regional Development Strategy of the Czech Republic 2021+.

With a population of over 41,000, it is the third most populous municipality in the Olomouc Region. According to the same document, the administrative district of Přerov with extended powers (ORP) is classified as an economically and socially disadvantaged area. This reflects certain negative socio-demographic phenomena. These include, for example, long-term negative natural growth, high old-age index values and overall demographic ageing of the population.

The ageing of the population is confirmed by many indicators, including the fact that there are more people of post-working age (aged 65 and over) than of pre-working age (aged 0–14). In the period under review, the number of children of pre-working age is declining, while the number of people of post-working age is increasing.

The city of Přerov				2	20	20
Population	total			47,311	44,538	41,661
Age index (in %)	total			95.3	**151.5**	**178.1**
Population	men	Age group	0 - 14	3,563	3,054	3,022
			15 - 64	16,774	14,895	12,926
			65	2,523	3,639	4,165
	Women	age group	0	3,270	2,896	2,764
			15	17,193	14,677	12,643
			65	3,988	5,377	6,141
Average age	Total			39.9	43.2	**45.6**
Average age	Gender	Men		38.2	41.4	43.6
		women		41.5	44.9	47.5

Note: The age index expresses the number of inhabitants aged 65 and over per 100 children under 15.

The age index of the population of Přerov reached 95.3 in 2003, but by 2023 it had risen to 178.1. This means that there are now almost 178 seniors for every 100 children. People aged 65 and over are also considered a very vulnerable group due to ongoing climate change. The city of Přerov is slowly becoming depopulated. If we were to recalculate the increasing greenhouse gas emissions per capita, this situation would not be favourable.

The following socio-economic data is based on statistics from the 2011 and 2021 censuses of people, houses and flats (SLDB).

According to the 2021 census, Přerov had deteriorating economic conditions, with unemployment reaching 5.17%. For the Czech Republic as a whole, the unemployment rate at the end of 2021 was only 3.5%, meaning that Přerov is well above the average.

According to the results of the 2011 census, over 18,000 of the total 21,000 economically active inhabitants were employed in 2011. The tertiary sector was the most represented sector of the national economy, employing over 52% of the working population. The share of these urban functions reflects the fact that Přerov is an important regional centre. Furthermore, almost 34% of the population was employed in the secondary sector and almost 1% of the economically active population in the primary sector.

According to the classification of economic activities, in 2021, most entities were classified as wholesale and retail trade, followed by professional, scientific and technical activities.

Coordinating organisation

The statutory city of Přerov and the company Asitis s.r.o. are responsible for the implementation of the project.

On behalf of Přerov, the project is being implemented by the Department of Property and Municipal Services, specifically by employees of the Other Property and Municipal Services Division.

(source: https://www.prerov.eu/cs/magistrat/o-magistratu/odbory-magistratu/odbor-spravy-majetku-a-komunalnich-sluzeb/kontakty-na-pracovniky-odboru-spravy-majetku-a-komunalnich-sluzeb.html)

The implementation team includes employees from the Building Authority and Environment Department and the Internal Administration Department, City Planning and Development Division.

Deliverable development process

The involvement of the city of Přerov in the **Pathways2Resilience** project is based on ongoing planning of activities necessary for the management of public goods (public property) with the aim of incorporating more blue-green infrastructure and thus adapting the city's territory to climate change as much as possible.

For the coming decade, the city wants to use a variety of adaptation measures to maintain or, where possible, improve the quality of life for residents and visitors to the city. From previous years, it has a number of high-quality documents proposing solutions to this issue through adaptation measures (Adaptation Strategy, SECAP, etc. – see overview of documentation).

With this P2R project, the city wants to build on the expert measures already proposed by finding broad consensus among interest groups and stakeholders on the implementation of

specific activities and projects while defining and estimating financial needs as accurately as possible. At the same time, it wants to find solutions that will involve private and other entities with their own finances and activities.

1.2 Priorities

The key economic, environmental and social strategies and policy objectives that will influence the city's development in the coming years are outlined here, on the basis of which key spending priorities, capital investments and decisions for the next five years are also being developed. The strategies are divided into the following levels:

1.2.1 Global

The international legal and strategic framework for combating climate change began to emerge in the 1980s. Key global agreements include:

- **The United Nations Framework Convention on Climate Change**, adopted in 1992 in Rio de Janeiro at the United Nations Conference on Environment and Development, which laid the foundation for an international legal framework for the protection of the Earth's climate system. The Czech Republic ratified it on 7 October 1993.
- **The Kyoto Protocol**, adopted in 1997 and ratified by the Czech Republic in 2001. In it, countries committed to reducing greenhouse gas emissions by at least 5.2% compared to 1990 levels by 2012. The validity of the commitments was extended to 2020 by the Doha Amendment.
- **The Paris Agreement** adopted in December 2015 by the parties to the UN Convention on Climate Change. The agreement replaced the Kyoto Protocol after 2020. Of fundamental importance is
    - **Article 2,** which declares the commitment to keep the global average temperature rise below 2 °C compared to pre-industrial levels and to strive to increase the ability to adapt to climate change, strengthen resilience and low-emission development in a way that does not threaten food production.
    - **Article 7, in which** the Parties set a global adaptation goal.

The adoption **of Agenda 2030**, which includes 17 Sustainable Development Goals (SDGs), is also crucial for adaptation. These include:

- Goal 11: Sustainable cities and communities
- Goal 13: Climate action

and 169 specific targets to be achieved by UN member states by 2030. The Agenda is transposed into the Czech Republic in the document "Strategic Framework for the Czech Republic 2030", adopted in 2017.

Impact on Přerov:

- Taking into account extreme phenomena: heat waves, torrential rainfall, droughts
- Need for adaptation planning at the municipal level (green infrastructure, water retention)

1.2.2 European level

The Green Deal and the related European Climate Law (European Climate Law) are crucial here. The political ambition of the Green Deal for the EU is to achieve climate neutrality by 2050 through ecological transformation. The European Climate Law makes this ambition a legal

obligation. By adopting this regulation, the EU and its Member States have committed to reducing net greenhouse gas emissions in the EU by at least 55% compared to 1990 levels by 2030 (**Fit for 55)**.

The EU Strategy on Adaptation to Climate Change outlines a long-term vision for the EU to become a climate-resilient and climate-adapted society by 2050, through, for example:

- **EU Strategy on Adaptation to Climate Change** (2021) – 'from climate resilience to climate preparedness'
- **New biodiversity strategies for 2030** – promoting urban greenery
- **EU Mission: Climate-Neutral and Smart Cities** – Přerov can draw inspiration and tools

To this end, the EU provides tools such as:

- **Cohesion Policy 2021–2027** – EU fund investments in regions
- **Czech Republic–EU Partnership Agreement 2021–2027**
- **Sources of funding –** e.g. OPŽP, LIFE, Horizon Europe (projects focused on climate, water, greenery)

Impact on Přerov:

- Support for projects in the areas of renewable energy sources, energy savings, electromobility, biodiversity, blue-green infrastructure, infrastructure adaptation, etc.

1.2.3 National level

At the national level, the Czech Republic is adopting European commitments through, for example:

- **The Czech Republic's Development Strategy 2030 -** "Strategic Framework for the Czech Republic 2030" adopted in 2017
- **Spatial Development Policies of the Czech Republic**
- **State Energy Concept (under review)**
- **Climate and Energy Plan of the Czech Republic (NECP)**
- **Resilience and Recovery Plan – National Recovery Plan (NRP)**

In the area of adaptation, through:

- **National Action Plan for Adaptation to Climate Change (NAP Adaptation) – updated in 2021 and currently undergoing revision**

Impact on Přerov:

- Requirements for the preparation of SECAP (Sustainable Energy and Climate Action Plan) **and other local** concepts (AS, territorial system of green settlements, etc.)

1.2.4 Regional level

Key documents for sustainable development at the regional level are:

- **Olomouc Region Development Programme 2021–2027**
- **ITI Olomouc Agglomeration** – a tool for coordinating large investments

In accordance with national adaptation goals, objectives, plans and proposals, the following have been adopted at the regional level:

- **Olomouc Region Adaptation Strategy to Climate Change for the period 2023–2030**

Impact on Přerov:

- Opportunities for cooperation on regional projects, e.g. cycling, brownfields, digitisation, etc.
- Possibility of drawing on regional allocations from IROP, OPŽP, Dešťovka for municipalities, support for tree planting

1.2.5 Local level

The statutory city of Přerov has documents whose main objective and mission is to conceptually and systematically adapt the territory of the city of Přerov to climate change.

These documents include:

- **Přerov's Adaptation Strategy to Climate Change for the period 2021-2030**
- **Sustainable Energy and Climate Action Plan (SECAP) for Přerov**

Other documents related to adaptation at the documentary and declaratory level include the following:

- Spatial Plan of the City of Přerov
- Strategic Development Plan of the City of Přerov for 2021–2027 (including an action plan and project pipeline)
- Sustainable Urban Mobility Plan for the City of Přerov for 2024–2027
- Housing Concept for the Statutory City of Přerov until 2035, including a project pipeline
- Programme Statement of the City Council of Přerov 2022–2026
- Flood plan,
- Sports Development Plan of the Statutory City of Přerov for 2021–2024
- Passport of business areas suitable for industrial zones, created in 2007
- Diploma thesis "Societal benefits of blue-green infrastructure using the example of the city of Přerov" (16 December 2024)
- Medium-term plan for the development of social services in the Přerov region for the period 2025–2028

The city of Přerov also has older documentation, e.g.

- Long-term plan for the reconstruction of children's playgrounds in Přerov from 2008,
- Programme for the regeneration and development of the Přerov - Laguny district from 2008,
- Revitalisation of ponds in Předmostí from 2019,
- Housing estate regeneration plans, most recently:
    - Regeneration of the Dvořákova housing estate from 2021,
    - Regeneration of the Budovatelů prefabricated housing estate from 2021
- Programme for the revitalisation of the municipal cemetery in Přerov from 2008
- Local Action Plan for Education Development II in the Přerov Municipal District, Strategic Framework for the MAP until 2025 for the Přerov Municipal District, 11th update

In 2021, a comprehensive project was planned to "Make primary schools established by the statutory city of Přerov more environmentally friendly by upgrading them to blue-green infrastructure and modern energy management". However, the adaptation and mitigation of

primary schools are being addressed individually according to the city's capabilities and current subsidy options.

The financial aspect is covered by:

- Budget of the statutory city of Přerov for 2025
- Medium-term budget outlook of the statutory city of Přerov for 2026 and 2027
- The repayment schedule of the statutory city of Přerov, prepared in the draft budget for 2025 for the five-year period 2024-2028

At the turn of 2022-2023, the statutory city of Přerov was working on a Territorial Study of Urban Greenery in the Statutory City of Přerov. The document has not yet been prepared, and the possibility of creating the documentation will be discussed again in 2025.

The following table provides an overview **of the key priorities for planned expenditure investments** over the next five years:

Area	Expenditure priority	Type
Energy	Establishment of an energy community (photovoltaic panels on building roofs)	Mitigation
	Modernisation of public lighting (LED, consumption control)	Mitigation
	Insulation of public buildings, replacement of heat sources (heat pumps, biomass)	Mitigation
	Installation of nearly zero-energy buildings (ZEB, ZEBRA)	Mitigation
Transport	Development of cycle paths and active mobility	Mitigation
	Low-emission public transport and electromobility (electric buses, charging)	Mitigation
Digital city	Smart city solutions (energy monitoring, public lighting)	Mitigation
Social	Affordable housing and modernisation of accommodation facilities	Social
	Development of care for the elderly, health and education	Social
Public space and infrastructure	Revitalisation of brownfields and unused areas	Combined
	Construction and repair of technical infrastructure (water, sewerage, roads)	Infrastructure/adaptation
	Shading of open spaces, cooling of the urban microclimate	Adaptation
	Protection of residents from heat (gazebos, street furniture, drinking fountains)	Adaptation
Greenery and water (blue-green infrastructure)	Tree planting, green belts, tree lines	Adaptation
	Green roofs and walls on public buildings	Adaptation
	Rain gardens, infiltration strips, retention basins	Adaptation
	Restoration of ponds, water retention in the landscape	Adaptation
Buildings	External blinds, planting trees along facades, ventilation for hot days	Adaptation
Planning	Climate risk maps, adaptation strategies	Adaptation

Area	Expenditure priority	Type
Communication	Public participation, education and workshops on adaptation	Adaptation
Critical infrastructure	Dimensioning of sewerage systems for extreme rainfall	Adaptation

Private sector

In Přerov, several private entities are actively involved in the sustainable development of the city through various initiatives and projects. Specific examples of these activities are listed below:

- **RC EUROPE** – Construction of an eco-friendly industrial park – planned construction of a modern industrial and logistics zone covering an area of over 110,000 m². The buildings will be equipped with photovoltaic systems and will meet strict environmental criteria with BREEAM Outstanding certification, complying with ESG principles.
- **IN-HUB Přerov** – an agency promoting innovation and sustainable business – offers consulting services, office space, workshops with 3D printers and organises workshops focused on sustainability and efficient energy, water and waste management.

Other major employers with sustainable initiatives

- **Meopta – optika, s.r.o.**: A traditional manufacturer of optical devices that focuses on innovation and sustainable production processes.
- **Precheza a.s.**: A chemical company that implements environmentally friendly technologies and processes in its production.
- **Pivovar Zubr a.s.**: A regional brewery that focuses on environmentally friendly production and support for local initiatives.
- **EMOS spol.** s r.o.: One of the largest companies in the electrical equipment and components market in the Czech Republic. It is already taking several significant steps in the area of sustainability and climate resilience, from circular economy to resilient products and automated logistics. The benefits can be further enhanced by external funding (government and EU programmes), involvement in public investment and active use of ESG frameworks.

1.3 Just resilience considerations

A fair approach to *resilience* means that measures to increase resilience to climate change and other risks should be socially just, inclusive and equitable for different groups of the population. It is not enough to simply build technical resilience – it is important to consider *who* benefits from these measures and *who* may be at risk.

Key groups that may be more affected by climate change than others are as follows:

- the elderly
- children and young people,
- people with disabilities,
- low-income households,
- socially excluded or vulnerable people (e.g. homeless people),
- uniformly socially disadvantaged areas (e.g. old housing estates).

The strategy for the resilience of the city of Přerov to climate change will take these inequalities into account in its proposals for solutions, action plans and investment plans in individual key community systems (KCS) and will propose, among other things, the following steps to address them:

- **social mapping**: where vulnerable groups live, what their needs are (e.g. access to shade, water, services)
- **involvement of kindergartens, schools, retirement homes, social workers, non-profit organisations and community centres**
    - possible accessible forms of participation for individual groups:
        - **senior citizens:**
            - meetings at the community centre,
            - printed questionnaires with assistance,
            - use of models and pictures instead of longer texts,
        - **children:**
            - art workshops and creative activities,
            - games and story maps,
            - school competitions on the topic of climate change,
        - **people with disabilities:**
            - barrier-free access,
            - translation into simple Czech,
            - use of pictograms and visual elements,
            - option of accompaniment or assistance,
        - **low-income residents**
            - cooperation with food banks and social services,
            - community events with refreshments and a friendly atmosphere,
            - financial incentives or coverage of participation costs,

- **creation of a "mini-citizens' panel"** – 5–10 representatives from various vulnerable groups who will oversee the fairness of the Strategy, or reaching out to non-profit organisations that work with vulnerable groups.

1.4 Climate resilience objectives

Challenge statement

The main climate issue that the city **of Přerov** wants to address is:

"urban overheating and extreme weather fluctuations associated with drought and torrential rains".

Context and impacts:

- **Urban overheating**, especially in the summer months, reduces the quality of life of residents, increases health risks (especially for the elderly and children) and contributes to higher energy consumption for cooling.
- **Torrential rains** cause **rapid water runoff**, which burdens the sewer system and leads to local flooding and soil erosion.

- **Drought** has a negative impact on urban greenery, the water balance and urban parks, which further reduces the city's ability to cool naturally, but also affects water production and supply.

Main causes:

- **Large areas of paved surfaces** that accumulate heat and prevent water from seeping into the ground.
- **Lack of quality urban greenery** (trees, parks, shade-providing vegetation) in densely built-up parts of the city.
- **Inadequate retention measures** – rainwater runs off without being utilised.
- **Inappropriate construction** and lack of climate-adapted infrastructure from the past.

Main objective:

- **Development of green and blue infrastructure** (e.g. green roofs, retention basins, tree planting) – these reduce the temperature in the city and retain rainwater.
- **Improved resilience of the city** to extreme climate events (drought, heavy rainfall).
- **Higher quality of life** for residents thanks to a more pleasant microclimate, more shade and accessible green spaces.
- **Sustainable water management**, where rainwater is considered a resource rather than waste.

Primary adaptation objectives

Objective	Performance metrics – e.g.:	Economic justification	Cost estimate	Estimated benefits
Increase in green space and tree planting	Number of newly planted trees, % of green space, decrease in temperatures in hot zones	Green infrastructure reduces cooling costs, increases property and investment values, and improves quality of life	1–3 million CZK/year (depending on the extent of planting and maintenance)	Energy savings, reduced sickness rates, greater attractiveness for investors
Improved rainwater management	Volume of water retained, number of retention measures, reduction in water in the sewer system	Reduction in damage caused by heavy rainfall, lower infrastructure load	CZK 2–5 million for larger projects, CZK 500,000 for smaller measures	Prevention of damage amounting to tens of millions of CZK, securing water for irrigation
Reduction of the proportion of impervious surfaces without drainage	% of impermeable areas, revitalised areas	Better microclimate, less damage to property, higher aesthetic value	CZK 500,000–2 million/area depending on size	Savings on maintenance, greater user comfort, reduction in temperature extremes

Secondary resilience objectives

Objective	Performance metrics – e.g.:	Economic justification	Cost estimate	Estimated benefits
Increasing public awareness and participation	Number of events, people involved, level of public support	Increased implementation efficiency, lower costs of enforcing changes	300–800 thousand CZK per year	Greater acceptance of projects, active approach by citizens, reduced resistance to change
Integration of adaptation measures into spatial planning and investment preparation	Number of projects with measures, share of areas covered by adaptation measures	Prevention of reconstruction costs, legal certainty	Low – implementation within planning processes	Long-term savings, greater investment certainty, sustainability of construction
Improvement of public health	Number of days with extreme heat, number of hospitalisations, average life expectancy	Reduction in healthcare costs, more productive population	Dependent on measures (e.g. shading, cooling)	Savings in healthcare, improved quality of life
Enhanced social well-being	Level of population satisfaction, level of involvement of vulnerable groups	Stronger communities, prevention of social conflicts, equality in adaptation	Low to medium – depending on the form of support and involvement	Social cohesion, reduction of risks of marginalisation
Support for sustainable economic development	Number of green jobs, volume of sustainable investments	Attracting investment, innovation, economic diversification	Investment in development programmes, support for businesses	New revenues, long-term economic stability

1.5 Planned investments

Over the next 10 to 15 years, the city of Přerov plans to implement several major investment projects that will have to include adaptation measures in response to climate change. These projects are based on strategic documents and initiatives from the city's leadership, such as:

- **Renovation and modernisation of the Přerov Hospital**
- **Revitalisation of T.G.M. Square**
- **Revitalisation of the area in front of Přerovanka**

and others.

A broader outlook for investments in adaptation and mitigation measures, or related investments, is included in several documents. The same investments are partially overlapping in the conceptual documents due to their cross-cutting nature, and some investments are included in multiple documents. Planned investments in adaptation/resilience in the short term are listed in the following table:

KCS	Description	Estimated costs for the period 2025–2029 (in million CZK)
Water management	Rainwater retention at the municipal cemetery (85 m³ reservoir)	4
Water management, Ecosystems	Controlled irrigation of old river branches in the Žebračka National Nature Reserve from the Strhanec stream	5
Water management, Ecosystems	Revitalisation and restoration of ponds in Předmostí, phase II	10
Critical infrastructure, Water management	Updating/optimisation of the development, maintenance and repair plan for the sewerage network in connection with the implemented HDV measures	5
Water management, Ecosystems, Health and well-being	Revitalisation of the roof into a green roof on the Velká Dlážka primary school building	1
Critical infrastructure, Water management, Ecosystems, Health and well-being	Regeneration of housing estates, streets and intersections – greenery, HDV, parking	5
Ecosystems, Water management, Health and well-being	Landscape interventions and biodiversity support on Popovický kopec hill and in Knejzlíkovy sady park	1
Ecosystems, Water management	Landscape restoration – new landscape features, water features, greenery, elements of the ÚSES (Unified System of Ecological Stability) – KPÚ (Krajinná architektura a krajinná úprava, Landscape Architecture and Landscape Management) in the cadastral areas of Újezdec and Lýsky	1
Ecosystems	Restoration of meadow vegetation on arable land in the cadastral area of Lýsky	0
Ecosystems, Water management	Support for ecological stability Small lagoons and surrounding areas	0
Ecosystems, Local economy	Expansion of orchard area in Žernava and implementation of measures to support biodiversity	1
Health and well-being, Ecosystems	Revitalisation, accessibility and restoration of the park on Svobody Square	2
Health and well-being, Ecosystems	Revitalisation of public space in the areas of Optiky Street and Gen. Janouška Street	1
Health and well-being, Ecosystems	Construction of the "Na přádelně" park on the site of the former Juta a.s. premises	1
Ecosystems	Restoration of the landscape structure between Kozlovice and Újezdec through new landscape elements, including elements of the ÚSES	5

KCS	Description	Estimated costs for the period 2025–2029 (in million CZK)
Health and well-being, Critical infrastructure	Shading (gazebos, pergolas) in areas extremely vulnerable to heat waves	1
Ecosystems, Health and well-being	Revitalisation and planting of greenery, water feature on TGM Square	2
Health and well-being, Education	Renovation and revitalisation of school gardens at nursery and primary schools	3
Ecosystems	Completion of the third stage of the green passport in the municipalities of Lověšice, Újezdec, Kozlovice, Henčlov and Dluhonice	0.3
Ecosystems, Health and Well-being	Landscape as a garden, launch of the Mezikolí project	1
Health and well-being	Revitalisation of public spaces according to territorial studies of city districts	1
	Total costs planned for 2025–2029	**1**

1.6 Economic rationale

The primary reason for the city's investments is the economical use of public funds with the aim of improving the current situation. The city's activities in this area are aimed at improving the quality, usability and resilience of infrastructure. The city also focuses its investments on reducing infrastructure operating costs and the return on investment horizon. Investments in infrastructure are also intended to help prevent potential damage and save costs that would arise from later implementation through timely solutions.

Adaptation to climate change is part of the investment strategy described above, and greenery and its benefits are considered public infrastructure. Proper management and use of rainwater are among the measures to strengthen infrastructure functions and ensure the economical use of public funds. Blue-green infrastructure is an integral part of the city and its importance is reinforced by the implementation of adaptation measures.

Economic and financial reasons for adaptation:

- **improving the health of residents** and visitors to the city (life expectancy, living in a high-quality environment
- stabilisation **of healthcare costs** (maintaining the number of emergency service call-outs, healthcare expenditure, etc.)
- **prevention of threats to the property** of natural and legal persons, including city property (elimination of the impact of hydrological extremes on the quality of roads, flood damage, damage to agricultural production, including gardens and allotments of city residents
- enhancing biodiversity
- more resilient infrastructure

maintaining thermal comfort in building interiors (preventing overheating during periods of high temperatures, etc.)

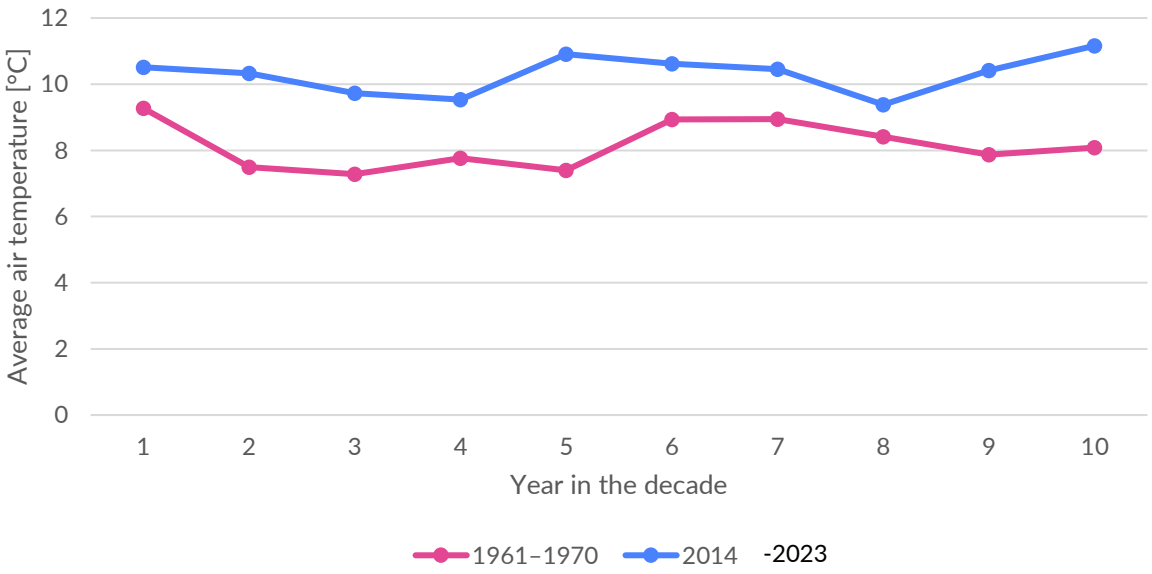
2 Climate risks

2.1 General climate profile of the region

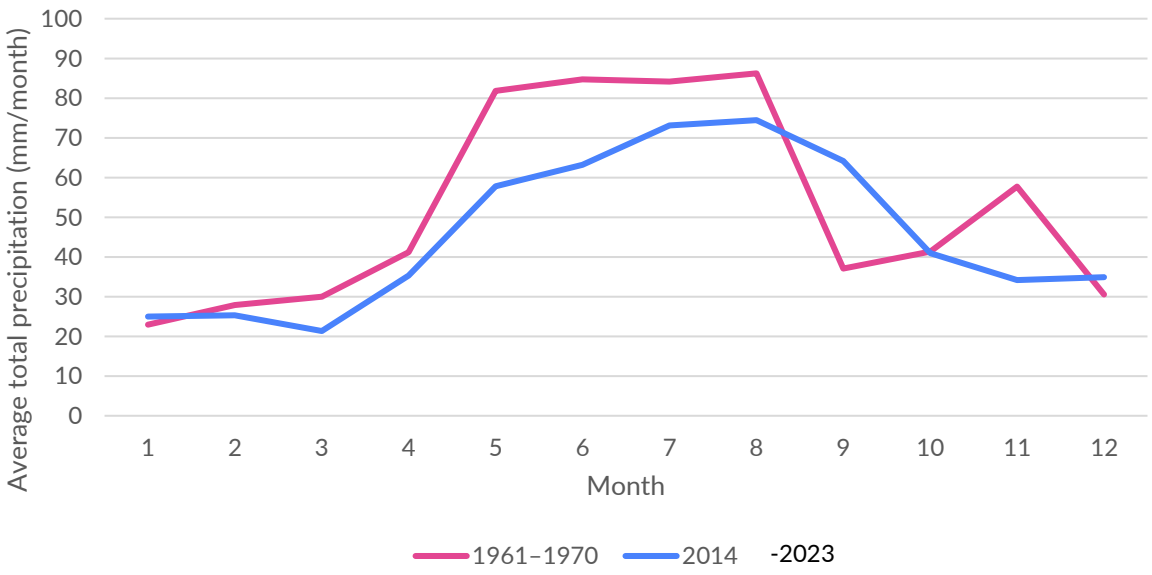
The town **of Přerov**, located in the south-eastern part of the Czech Republic in the lowlands of the Moravian Gate, belongs to **the warm climate zone T2** according to the classification of the Czech Hydrometeorological Institute. **Mild winters and warm to very warm summers** prevail here, making the area relatively favourable for living and agriculture, but at the same time increasing its **vulnerability to the effects of climate change.**

Predominant climatic conditions:

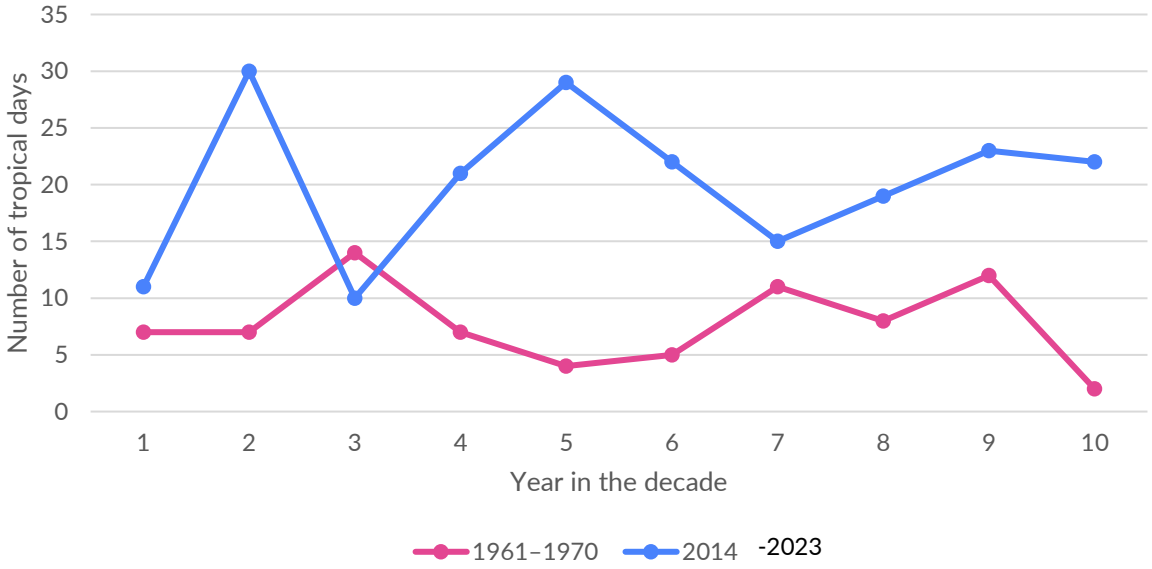
- **Average annual temperature:** approximately **9.5–11.5 °C**, with an increase of 1.8 °C compared to the 1970s.



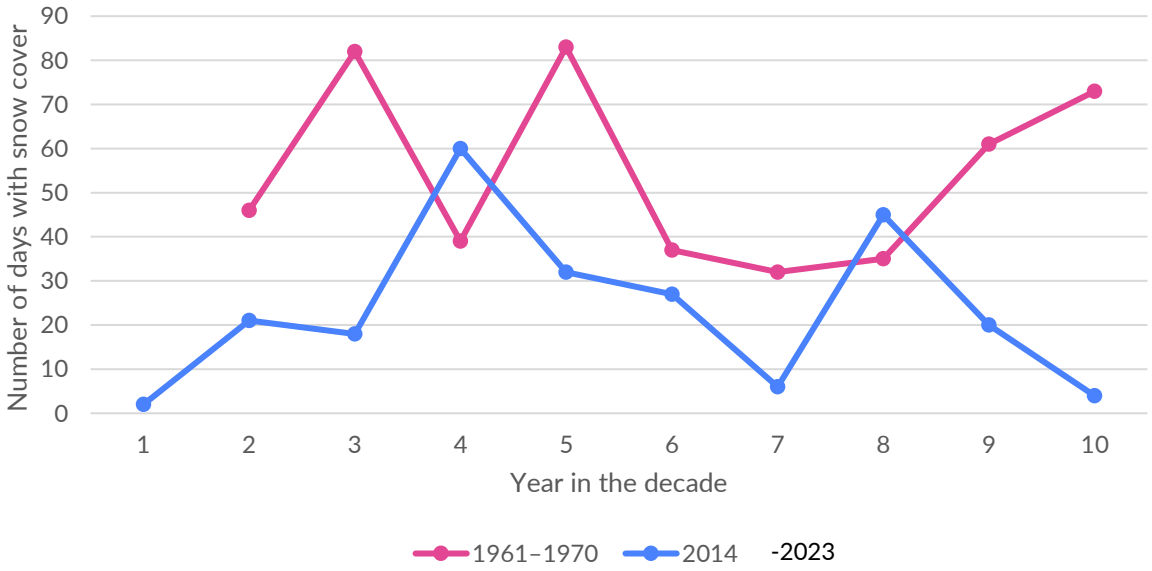
- **Average annual precipitation:** around **550–650 mm**, with varying distribution throughout the year (frequent and increasingly intense precipitation events (frequent summer downpours).



- **Number of summer days (Tmax ≥ 25 °C):** increasing, on average **30–50 days per year**, with a trend towards an increase in extremely hot, **tropical** days (Tmax ≥ 30 °C), currently around **20 days per year**.



- **Winters:** more often without permanent snow cover, average length of the frost period is decreasing.



Key climate hazards:

1. **Urban heat island effect**
    - Increased summer temperatures, especially in densely built-up areas of the city, are a burden on the health of the population and increase energy consumption for cooling.
2. **Drought and reduced water availability**
    - Long periods without precipitation negatively affect urban greenery, agriculture and the water regime of the landscape.

3. **Torrential rains, river and flash floods**
    - Prolonged rainfall and rapid snowmelt cause the Bečva River and its tributaries to rise, increasing the risk of river flooding that threatens the built-up areas of Přerov and low-lying areas near the river.
    - Intense summer rainfall puts a strain on the sewerage system and increases the risk of local flooding.
4. **Gusts of wind and storms**
    - The increasing frequency of storms with strong winds causes damage to infrastructure, greenery and property.
5. **Seasonal changes and weather instability**

Unpredictable transitions between seasons complicate planning in agriculture, construction and city management.

2.2 Impact of past or ongoing climate events

Event	Timing and duration	Geographical scope	Associated impact	Measures taken
Flood on the Bečva River	July 1997 (7–9 July)	Přerov and surrounding area	Flooding of large parts of the city, damage to infrastructure, evacuation of residents, contamination of water sources	Construction of embankments, modernisation of sewerage system, emergency plans
	March–April 2006	Přerov and surrounding area	Flooding of low-lying areas, damage to property and infrastructure	Strengthening of flood protection measures, revision of emergency plans
	May–June 2010	Přerov and surrounding area	Repeated flooding, damage to property and infrastructure	Improved communication with the population, reinforcement of river banks
Extreme drought	Summer	Přerov and surroundings	Decline in groundwater levels, threat to agriculture, water restrictions	Water-saving measures, drought-resistant vegetation, awareness campaign
	Summer	Přerov and surroundings	Decline in groundwater levels, damage to urban greenery	Restrictions on water extraction, public awareness, monitoring
	Summer	Přerov and surroundings	Threat to agriculture and watercourses, reduced crop yields	Support for adaptation, change in urban green space management
Torrential rains	August 2020	City centre	Flooding of streets and basements, traffic collapse	Sewer cleaning, construction of retention reservoirs
	August	Přerov and surroundings	Flooding of low-lying areas, damage to houses	Improved drainage, sewerage modernisation
	June	Křenovice near Kojetín	Local flooding, damage to property	Retention reservoirs, landscaping
Heatwave	July	Přerov and surroundings	Temperatures above 35 °C, health complications	Cooling centres, tree planting, awareness raising

Event	Timing and duration	Geographical scope	Associated impact	Measures taken
	July	Přerov and surroundings	Increased number of hospitalisations, network overload	Watering of green areas, public awareness campaigns
	July	Přerov and surroundings	Record temperatures, extreme strain on infrastructure	City cooling plan, irrigation regimes
Storms and strong winds	October	City districts	Damage to roofs, power outages	Tree inspection, technical interventions
	August	Kokory	Destruction of hop fields, damage amounting to CZK 25 million	Prevention in agriculture, emergency reserves
	April	Ústí nad Orlicí	Mud and hail, local damage	Remediation, flood prevention planning

2.3 Climate risk assessment

The extent of the impact of climate phenomena on individual sectors was assessed in three steps:

1. First, the impact values of climate phenomena were averaged according to the individual areas defined by the IPCC table, and the degree of impact on a given climate phenomenon was determined at the level of entire sectors.
2. In the next step, the impact levels were determined for the sectors defined by the SECAP methodology and included in the MyCovenant assessment. These impacts were assessed by expert estimation and averaged with the impact level according to the IPCC based on their significance (SECAP sectors "buildings", "transport" and "energy" correspond to the IPCC sector "cities, municipalities and key infrastructure"). Key KCS from P2R were also assigned to these sectors:

Sectors*		Impact level (H – high, M – medium, L – low)								
P2R (KCS)	**IPCC**	**Extreme heat**	Cold periods	**River flooding**	**Heavy rainfall and flash floods**	Landslides and erosion	Hydrological drought	**Fires**	**Strong windstorms**	Heavy snowfall and ice storms
Nature-based solutions for ecosystem support	Terrestrial and freshwater ecosystems	H	M	M	M	L	L	H	M	S
Water management	Water	L	-	M	M	L	M	L	-	N
Land use and food systems	Food and other ecosystem products	H	M	H	M	L	M	M	M	S
Critical infrastructure protection	Cities, municipalities and key infrastructure	H	M	H	H	M	M	L	H	V
Health and well-being	Health, well-being and society	H	M	L	L	L	M	M	L	S
Local economic systems	Poverty, livelihoods and sustainable development	L	L	H	M	L	L	M	L	N
SECAP – MyCovenant										
Environment and biodiversity		V	M	M	M	L	M	M	M	M
Water – infrastructure, infiltration management		S	L	M	M	L	H	M	-	L
Agriculture and forestry		V	L	M	M	M	H	H	M	L
Buildings		S	M	H	H	M	L	L	H	M

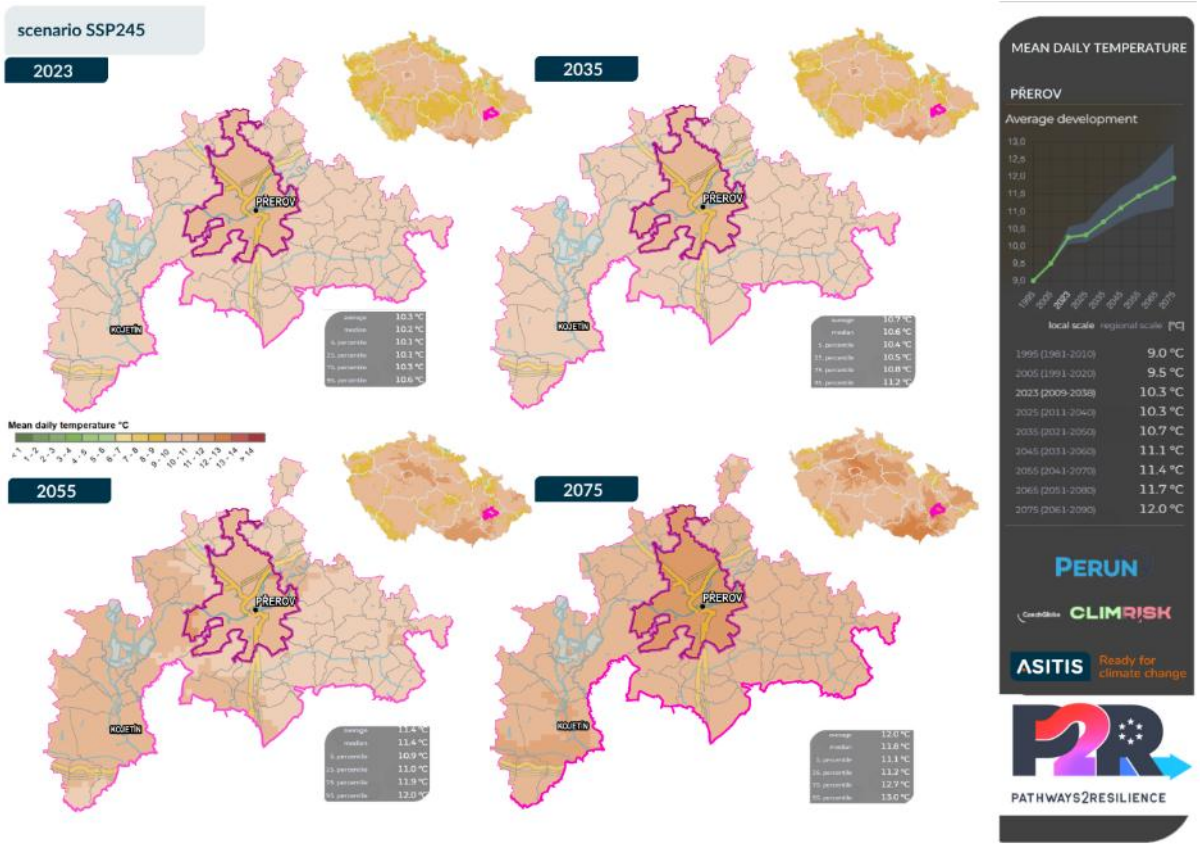
Waste	S	L	M	M	L	L	L	M	M
Communication technology	S	L	M	M	L	L	L	H	M
Transport – infrastructure	S	M	H	H	M	L	L	M	M
Energy – infrastructure	V	H	M	M	M	L	L	H	H
Education	S	M	L	L	L	L	L	L	M
Health	V	M	M	L	L	M	M	M	M
Emergency services	S	M	M	L	L	L	M	L	M
Tourism	N	L	M	L	L	L	L	L	M
Land use planning	N	L	H	M	M	L	L	L	L

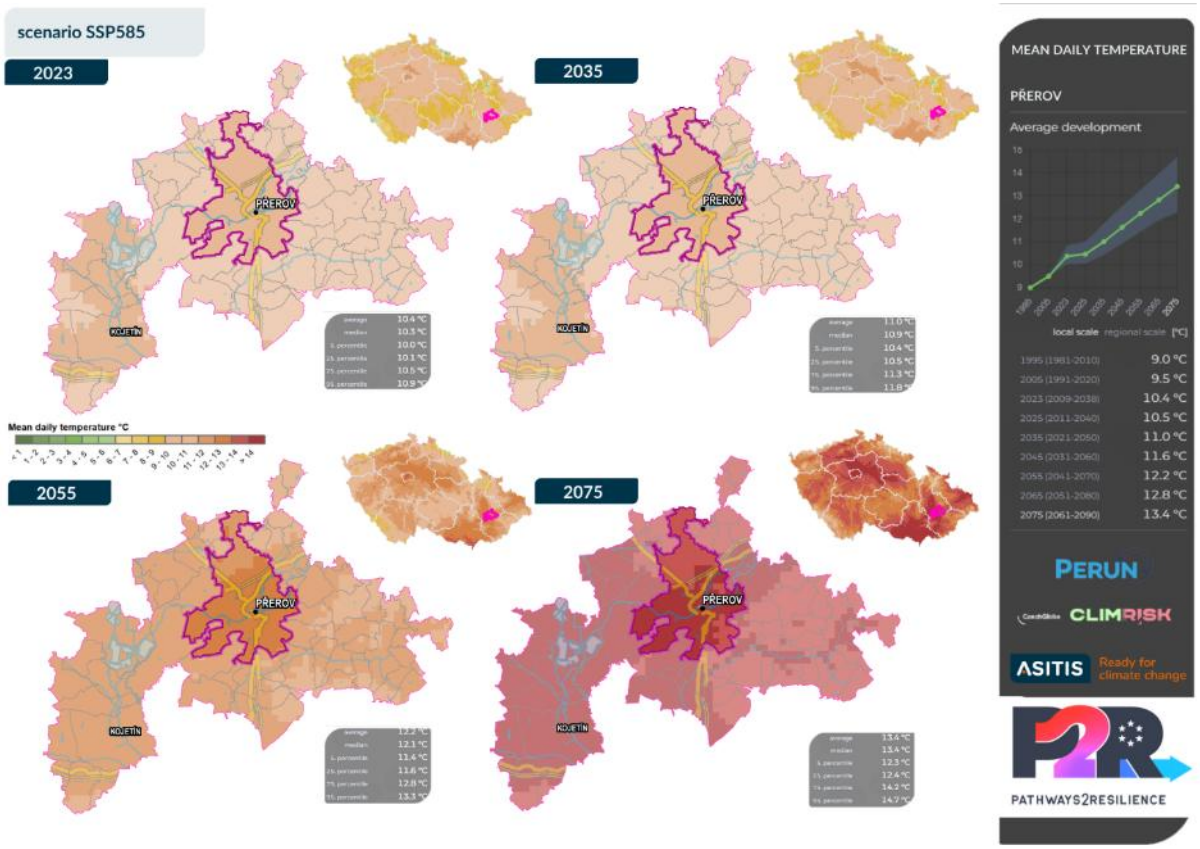
**Colour coding for sectors indicates the significance of the link between sectors and systems defined by the IPCC, SECAP and P2R*

3. For climate phenomena with the greatest impacts, the degree of risk and temporal and spatial variability were sought based on available data (CLIM RISK, PERUN, CzechGlobe, etc.):

2.3.1 Extreme heat

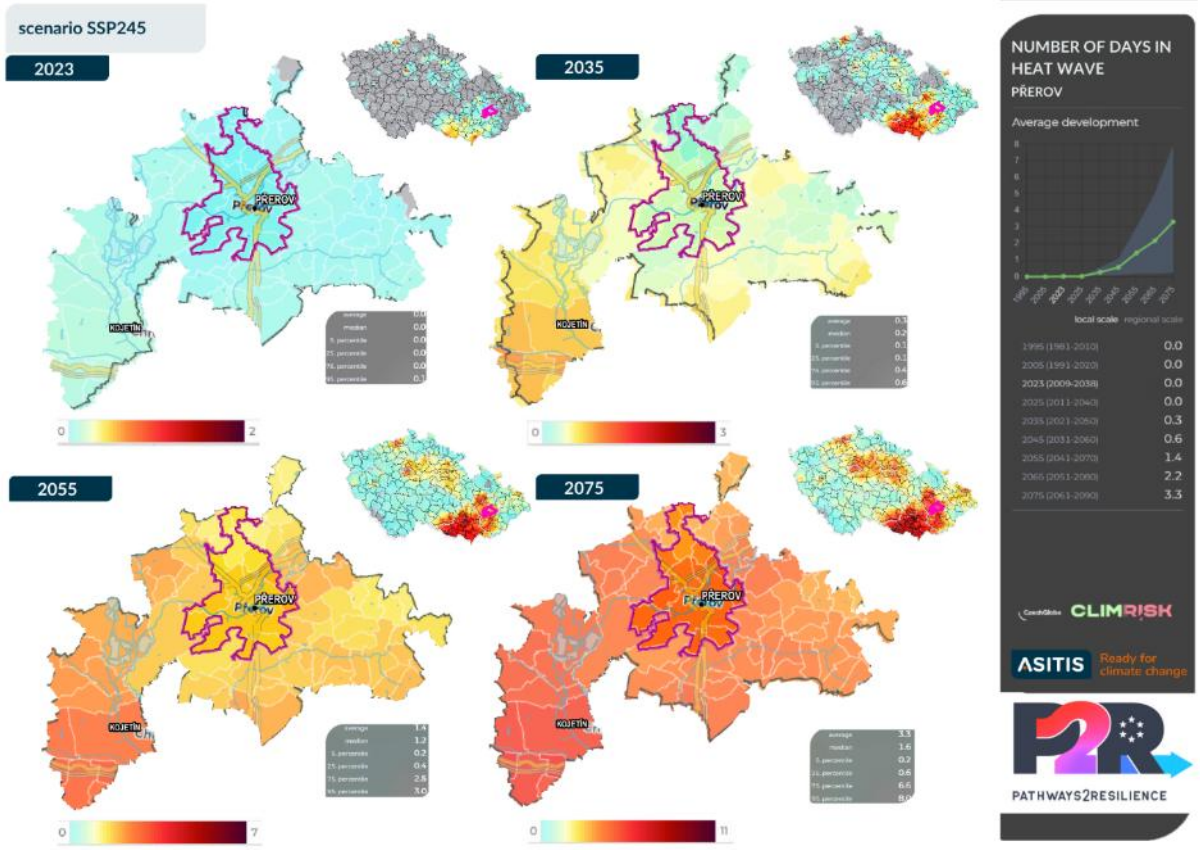
- **Mean daily temperature** increase**:**
  - According to projections by the Czech Hydrometeorological Institute (ČHMÚ, PERUN project), the Global Change Research Institute of the Czech Academy of Sciences – CZECHGLOBE, the ClimRISK project and climate models (e.g. **the SSP2-4.5 medium model, the SSP5-8.5 extreme model)**, the average annual temperature in the Přerov region will continue to rise in the coming decades.

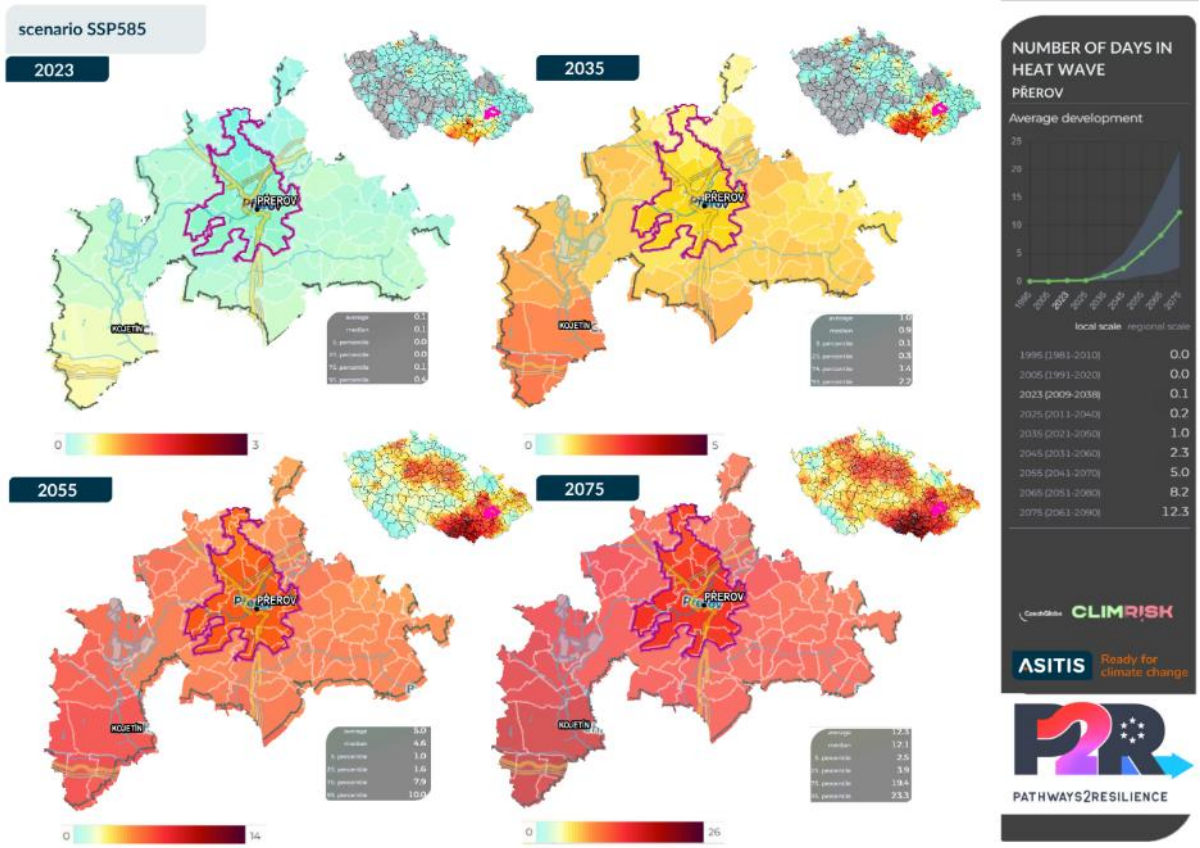




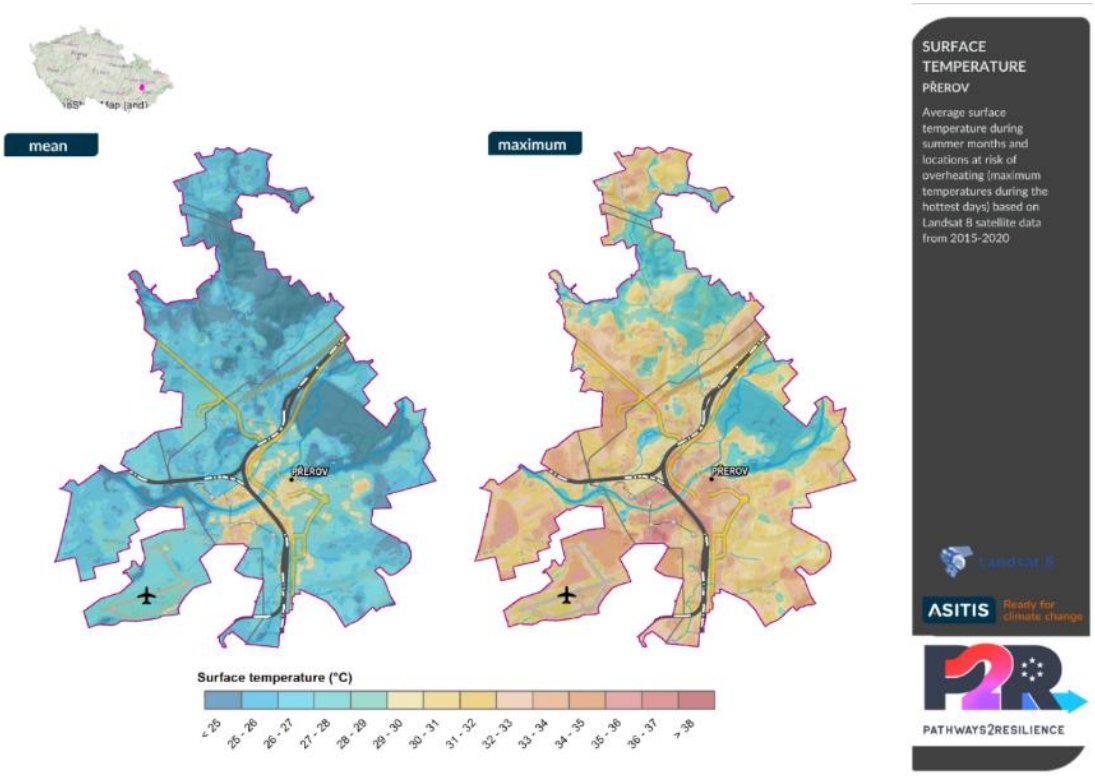
- An increase in extremes leading to longer and more intense **heat waves:**
    - **Number of days in a heatwave –** defined as at least 3 consecutive days with a maximum daily temperature >= 30°C, when at least once the temperature exceeds 35°C and the minimum temperature does not fall below 20°C. These days pose a risk to human health (the risk of cardiovascular incidents increases significantly), but also to nature, as evaporation increases. This results in a tendency towards drought or more frequent natural fires. Therefore, this index can be used to assess the risk of drought, fires and, above all, the impact on human health:

Number of days in a heatwave:



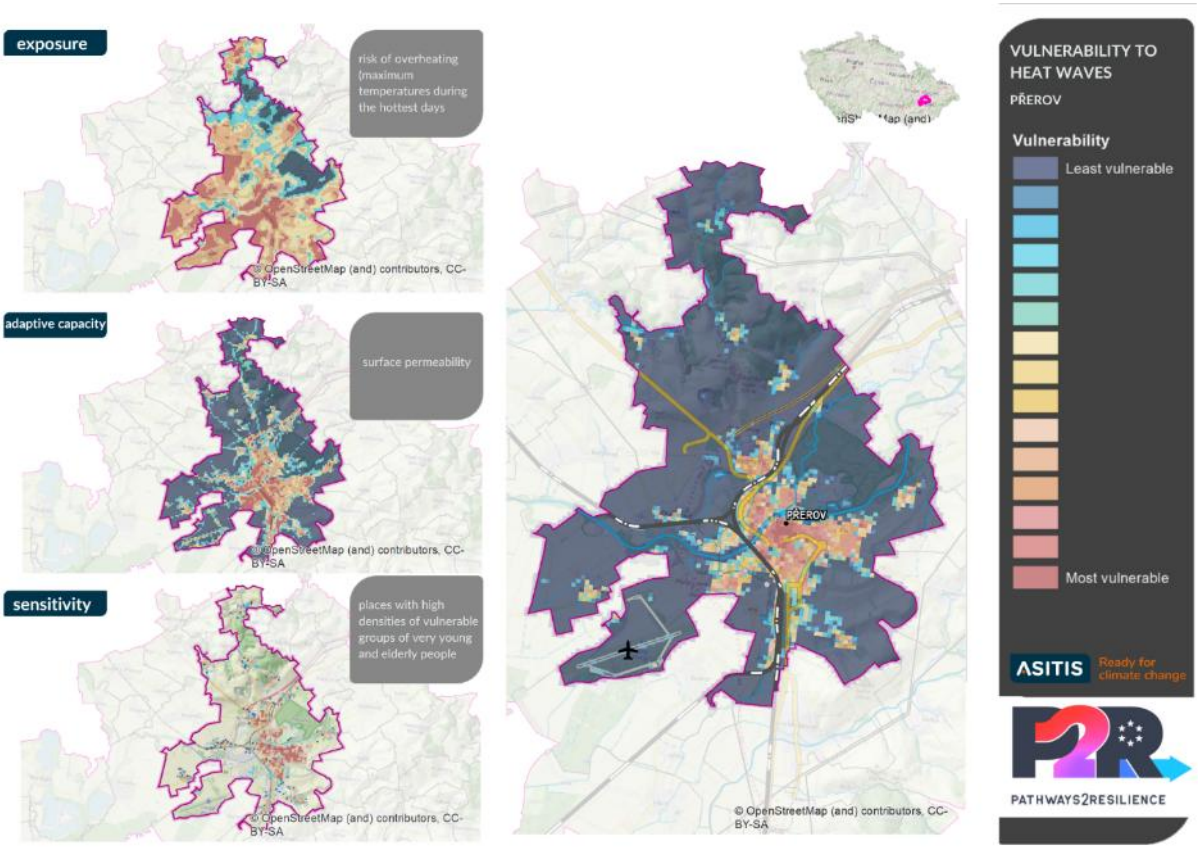


- **Urban overheating:**
  - **Surface temperature** – analysis of average surface temperatures during the summer months and places at risk of overheating (maximum temperatures during the hottest days) based on Landsat 8 satellite data from 2015-2020:



  - High surface temperatures in selected parts of Přerov, especially in the densely built-up centre, indicate the low ability of these locations to withstand extreme heat. This phenomenon increases the burden on the health of the population, infrastructure and energy consumption in the summer months. Monitoring and reducing surface temperatures is therefore an important step towards increasing the city's climate resilience and improving quality of life.

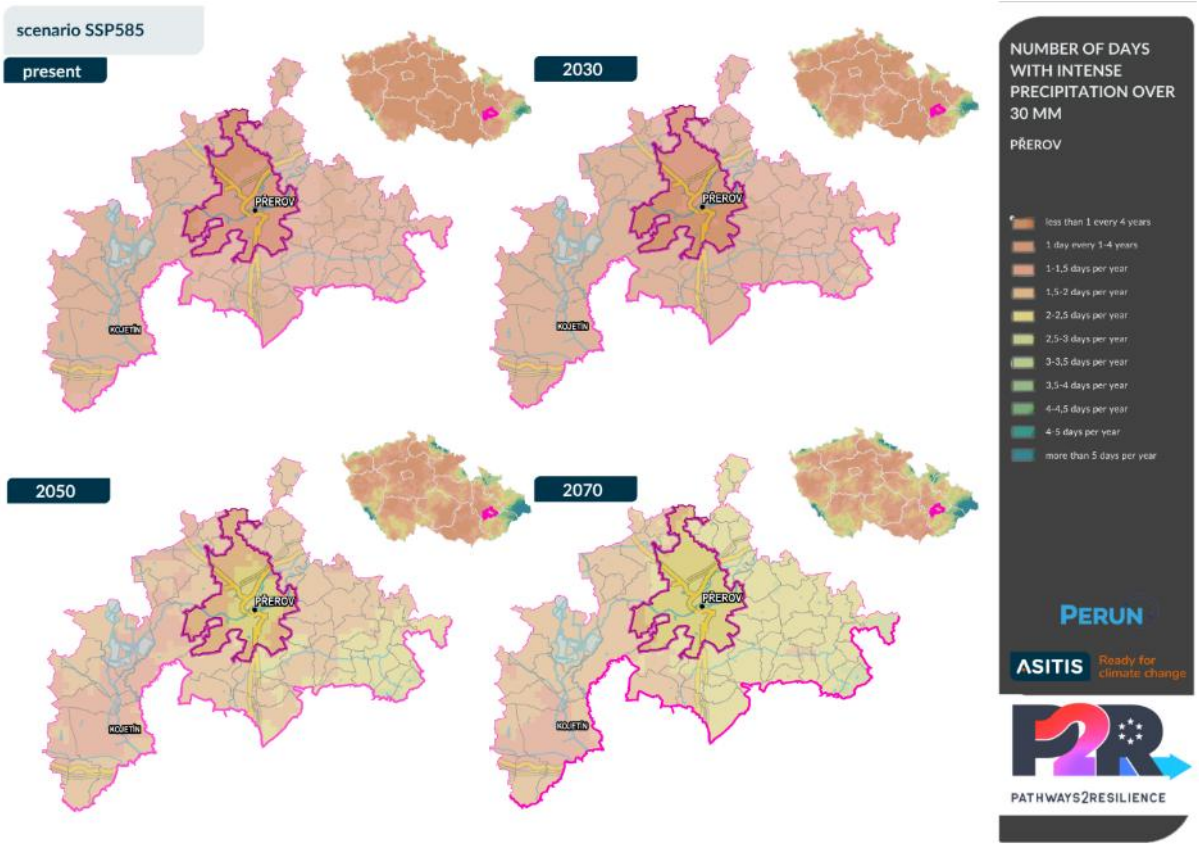
- **The city's vulnerability to heat waves**:
  - This is based on a combination of three factors: exposure, adaptation capacity and sensitivity. The most vulnerable areas are those with high surface temperatures, limited surface permeability (e.g. extensive paved areas without vegetation) and a high concentration of sensitive population groups, particularly the elderly, children and people with disabilities. Such places include the vicinity of schools, kindergartens, retirement homes and social care facilities. In addition, a lack of greenery and impervious surfaces reduce the ability of these locations to regulate heat naturally. This analysis helps to identify priority zones for targeted adaptation measures, such as tree planting, drainage or shading of public spaces:



- **Amount of vegetation around buildings:**
  - The amount of vegetation around buildings has a significant impact on reducing overheating, improving the microclimate and slowing down rainwater runoff. Greenery also contributes to the mental well-being of residents and increases the overall resilience of the city to climate extremes. The recommended development direction is to use the 3-30-300 rule, which sets minimum standards for visual contact with trees, the proportion of tree cover in the vicinity of residential areas and the availability of public green spaces:

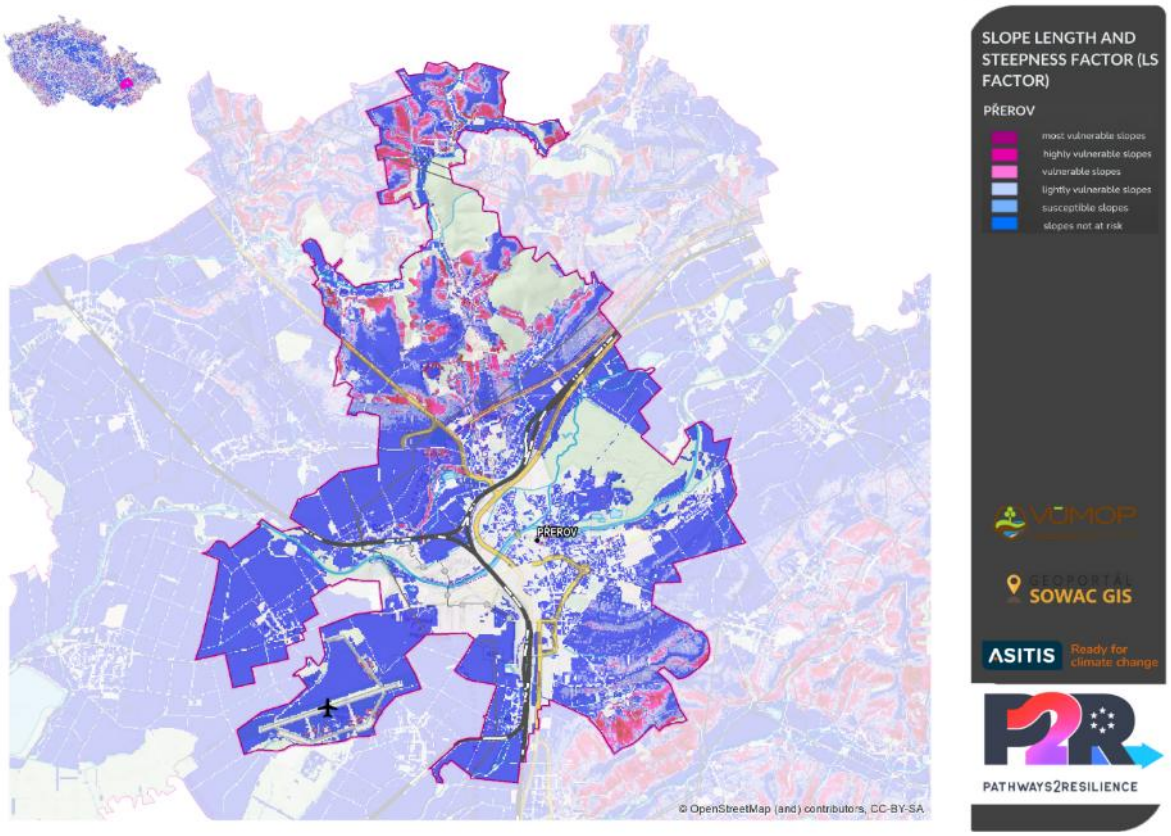
2.3.2 Heavy rainfall and flash floods

- **Number of days with intense precipitation over 30 mm:**
  - The number of days with intense precipitation above 30 mm is an important indicator of hydrometeorological extremes that can significantly affect **the resilience of the city of Přerov to climate change**. This indicator is particularly related to the risk of:
    - **flash floods**, especially in built-up areas with a high proportion of impermeable surfaces (concrete, asphalt),
    - **increased load on sewerage and drainage systems**, which may not be designed to handle such volumes of water,
    - **soil erosion** on the outskirts of the city and in agricultural landscapes,
    - **threats to infrastructure and property** in lower-lying parts of the city or near watercourses.
  - This increase – **from the current occurrence of approximately 1 day with intense rainfall of over 30 mm every 1 to 4 years to 2 to 2.5 days per year** – represents **a significant increase** in **the frequency of extreme rainfall**, approximately **four to ten times** higher than the current situation, which corresponds to a fundamental climate shift that cannot be ignored.

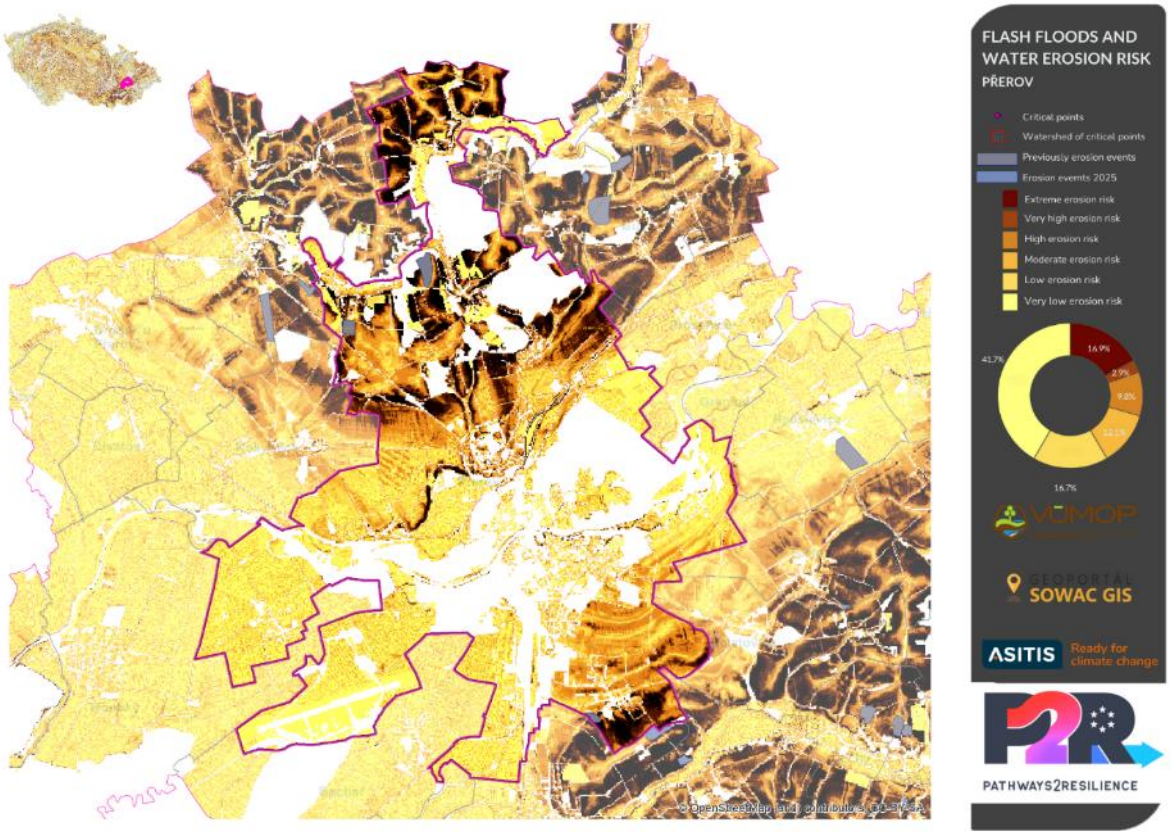


- **Slope gradient and length:**
  - **expressed by the LS topographical factor**, which is the product of two terrain components:
    - **L (slope length)** – the length of the slope, i.e. the distance over which water flows without interruption;
    - **S (slope steepness)** – the steepness of the slope.
  - In areas with a high LS factor, these rains cause **increased soil erosion**, leading to soil profile degradation, silting of watercourses and loss of fertility.
  - Slopes with a high LS factor are **more vulnerable to landslides**, especially if they are deforested or intensively farmed.
- **Water erosion:**
  - It represents a serious environmental problem that can significantly affect the resilience of the city of Přerov to climate change. Although water erosion is most often addressed in the context of agricultural landscapes, its impacts also affect cities – especially in suburban and peripheral areas, along slopes and watercourses.
  - Erosion carries sediment into watercourses, reducing their capacity and increasing the risk of local flooding.
  - The silting up of retention basins and sewer inlets worsens the city's ability to respond to precipitation events.
  - The washing away of topsoil leads to the degradation of suburban soil and the loss of the landscape's ability to retain water.
  - This increases Přerov's vulnerability to drought and flooding.

- **Slope gradient and length**

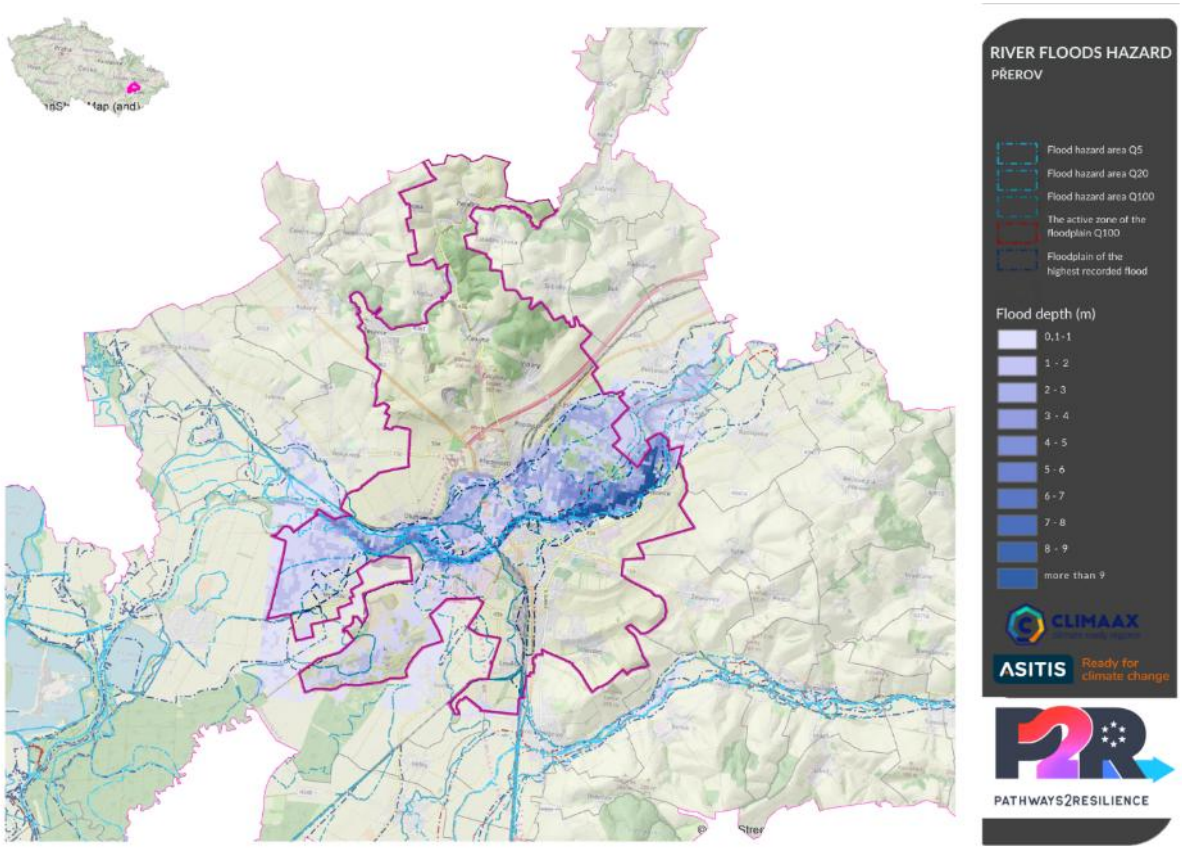


- **Water erosion:**



2.3.3 River flooding

Přerov is significantly threatened by river flooding, especially in connection with the Bečva River, which flows through the central part of the city. Flood zones extend along its course and in the vicinity of its tributaries, and in some parts of the city, especially near the historic centre and industrial areas, the depth of flooding during a hundred-year flood (Q100) can exceed several metres. The flood zone also includes areas with a high concentration of population and infrastructure, which increases the overall risk of impacts. Flood protection is provided by a system of flood control measures, but in the context of climate change and torrential rainfall, further adaptation and an increase in the retention capacity of the landscape are necessary.



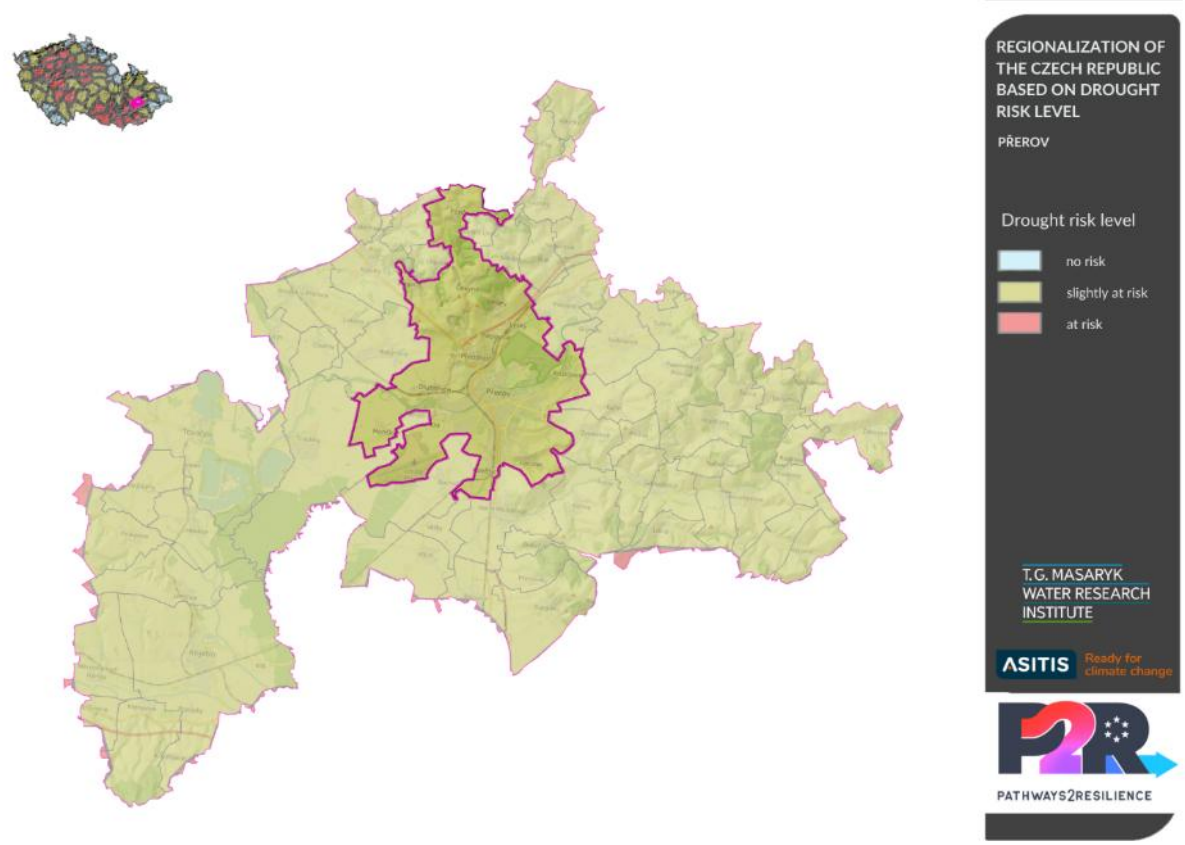
2.3.4 Hydrological drought and agricultural drought

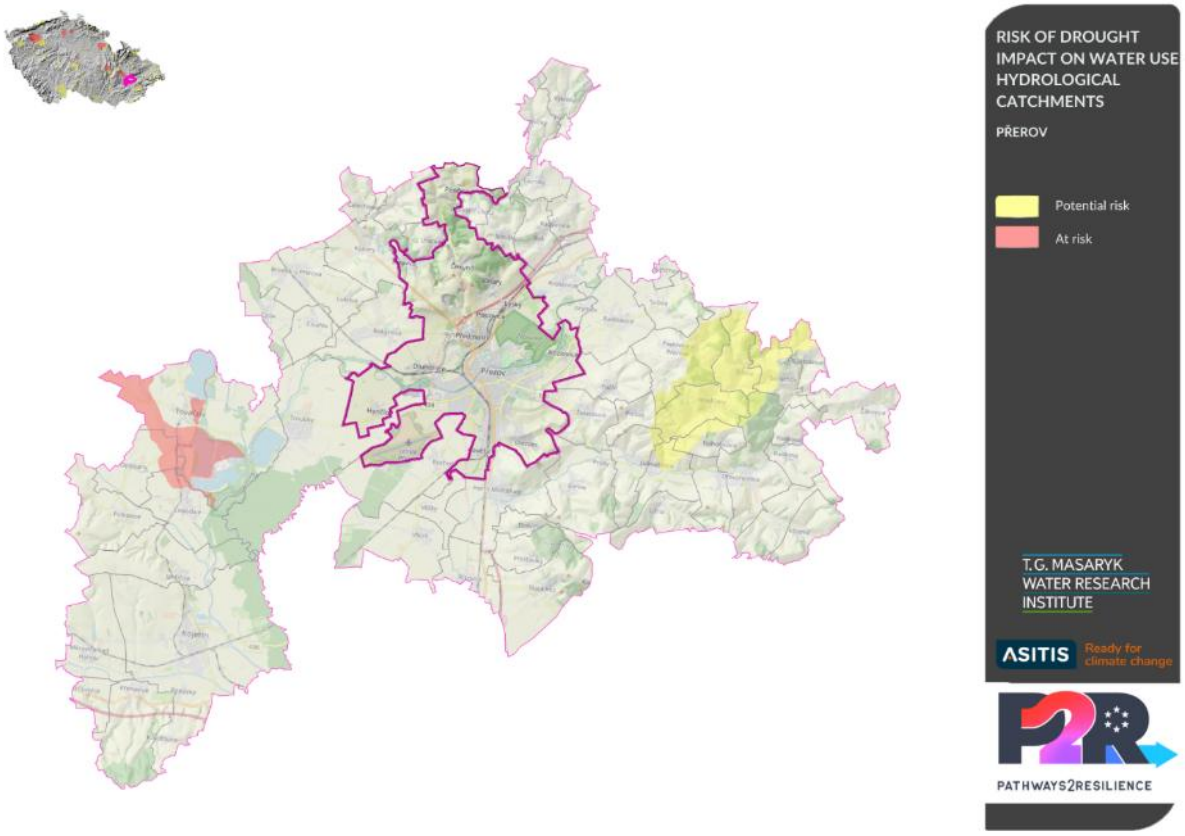
The threat of so-called hydrological drought is assessed on the basis of:

- **Regionalisation of the Czech Republic according to the degree of drought risk** – this was developed for individual districts, which are divided into several risk classes according to the values of monitored water deficits and the frequency of droughts. This regionalisation uses hydrological models (e.g. the Bilan model) and cluster analysis on data from catchment areas for the period 1901–2015, with the key index being the volume of runoff deficit below the 20% quantile of monthly flows. The result is a map showing areas with different levels of risk, which can be used for strategic planning of measures to combat the negative effects of drought.
    - **The Přerov district** falls into the medium risk category for hydrological drought – see map below.
- **Risks of drought impacts on surface water use for hydrological basins –** based on hydrological data from approximately 400 profiles with a long-term time series (1986–2015), hydrological basins were assessed in terms of the risk of drought impacts on

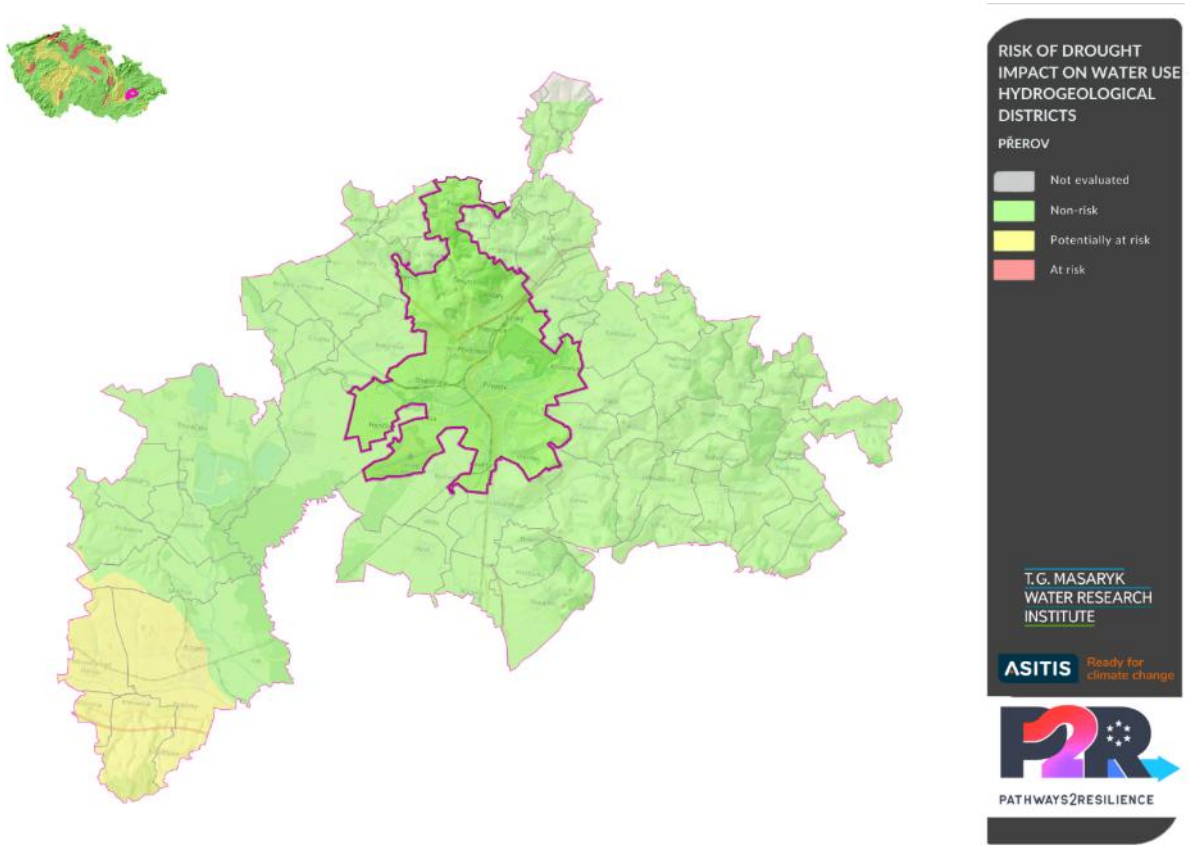
water availability for various purposes (, human supply, agriculture, industry and ecosystems). Basins facing a summer water balance deficit are particularly at risk.

- **The Přerov ORP includes one risk basin and one basin with potential risk.**





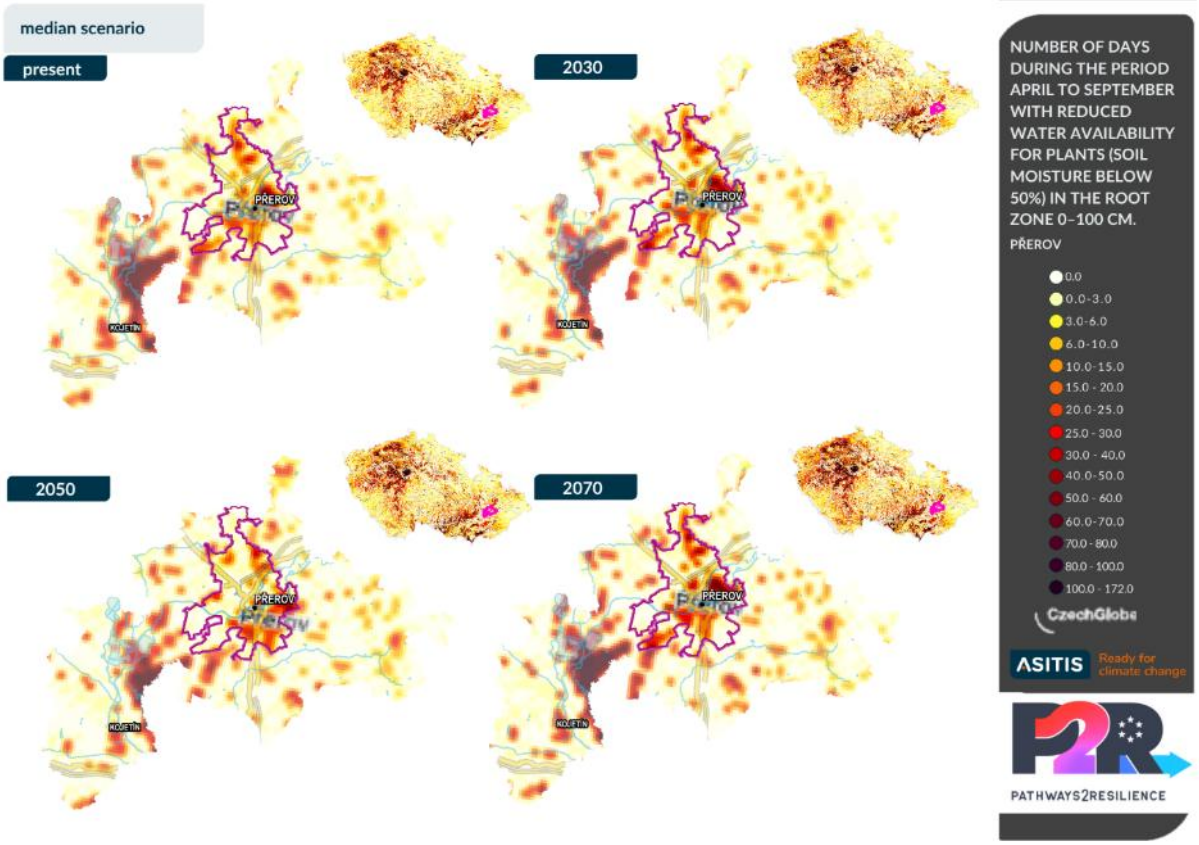
- **Risks of drought impacts on groundwater use for hydrogeological districts -** Specific groundwater withdrawals were analysed in 58 hydrogeological districts, with a tense balance confirmed in many of them, especially where groundwater is used for water supply. Vulnerability was determined based on water availability during droughts and divided into categories ranging from low to critical. It was found that some regions do not have sufficient reserves to cover withdrawals during droughts.
    - The south-western part of the Přerov ORP extends into a potentially risky hydrogeological district, while the remaining part of the ORP is identified as risk-free.

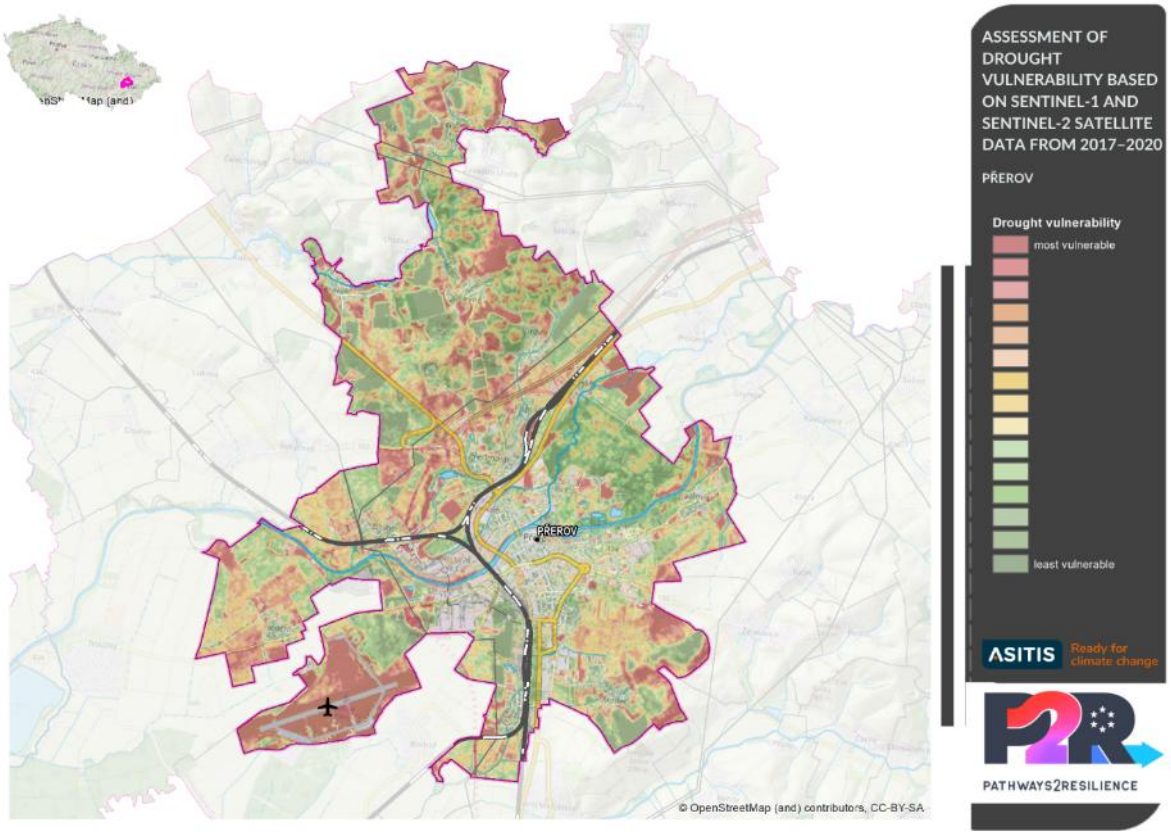


The threat of so-called agricultural drought is assessed on the basis of:

- **Lack of moisture in the root layer of the soil during the growing season –** number of days between April and September with reduced water availability for plants (water content below 50%) in the root layer 0-100 cm:
    - Přerov experiences an average of 4–5 weeks of drought between April and September, when soil moisture in the root zone is significantly reduced. Years with extreme drought are particularly critical, posing a serious risk to agriculture, public greenery and the stability of ecosystems in the region.
    - The length of these dry periods is likely to increase, and the area of crops at risk will also continue to grow.
- **Assessment of drought-prone areas** based on Sentinel 1 and Sentinel 2 satellite data from 2017-2020 (dry years).
    - The highest risk of drought in Přerov occurs in areas with low vegetation cover or intensively mowed lawns, especially in the Přerov Airport area. The meadow around the concrete runway is regularly mowed to a low height and is not

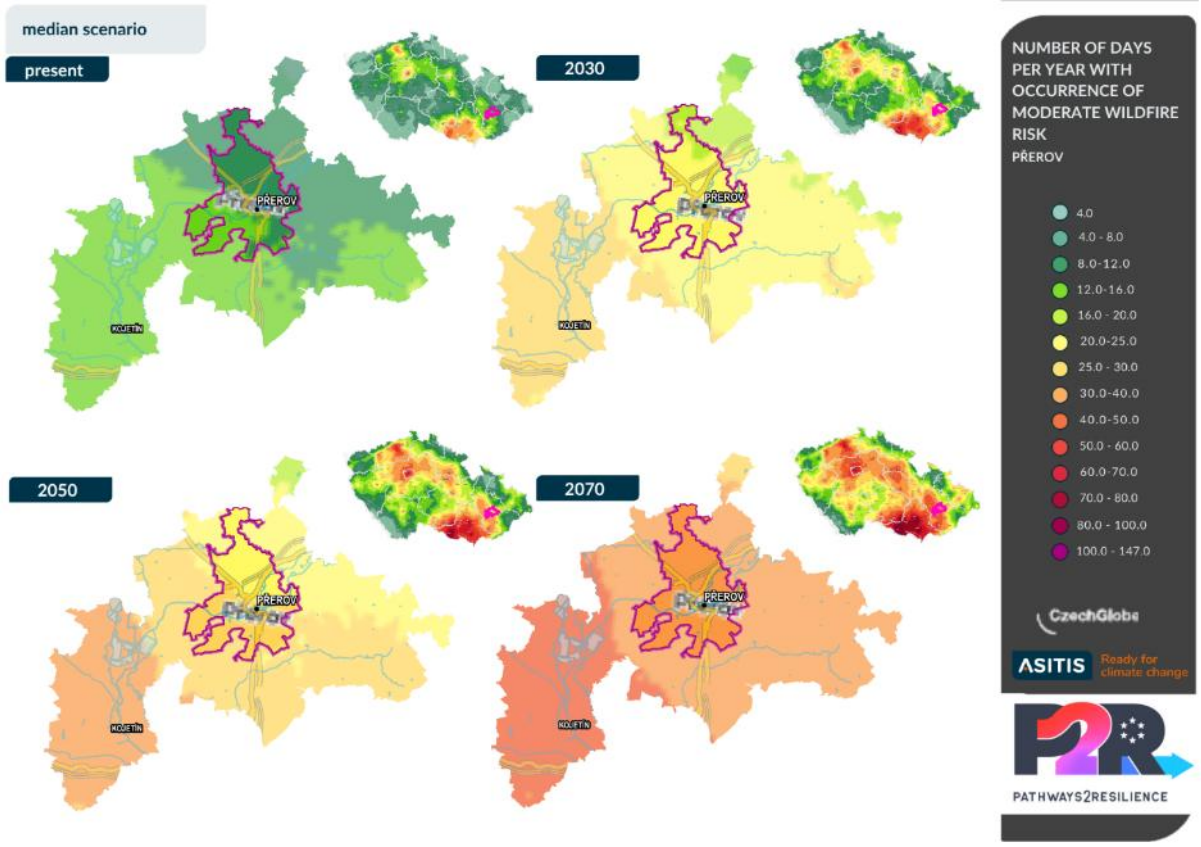
irrigated, which significantly reduces its ability to retain moisture. The adjacent field , also remains extremely vulnerable, although permanent grassland or more extensively maintained meadows would be more suitable here.





2.3.5 Wildfires

- **Number of days per year with occurance of moderate wildfire risk:**
    - Higher temperatures, less rainfall, longer and more intense droughts – these factors lead to a significant increase in the risk of fires, with the average number of days with moderate risk increasing several times over time:



2.3.6 Strong windstorms

- According to data from the Czech Hydrometeorological Institute, **strong wind gusts (over 25 m/s) occur in the Přerov area on average once every 3–5 years**, while weaker gales (15–24 m/s) can occur **1–2 times a year**.
- Extreme wind phenomena (over 30 m/s) are **exceptional** in the Přerov area**, with a return period of 15–30 years**.
- **Spatial variability –** it is not feasible to produce a map showing the risk of windstorms in such detail, but the most vulnerable areas of the city can be described in general terms:
    - Open countryside on the outskirts of the city (e.g. parts of Dluhonice, Žeravice, Penčice) with little mature vegetation.
    - Higher elevations of the city (e.g. Čekyňský kopec, parts of Čekyně and Vinary) with higher exposure to wind gusts.
    - Urbanised parts of the city with a large proportion of prefabricated and flat roofs are vulnerable to wind gusts.

2.4 Adaptation needs

The statutory town of Přerov faces several major climate threats. Among the most serious are **extreme heat** and **heat waves**, which negatively affect the health of the population, especially the elderly and other vulnerable groups. The town is also threatened by **flash floods** and **river floods**, especially in areas near the Bečva River. There is also a significant risk of **hydrological** and **agricultural drought,** which can lead to soil degradation and water supply problems. In some parts of Přerov (e.g. Žeravice, Dluhonice, Penčice, Čekyně), there is an increased susceptibility to **wind** and **water erosion,** which has a direct impact on soil quality and landscape stability. Additional but important risks include **strong winds** and the potential for **fires,** especially during dry periods.

Identified adaptation needs

Based on the above risks, key adaptation needs have been identified for the town of Přerov. First and foremost, it is necessary **to improve the water regime** of the landscape and the city, primarily by restoring the landscape's retention capacity, creating new retention and infiltration elements, and managing rainwater more efficiently. This is linked to the need to restore and protect wetlands, ponds and green areas near built-up areas.

Furthermore, it is necessary **to increase resilience to extreme heat** through the development of urban greenery, planting trees in streets, shading buildings and promoting natural cooling of urban spaces. Special attention should be paid to the application of the 3-30-300 rule: every resident should have a view of three trees, at least 30% tree cover in their neighbourhood and access to public green space within 300 metres of their home.

In the context of overheating of public spaces, it is necessary to invest in the revitalisation of squares, streets and parks, for example by planting greenery, installing water features and providing shade. In addition, **the resilience of urban infrastructure**, in particular the sewerage network, needs to be **strengthened** to cope with extreme rainfall events.

Another important need is **to promote public participation**, including educating residents about climate risks, involving communities in planning and supporting sustainable behaviour. Adaptation measures will only be effective if they are accepted and co-created by the general public.

Sources of information and available resources

The sources used to identify the city's adaptation needs include a combination of climate data (e.g. from the Czech Hydrometeorological Institute, CzechGlobe), satellite analyses (Landsat 8, Sentinel), technical documents (e.g. Přerov Adaptation Strategy, SECAP) and expert estimates. These sources enable the quantification of risks and the design of appropriate measures in accordance with IPCC or EU Mission Adaptation methodologies.

The city of Přerov has several types of resources at its disposal to address adaptation needs. From its own budget, it spends approximately CZK 36 million per year on urban greenery and CZK 5 million on water management. Support can also be drawn from regional and national programmes (e.g. AOPK, Olomouc Region) and European funds, primarily OPŽP, LIFE and Horizon Europe. Private sources are also used, for example in development projects with ESG certification (e.g. BREEAM) or through the involvement of private actors in public space projects.

Adaptation limits

However, the city of Přerov faces several limitations in achieving its adaptation goals. The most significant is **financial constraints** – the estimated needs significantly exceed the city budget, with up to 70% of the required funds needing to be secured from external sources. Another barrier is **the low level of public participation,** the lack of formalised mechanisms for involving citizens' initiatives and the limited capacity of some municipal departments. Technical challenges remain in the form of outdated infrastructure, particularly the sewerage and drainage systems, and the low retention capacity of the urbanised area.

Changing needs over time and uncertainties

With advancing climate change, the city's adaptation needs will continue to grow. More frequent and intense extreme temperatures and precipitation events can be expected, which will increase pressure on green infrastructure, the need for cooling public spaces and the dimensioning of sewerage systems. Uncertainties are related to the speed of climate change, the availability of finance and the city's capacity to implement these changes. Political continuity in the field of climate and access to European funds can also significantly influence the actual implementation of adaptation plans.

2.5 Existing or planned climate risk management and adaptation actions

Level	Policy/strategy/initiative	Objectives and implementation	Sector/focus	Gaps or issues	Private sector actions
Local	Adaptation Strategy of the City of Přerov (2021–2030)	Increasing the city's resilience to climate extremes (drought, heat, torrential rain), integration into spatial planning	Greenery, water, public space	Limited funding and insufficient monitoring of results – link to SECAP	RC EUROPE – Greenery and retention measures in an industrial zone without direct public support
Local	SECAP Přerov	Sustainable energy and climate, including mitigation and adaptation, planned involvement of communities and vulnerable groups	Energy, public buildings, transport, adaptation, energy communities	Insufficient funding and difficult coordination of adaptation and mitigation	IN-HUB Přerov (ICOK) – workshops and support for companies in the area of climate resilience, possibility of electricity sharing
Regional	Adaptation strategy of the Olomouc Region	Water retention in the landscape, support for	Landscape, water, agriculture,	Weak commitment on the part of municipalities,	Agricultural enterprises – erosion control

Level	Policy/strategy/initiative	Objectives and implementation	Sector/focus	Gaps or issues	Private sector actions
		municipalities, blue-green infrastructure	municipalities	low level of coordination	measures in fields with regional subsidy support
National	National Action Plan for Adaptation to Climate Change (NAP Adaptation)	Comprehensive framework for climate change adaptation in the Czech Republic, inter-ministerial approach	Water, health, forests, agriculture, cities	Insufficient links with the local level and low funding	Water management companies – retention reservoirs and infrastructure modernisation
National	Czech Republic's 2030 State Environmental Policy	nd integration of adaptation into state policies	Air, nature, water, landscape	General objectives, lack of specific measures	Zubr Brewery – water savings and green roofs without public subsidies
EU	EU Climate Change Adaptation Strategy (2021)	Transition from planning to implementation, linking science, policy and practice, emphasis on fairness	Public planning, infrastructure, nature, finance	Voluntary implementation, uneven application	European companies in the Přerov–Bochoř strategic zone – adaptation plans in line with ESG without national intervention

2.6 Adaptation objectives

The adaptation objectives of the statutory city of Přerov were set based on a mix of strategic documents (City Adaptation Strategy, SECAP, Olomouc Region Adaptation Strategy, NAP Adaptation) and expert consultations with specialists in water management, landscape planning, and technical services, including urban green space management. The city's priorities in reducing vulnerability to extreme weather events (torrential rainfall, floods, drought, extreme temperatures, strong winds) and the need to improve the quality of life of residents, biodiversity and the retention capacity of the landscape were taken into account.

The process of setting adaptation goals included:

- **An analysis of climate risks in Přerov** (drought, floods, extreme temperatures, wind) using data from the Czech Hydrometeorological Institute (ČHMÚ), SECAP Přerov and AS Přerov.

- **Mapping the vulnerability** of individual parts of the city and identifying vulnerable groups of residents (senior citizens, children, low-income households).

Preparation of a participatory meeting with stakeholders, where selected key stakeholders were approached and their attitudes towards climate resilience were assessed through individual consultations and a questionnaire survey. A large meeting will then take place in June, with the aim of involving stakeholders in the preparation of a shared vision and the development of future scenarios.

3 Regional capacity

3.1 Resilience Maturity Curve

The Resilience Maturity Curve (RMC) is a new model for monitoring, assessment and learning developed by experts from **Pathways2Resilience**. It combines the assessment of four resilience capacities: **the ability to anticipate, adapt, absorb** and **transform.** It recognises that regions and communities may have different levels of resilience maturity. Acquiring these capacities increases the overall resilience of a region. This can be achieved through a range of interventions that address both the immediate and long-term adaptation needs of the region.

The resilience maturity curve is structured on the basis of a self-assessment questionnaire that is consistent with the following points and with the individual steps of the P2R programme, including key enabling conditions and the adaptation investment cycle.

Assessment of the maturity of the city of Přerov

In the P2R self-assessment questionnaire, the city of Přerov ranked **at the lower end of the middle maturity level**. This means that some basic mechanisms and strategies for climate adaptation are in place, but there are significant gaps in their comprehensiveness, connectivity and participatory management.

Of the ten steps in the three-phase methodology, **four** were **identified as areas with low maturity**:

1. **Understand the System**
   – lack of systematic mapping of linkages between sectors and actors
2. **Ensure Ownership and Commitment**
   – insufficient formal anchoring and coordination across levels of government
3. **Explore Possible Futures**
   – the region makes little use of foresight or scenarios for future development
4. **Co-create a Shared Vision**
   – there is currently no shared long-term vision involving the public and partners

The remaining steps were assessed as **moderately advanced**.

Level of maturity in climate resilience investment planning (CRIP – Climate Resilience Investment Plan):

- According to the RMC, the CRIP assessment is **at a medium level** – the city has a basic idea of investment priorities, but needs to:
  - strengthen the identification of funding sources and better structure the investment plan as a comprehensive management tool.

Identified priorities and needs for further development

- **Improving participation** and cooperation with stakeholders
- **Introduction of foresight tools** and future scenarios
- **A shared vision of adaptation** for the region with broad support
- **Increasing resilience to extremes**: overheating, floods, drought
- **Improving financial preparedness** for the implementation of adaptation measures

- **Introduction of a system for monitoring and evaluating progress**

3.2 Role of key enabling conditions

Here is a detailed overview of selected **Key Enabling Conditions (KEC)** as assessed by the city **of Přerov** within the **P2R** programme. Each item includes **current practices**, identified **gaps** and potential **opportunities for development**.

Knowledge and data	
Current work	The city draws information from national databases (e.g. Intersucho, ČHMÚ), uses basic monitoring and has data from Analyses for AS and SECAP at its disposal.
Gaps	Low localisation of data, lack of a shared data platform between the administration, citizens and research. Lack of systematic analyses of the impacts of climate change on the city.
Opportunities	Establishing cooperation with universities, creating a city data portal, more intensive use of geodata and remote sensing for monitoring greenery (e.g. application of the 3-30-300 rule, soil monitoring, droughts, etc.).

Capabilities and skills	
Current work	Some departments have technical capacities within their remit
Gaps	Insufficient knowledge in the areas of system planning, climate risk analysis, or evaluation of measures. There is a lack of training and methodological support, and interdisciplinary coordination needs to be supported.
Opportunities	Systematic training of officials and key actors, introduction of adaptation methodologies for individual departments, cooperation with the research sector.

Behavioural change	
Current work	Some awareness-raising activities are underway (e.g. public campaigns on water conservation).
Gaps	Lack of strategic communication aimed at supporting behavioural change in the area of adaptation (e.g. households, businesses). Weak link to citizens' motivation to get involved.
Opportunities	Development of behavioural interventions, motivational campaigns (e.g. sustainable consumption, blue-green infrastructure), participatory pilot projects, involvement of vulnerable and at-risk groups.

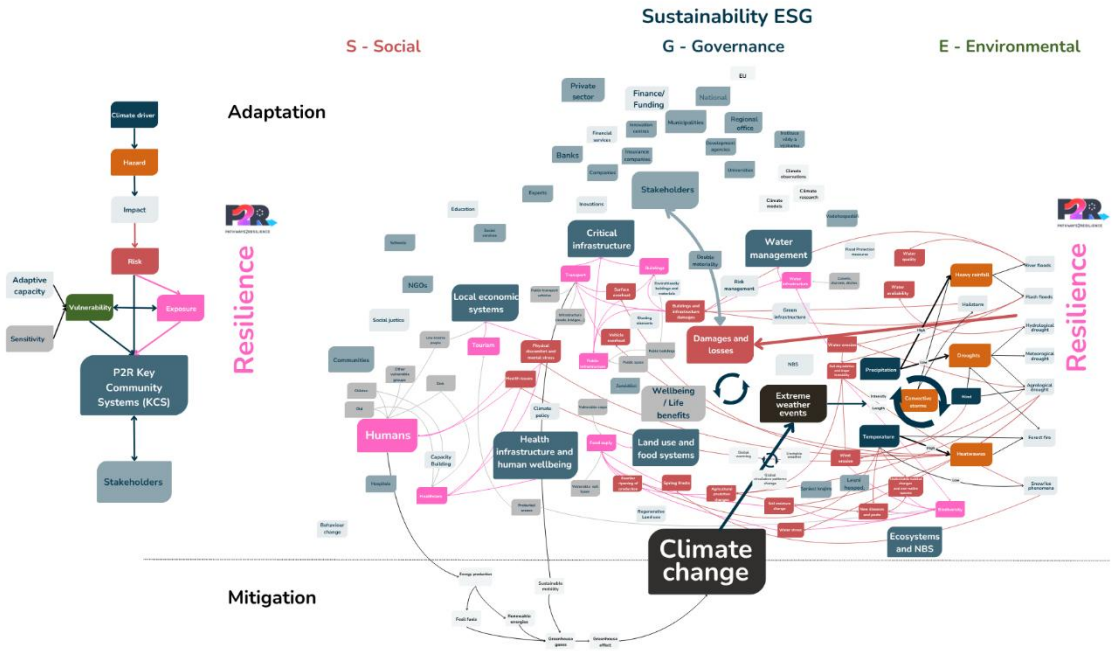
Experimentation, strategic learning and reflective adjustment	
Current work	Individual pilot projects (e.g. revitalisation of natural features) are underway but are not systematically evaluated.
Gaps	Feedback cycles, documentation of experiences and sharing of know-how are lacking. Adaptation is not perceived as an iterative process.
Opportunities	Introduction of experiment-reflection-adaptation cycles, learning from pilot projects, publication of case studies, benchmarking with other cities.

4 Systems and stakeholder mapping

4.1 Systems map

Key system/subsystem	Barriers	Opportunities
Water management	Flood protection of the Bečva River and smaller watercourses; ageing sewerage system; low utilisation of blue-green infrastructure in the city and agricultural landscape.	Development of NBS; OPŽP, LIFE, SFŽP; nature-based measures on the Bečva River and in the surrounding landscape.
• Flood and erosion control measures	Limited finances; complications with property rights for small watercourses.	Improvement of retention, synergy with nature conservation, restoration of river branches.
• Blue-green infrastructure	Low integration into the city's spatial plan and investment priorities.	Improvement of microclimate, water retention in built-up areas, reduction of heat islands.
• Water management structures	Outdated WWTP and sewerage technologies.	Modernisation, smart management, renewable energy sources for operation.
Critical infrastructure	Vulnerability of schools, hospitals, transport and engineering networks to flooding, heat and wind.	Climate-friendly modernisation, smart urban solutions.
• Public infrastructure	Insufficient shading, low retention in residential areas, urban heat islands.	Funding from NPOs and OPŽP, public participation.
• Construction	Lack of adaptation standards in renovations.	Sustainable materials, rainwater, green roofs, environmentally friendly public procurement.
• Transport	Vulnerability of roads during heat waves and heavy rainfall; overheating of vehicles.	Development of cycling, transport hubs, green stops, air conditioning in public transport vehicles.
• Energy	Dependence on supplies; overhead power lines.	Community PV systems, energy communities, storage, network modernisation.
• Other	Low resistance to flooding and wind.	Modernisation and decentralisation of resources.
• Digital infrastructure and data	Poor utilisation for climate monitoring.	Weather sensors, city climate dashboards.
Local economic systems	Low diversification, vulnerability to drought.	Support for green jobs, ecotourism, development of cycling tourism.

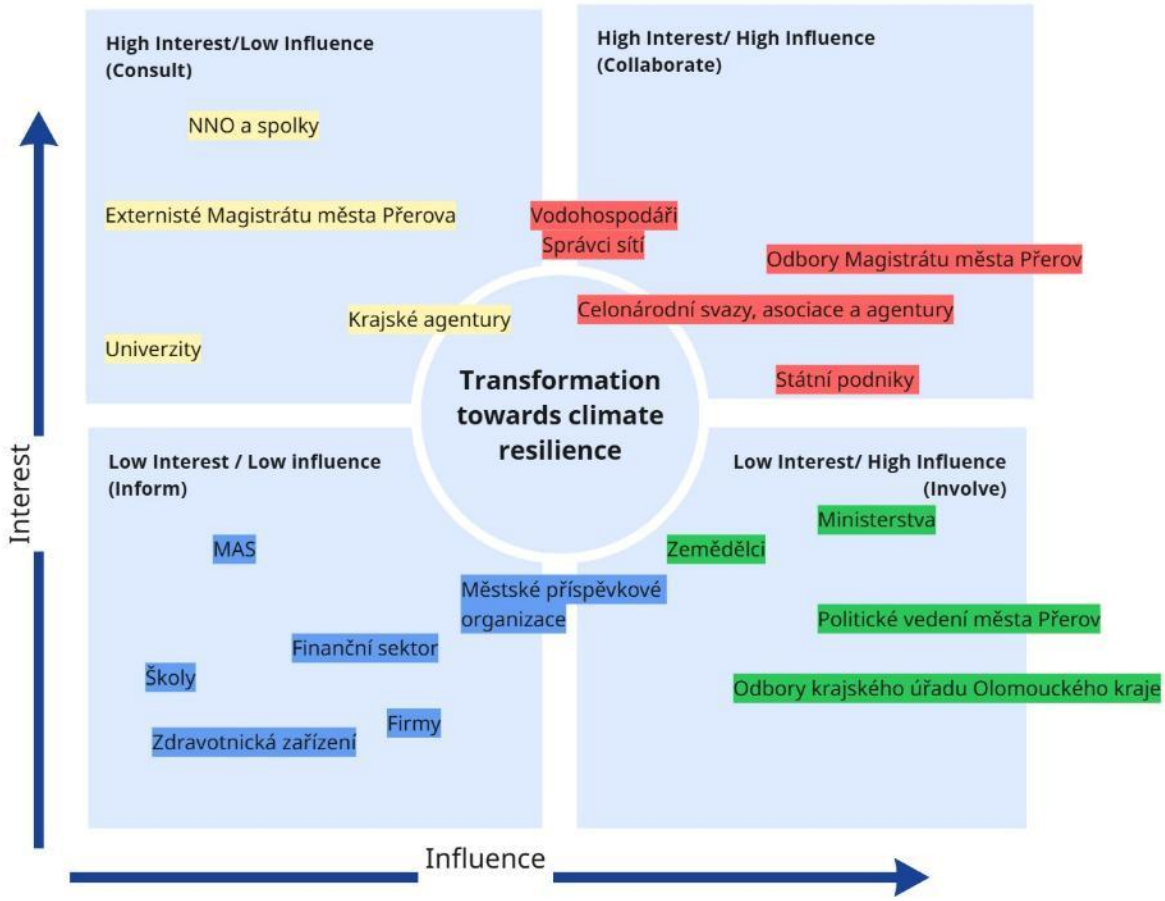
Key system/subsystem	Barriers	Opportunities
• Tourism	Weather dependency; overheating of the city centre.	Development of nature-friendly recreational areas (Žebračka, Bečva).
• Industry and manufacturing	Energy intensity of operations. Threat to water sources for production.	Energy savings, use of renewable energy sources in companies, rainwater retention,
• Innovation and green transformation	Insufficient use of innovation for climate.	Cooperation with universities and start-ups.
Health infrastructure and quality of life	Low resilience to heat and floods; vulnerable groups.	Cooling zones, emergency plans, awareness raising.
• Crisis management	Lack of scenarios for combined threats.	Coordination between city departments, training.
• Behavioural change	Low public involvement in adaptation.	Involvement of schools, community projects.
• Vulnerable groups	Senior citizens, children, socially disadvantaged people.	Evacuation plans, warning systems, social services.
• Social cohesion and communities	Differences between urban and rural areas.	Community plans, participatory planning.
Land use and food production	Erosion, soil degradation, drought sensitivity.	Green belts, agroforestry, water retention.
• Agriculture	Dominance of traditional crops, dependence on weather.	Crop diversification, irrigation, organic farming.
• Forest management	Drought, bark beetles.	Restoration and diversification of forest stands.
• Food	Low local self-sufficiency.	Support for local production and processing.
• Urban planning and spatial planning	Adaptation not anchored in spatial plans.	Update of spatial plans with adaptation, blue-green infrastructure.
Ecosystems	Landscape fragmentation, biodiversity loss.	Restoration of biocorridors, support for biodiversity, NBS.
• NBS	Weak implementation in the city and landscape.	Integration into municipal investments; synergies with recreation.



4.2 Needs and roles of stakeholders

Stakeholder group	Key system(s)	Level	Needs	Contribution potential	Vulnerable group	Engagement status
City management	All KCS – strategic management	Local	Coordination, political consensus	Approval and enforcement of strategies	-	Informed by the mayor and involved deputy mayors
Departments of the Přerov City Council	All KCS according to their competences	Local	Data, capacities, financing, support from city management	Project coordination and implementation	Socially vulnerable groups	Actively involved departments SMKS, investments, strategic development
External experts of the Přerov City Council	All KCS according to projects	Local	Contractual arrangements, financing of work	Expert support, project capacities	-	Consulted, involved in the preparation of the P2R baseline report
Municipal contributory organisations	Critical infrastructure, health	Local	Financing, coordination	Implementation of specific measures (greenery, water, education)	-	Consulting (TS Přerov, cultural facilities)
Departments of the Olomouc Regional Authority	Water management, critical infrastructure	Regional	Strategy coordination, financing	Synergy with regional projects	-	Informed, invited, no interest or further involvement at this stage
MAS	Land use, water management	Local	Financing, methodological support	Sharing good practices, implementation of measures	Rural communities	Contacted, no further involvement yet, outside the city limits
Regional agencies	Innovation, local economy	Regional	Involvement in financing, cooperation	Project support, networking	-	Approached, interest in cooperation (e.g. ICOK)

Stakeholder group	Key system(s)	Level	Needs	Contribution potential	Vulnerable group	Engagement status
Ministries	Water management, nature conservation	National	Legislative framework, subsidy titles	Support and approval of strategic measures	-	Informed by the Ministry of the Environment, participation in consultations (Ministry of the Environment)
State-owned enterprises	Water management, ecosystems	Regional/national	Coordination, legislation	Watercourse management, support for NBS	-	Invited (Morava River Basin Authority, Lesy ČR, SPÚ ČR)
National associations, federations and agencies	Local economic systems, agriculture	National/regional	Methodologies, legislative framework	Dissemination of good practice examples, influencing legislation	-	Informed, potential for consultation
NGOs and associations	Ecosystems, social cohesion	Local	Financing, capacities	Awareness raising, community projects	Yes, communities	Invited and involved (Association for Přerov, Our Common Landscape, No, It's Possible, Přerov, Predmontenzis)
Utilities etworks administrators	Critical infrastructure	Local/regional	Investment in modernisation	Ensuring network resilience	-	Contacted (VaK Přerov, ČEZ distribuce), interest in cooperation
Universities	Innovation, water management	Regional	Links to practice, research	Scientific and professional support	-	Approached (VŠLG)
Schools	Health, education	Local	Support for adaptation programmes	Education for adaptation, involvement of pupils	Children	Partially involved, approached, possibility of pilot awareness-raising activities
Healthcare facilities	Health and well-being	Local	Coordination, know-how	Awareness raising, crisis preparedness	Seniors, sick	Approached for involvement, but no significant involvement yet
Farmers	Land use and food production	Local/regional	Motivation, know-how	Adaptation of farming to drought	Rural communities	Engagement, varying degrees of involvement
Companies	Local economic systems, energy	Local/regional	Motivation, legislation, subsidies	Green innovation, emission reduction	-	Approached (Meopta, EMOS PSP, PRECHEZA), varying degrees of interest
Financial sector	Local economic systems	Regional/national	Overview of projects, return on investment	Financing of adaptation projects	-	Approached, limited synergy so far



4.3 Local champions

- **Přerov city administration**
  - Provides **political support** and active participation of the mayor and deputy mayors for the environment.
  - Supports the integration of climate resilience into the city's strategic and investment plans.
- **Departments of the Přerov City Council**
  - The departments involved (in particular the Department of Property Management and Municipal Services) provide **human and technical resources**.
  - They participate in the design and implementation of measures in the areas of water management, urban greenery, adaptation of housing estates and spatial planning.
- **Technical Services of the City of Přerov (TSMP)**
  - They ensure **the practical implementation** of selected measures: maintenance of green spaces, restoration of parks, care for water features.
  - They cooperate in the implementation of measures in public spaces and city districts.
- **Morava River Basin Authority**
  - Partner for **river revitalisation, runoff management and controlled retention**.
  - Shares data, provides expert consultations, participates in the planning of water measures (e.g. flooding of old river branches in the Žebračka National Nature Reserve).

- **NGOs and associations**
  - Focus on **ecosystems and social cohesion** in the city.
  - They contribute **in terms of capacity, expertise and community**: education, community events, proposals for improving public spaces and the open landscape.
  - The following were invited and involved in particular: **Spolek pro Přerov, Naše společná krajina, Ne, jde to Přerov, Predmontenzis**. They actively participate in participation and the collection of ideas.
- **Agency for Nature Conservation and Landscape Protection of the Czech Republic (AOPK ČR)**
  - Expert partner for nature conservation and planning in protected areas.
  - Provides methodological support, data on natural values and proposals for measures to support biodiversity and ecosystem services.
  - Involved in consultations concerning the Žebračka National Nature Reserve, biocorridors and landscape restoration in the vicinity of Přerov.

5 Governance

The town of Přerov does not have a specialised unit (organisational unit, department or division) within its administrative structure that would specifically deal with climate change adaptation. The environment, in terms of investment and public green space management (planting, maintenance, expansion of green infrastructure, etc.), is the responsibility of **the Property and Municipal Services Department**, the Other Property Management Division, which is also the leader of the P2R project. The Building Authority and Environment Department is responsible for supervising the quality of the environment, dealing with climate in the context of air protection, nature, water management and agriculture. It issues opinions on environmental protection, bans and permits, and handles other administrative matters.

Three other organisations are involved in improving the environment in the area in question:

- The Agency for Nature and Landscape Protection (AOPK), which has nationwide jurisdiction and deals with the strengthening of natural and near-natural ecosystems
- Predmostenzis z.s., which operates locally and deals with nature and landscape protection, EVVO
- Naše společná krajina z.s., which operates locally and deals with biodiversity in the agricultural landscape, EVVO

The main coordinator of the P2R project for the city of Přerov is **the Department of Other Property and Municipal Services**, which organises joint meetings. Support for the P2R project within the city's policy is the responsibility of the deputy mayor.

5.1 Multi-level governance context

The model of regional administration is based on two pillars. One is the expertise of municipal employees, both in state administration and local government, who provide input and suggestions to the city's political leadership (through communication in the performance of their assigned duties and through budget proposals). The other is the political leadership itself, which decides which activities will be supported from the city budget. Representatives of the non-profit sector, citizens and, where appropriate, private (commercial) entities turn to this management structure with their suggestions and requests.

Local governance structure and framework

The management of climate and resilience measures has not yet been established. Its implementation and the introduction of measures are governed by applicable legislation or the initiative of city employees or political leadership. In practice, this means that as soon as a new obligation is introduced into legislation, e.g. to infiltrate rainwater during the reconstruction of car parks, the preparation of investment projects of this nature will commence in accordance with the new rules on the date of entry into force of the new legislation. Within the budget, it is also possible for city employees to take their own initiative, but this must not exceed the approved budget and must be approved by the head of the department and often also by the city's political leadership.

Current management structure: The city does not have a position, department or division responsible for managing, monitoring and implementing adaptation measures. In relation to investments, the internal regulations of the organisation determine which department is responsible for the investment.

Repairs and maintenance of municipal property are the responsibility of the Property and Municipal Services Department (MAJ), while the construction of new buildings and investment in new projects are the responsibility of the Project and Investment Management Department. After completion of a new building, the acquired property is transferred to the MAJ department for maintenance. The same applies to development projects, which are supervised by the city and, after construction, the public infrastructure is transferred to the MAJ department.

Greenery and environmental activities are handled in the same way. These are administered by the Building Authority and Environment Department. The Environmental Protection and Heritage Department and the Water Management and Agriculture Department are most involved in this area.

Responsibility: No specific department or person is directly responsible for climate change adaptation policy. At a general level, the agenda falls under the Department of Environmental Protection, and at a political level under the Deputy Mayor, Ing. Miloslav Dohnal (area of property management, municipal services and property matters, including the rental of city-owned flats and the environment).

Barriers and challenges to adaptation: The biggest obstacle to incorporating green infrastructure into built-up urban areas is technical networks (electricity, gas, water and sewerage systems, fibre optic cables) and their protective zones, which severely limit tree planting. In the countryside, the problem is fragmented land ownership and the willingness of owners to exchange or sell their land or part of it. This is also related to a lack of personnel on the part of the city, which is hampered by limited financial resources, as existing funds are earmarked exclusively for the management of public assets, meaning that there are no funds available to hire additional staff to deal with adaptation issues. The second problem is the implementation of measures (biocorridors, biocentres, protective greenery, etc.) within the territorial system of ecological stability (ÚSES). Subsidies for the implementation of measures can only be applied for if the entire amount for implementation (100%) is allocated in the city budget. However, allocating this amount (in the range of millions to tens of millions of CZK) would eliminate plans for other activities or investments that are given priority. Therefore, subsidies for the city are more distant than they could be if it were sufficient to allocate, for example, only 30% of the estimated cost of the proposed adaptation measures in the city budget.

Engagement of non-governmental stakeholders

The statutory city of Přerov has not entered into any partnerships to address common challenges such as climate change adaptation, and non-governmental organisations (e.g. civil society, academia) and the private sector are not directly involved in identifying climate change adaptation needs and objectives.

Mechanisms for involving citizens in joint planning, decision-making and the development of adaptation measures have not been established. The city only regularly organises public hearings on the revitalisation of housing estates and inner courtyards, in which city residents and other entities can participate and express their views on proposed solutions or plans for the revitalisation of green spaces, playgrounds, the location of waste containers, etc.

In the case of more significant revitalisation of the area, such as the creation of a leisure area for city residents and visitors, or when developing strategies related to the lives of city residents, such as the City Mobility Plan, residents are invited to submit their suggestions on the matter to the local government. Comments and suggestions are then evaluated and incorporated as far as possible. A questionnaire survey was conducted on the city's strategic

plan, and feedback is also obtained through surveys carried out within the MUNIPOLIS system, which is used to inform citizens about events and life in the city in electronic form (e-mail, SMS, app).

Alignment of Pathways2Resilience deliverables with formal procedures and plans

There are no regulations governing the harmonisation of P2R outputs with formal procedures and plans, nor are there any specific institutions or organisations whose opinion would be necessary for the finalisation of P2R outputs . For this reason, it is not necessary to allocate any time in the project schedule for comments on the P2R project.

As part of normal processes, comments and additions to information, suggestions or ideas will be addressed by staff from the Property and Municipal Services Department, the Project and Investment Management Department, the Environmental Protection Department and the Concept and Strategic Development Department.

The final P2R document will be approved by the Přerov City Council.

6 Monitoring, evaluation and learning (MEL)

The strategic and conceptual documents of the statutory city of Přerov are used on an ad hoc basis, without a uniform evaluation system. The involvement of external entities and experts is unsystematic and depends on the specific topic. The implementation of activities from the concepts depends on the voluntary initiative of municipal employees, who can propose them during the preparation of the budget. The city's political leadership decides on their inclusion in the budget in cooperation with the Department of Economy.

Many strategies include an action plan (AP), whose projects are continuously reviewed; unimplemented activities may be carried over to subsequent years or modified. Monitoring of the Climate Change Adaptation Strategy 2021–2030 will not be carried out separately – the city considers it part of the SECAP. Although some documents contain proposals for indicators and monitoring methods, their use is not consistent.

Strategy with action plan (AP)	AP period	Evaluation plan	Evaluation indicators	Evaluation (year)	Proposed responsibility	Actual responsibility
Strategic Development Plan for the City of Přerov for 2021–2027	2023	The period is determined by the city council	yes, degree of fulfilment	2022	City Council	City Council
Adaptation strategy of the city of Přerov to climate change for the period 2021–2030	2021	Approved once a year by the city council	Yes, detailed	Will not be implemented	Department of Concept and Strategic Development	Not specified
Action Plan for Sustainable Energy and Climate of the City of Přerov (SECAP Přerov)	2022	every 2 years reporting, templates	yes, detailed	2024	Department of Concept and Strategic Development	Concept and Strategic Development Department
Sustainable Urban Mobility Plan for the City of Přerov for the period 2024–2027	2023–2025	after the expiry of the current AP	yes, degree of fulfilment	2023	not specified	not specified
Housing concept of the statutory city of Přerov until 2035, project pipeline	2025	not set	yes, degree of fulfilment	2028	not determined	not specified
Medium-term plan for the development of social services in the Přerov region for the period 2025–2028	2025	Once a year, initiated by the SPRSS steering group	yes, degree of fulfilment	2026	Department of Social Affairs and Education	Department of Social Services and Housing
Local Action Plan for Education Development II in the Přerov Municipal District, Strategic Framework for the MAP until 2025 for the Přerov Municipal District, 11th update	2024	Once a year, initiated by the MAP steering committee	Yes, for each destination	2021	MAP Steering Committee	MAP Steering Committee

7 Finance

7.1 Budgetary process

The following is the standard approach applied by the city of Přerov in the creation and approval of revenue and capital expenditure and their relationship to the public finance management process:

- The city departments (administrators of individual budget chapters) prepare an overview of transfers and regular annual movements and submit it to the Economic Department.
- The economic department prepares a draft of the revenue side of the budget and sets budget expenditure limits for individual departments and its own contributory organisations (p.o.).
- Department heads and directors of contributory organisations submit a draft of the expenditure side of the budget to the economic department in accordance with the prescribed limits, refine the revenue side of the budget in line with the expected performance of the current budget, and submit the documentation for the preparation of the medium-term outlook.
- The budget shall be discussed between the economic department and department heads (including contributory organisations) with the participation of the city management and, where applicable, members of the finance committee.
- Discussions will be held with the management of the statutory city.
- Discussions will be held in the finance committee
- A public discussion of the draft budget will take place at a joint seminar of members of the city council, city management, the finance committee, department heads, the director of the city police and the directors of public institutions.
- Discussion in the Přerov City Council and proposal for approval in the Přerov City Assembly (ZM)
- Publication of the draft budget 15 days before discussion in the ZM.
- Discussion and approval by the Přerov City Council

The budget is linked to **the medium-term** budget **outlook** for the following two years, which is compiled on the basis of data from individual departments and organisations. The draft outlook is submitted to the City Council for approval at the same time as the draft budget.

During the year, the budget may be adjusted in terms of both revenue and expenditure **by means of a budget amendment**. The draft amendment is prepared by the city departments and discussed with the economic department and the city's political representatives.

7.2 Revenue and capital investment process

Municipal investments

Proposals for the revenue section of the city budget for the relevant section/chapter and for the expenditure section are prepared by the department responsible for the relevant proposal in cooperation with employees of the finance department. The current revenue and expenditure budget is proposed by the finance department, while investment expenditure is proposed by the relevant department within the financial limits set by the finance department. After consultation with the city's political leadership, the capital investment budget is refined and then approved by the city council (see **budget process 7. 1)**. The preparation of the city of

Přerov's budget for the following year and the two-year medium-term outlook takes place between September and November of the previous year.

Other investments

Other options for investment in adaptation measures in the area in question include investments by non-governmental non-profit organisations, including volunteer activities through state subsidies. One such organisation is the Nature and Landscape Protection Agency.

Another option is investment through the Land Office in the implementation of so-called joint facilities as part of comprehensive land consolidation.

Private commercial entities and individuals managing their own property can and, to a certain extent, do participate in investments in adaptation measures.

Complete data on the amount and scope of these other investments are not available. The following information is missing:

- Place/organisation/institution where such information would be concentrated/collected
- Statistics and records

7.3 Budget envelope

This chapter presents **an indicative public financial framework** that is likely to be available to support the implementation of **the climate resilience strategy and action plan of the city of Přerov** during the investment plan period. This is not a total estimate of adaptation costs, but a summary of **expected public expenditure** that may contribute to the implementation of adaptation measures. The data is based on budget forecasts, available grant instruments and already approved projects:

Scenario (thousands of CZK)	Year 1	Year 2	Year 3	Year 4	Year 5
Upper	**65,192**	**66,496**	**67,826**	**69,183**	**70**
Central, of which:	**62,088**	**63,330**	**64,596**	**65,888**	**67,206**
Communications and pavements	**45,888**	**42,000**	**38,000**	**48,000**	**47,000**
Water management and sewerage	**7,600**	**8,000**	**8,596**	**9,000**	**9,000**
Public spaces and greenery	**8,600**	**13,330**	**20,000**	**8,888**	**11,206**
Lower	**59,131**	**60,314**	**61,520**	**62,751**	**64,006**

The upper scenario assumes a 5% increase in the city's revenues as a result of obtaining subsidies for some of the planned events, economic growth and the expansion of event preparations during the budget year.

The lower scenario assumes that the City of Přerov will not always be able to implement all budgeted activities at the relevant cost level in the given calendar year. The estimated costs are reduced by 5%. Part of the planned orders for the given year will be carried over to the following calendar year.

7.4 Costs of climate change and near-term investment needs

In the past, the City of Přerov has had to deal with the consequences of extreme weather events such as floods, torrential rains, strong winds and heat waves. Precise data on the costs of dealing with these consequences over the last 30 years are not publicly available. Only an overview of insurance claims for damage to municipal property for the years 2020–2024 is available.

The city is taking steps to adapt to climate change and prevent damage caused by these phenomena. On 6 September 2021, the Přerov City Co**uncil (ZM) approved the " y Strategy of the City of Přerov for Climate** Change for the period 2021–2030", which brought specific proposals to mitigate the impact of climate change on the quality of life of the city's inhabitants. Subsequently, on 7 February 2023, the ZM approved **the "Action Plan for Sustainable Energy and Climate (SECAP),** which updated the adaptation strategy and brought proposals for energy savings in connection with measures to reduce CO_2 emissions by 40% by 2030. The proposed SECAP measures included:

- Increasing the energy efficiency of buildings.
- Promoting the use of renewable energy sources.
- Developing green infrastructure to improve the microclimate.
- Measures to improve rainwater management.

With the gradual implementation of the proposed measures, the financial dimension of the costs that will need to be incurred to mitigate the effects of climate change, including the necessary future maintenance to ensure the continued effectiveness of these measures, is slowly becoming apparent.

Financial impacts of historic weather events

In the past, the town of Přerov has repeatedly faced extreme weather events, especially floods, which have caused significant material damage. Precise financial data on all historical events are not always publicly available, but some significant events and their impacts can be approximated:

- **Floods in 1997:** In July 1997, Přerov and the surrounding area were hit by devastating floods, which were among the worst in the history of the Czech Republic. In Přerov, the Bečva River reached record levels, leading to extensive flooding of urban areas. The damage was estimated at hundreds of millions of crowns, with dozens of homes, infrastructure and municipal property damaged.
    - **Flood control measures:** In response to recurring floods, the city invested in flood control measures. In 2022, a major flood control project was completed at a cost of over CZK 70 million. These measures include protecting city districts and infrastructure from flooding and aim to minimise future damage caused by floods.
- **Flash floods in 2024:** In June 2024, flash floods hit the Přerov region, causing extensive damage in several municipalities. Torrential rains led to a rapid rise in local river levels, resulting in the flooding of homes, roads and agricultural land. The damage was estimated at millions of Czech crowns, with both private and public property damaged.

Economic impact of extreme weather: According to analyses by the International Chamber of Commerce (ICC), extreme weather caused global damage of approximately two trillion dollars (approximately 47 trillion Czech crowns) between 2014 and 2023. These events have significant economic impacts, which are also felt at the local level, including in the city of Přerov. However, there is no systematic record of these events in the city.

Despite investments in flood control measures and prevention efforts, the city of Přerov remains exposed to risks associated with extreme weather events. Continued adaptation to climate change and the implementation of further preventive measures are key to minimising the future financial impact of these events.

An overview of damage to municipal property in connection with insurance claims over the last five years is available. The table below shows the insurance company's payouts and the city's co-payment for each year.

Year	2020	2021	2022	2023	2024	Total
Insurance company payments (CZK)	330,565	407,243	407,993	134,208	485,805	1,358,571
City contribution (CZK)	10,000	110,000	55,000	11,000	41,000	227,000

The damage was mainly caused by torrential rain (flooding of cellars, water seeping into buildings), wind (a tree falling on a railing, a roof window torn off, damage to roofs) and snow (water seeping in).

Other current damage to municipal property in connection with the floods in September 2024, which has not yet been settled with the insurance company, is as follows

Event	Date	Main impacts, repairs	Costs (CZK)
Public lighting	September 2024	Switchboard, circuit breakers, inspection	50,000
Fitness trail	September 2024	Coating, repair of impact area, replacement of rope, cleaning	36,200
Children's playground	September 2024	Replacement of acacia boat element, sandpit fencing, levelling of terrain.	1,070,000
Cycle path	September 2024	Renewal of the embankment along the cycle path from Bezručova Street to Laguna.	200,000

Costs of climate change (inaction)

Currently, there are no estimates available for the costs of climate change impacts in the coming years for the area in question.

We can estimate that the flood protection measures recently implemented in the Bečva riverbank zone will help to significantly reduce the costs of dealing with the consequences of hydrological extremes in the future.

The risk of drought in urban areas is reduced by measures that allow for greater rainwater infiltration, e.g. during the reconstruction of car parks. In the future, it will be beneficial for the city to implement measures that strengthen water drainage from roads into green areas.

The city reduces the risk of heat waves by planting trees (shade, cooling). The costs of maintaining tree vitality are already higher than in the past. This is due to a higher percentage of dead trees and the costs of irrigation bags. The costs of tree care will increase in the future. To ensure the vitality of trees in urban environments, it will be necessary to create sufficient root space using structural substrate, which already makes planting more expensive today.

Existing adaptation funding and financing

7.5 Strategic sources, instruments and barriers evaluation

Sector	Item	Amount (in million CZK)	Period	Public/private	Benefits	Source
City of Přerov	Green space maintenance – city	33 million CZK	year	public	Greenery vitality	City budget
City of Přerov	Investment in greenery	6 million CZK	year	public	Expansion of green spaces	City budget
City of Přerov	Subsidy support for NGOs	1.2 million CZK	year	public	Care and expansion of green spaces	City budget
City of Přerov	Water management	5 million CZK	year	public	Adaptation for rainwater management	City budget
City of Přerov	Sewerage	3 million CZK	year	public	Adaptation to flash floods	City budget
City of Přerov	Communications	50 million CZK	year	public	Adaptation to hydrological extremes	City budget
region	Environment	0.2 million CZK	year	public	Support for adaptation through NGO activities	Regional budget
AOPK	Compensation PR	3.2 million CZK	year	public	Green vitality	State budget
Private entities	Unknown	-	-	-	-	-

7.5.1 Existing sources and instruments

Existing (annually recurring) resources

Source (whose pocket):	Purpose	Approximate amount of funds
Sector: public, category: Regional and sub-national government entities, subcategory: Regional government		
Olomouc Region	Grant support for environmental protection	0.2 million CZK
Sector: public, category: Regional and sub-national government entities, subcategory: Local municipalities		
Statutory City of Přerov	Care for the appearance of the municipality and public green spaces	CZK 36 million
Statutory City of Přerov	Investment in green infrastructure	6 million CZK
Statutory City of Přerov	Investment in blue infrastructure	5 million CZK
Statutory City of Přerov	Subsidy for EVVO	CZK 1.2 million

One-off resources used in the past (beyond the scope of annually recurring resources) – indicative list

Subcategory	Source	Purpose	Approximate amount of funds
Sector: public, category: European institutions			
Norway, Norwegian Financial Mechanism 2014–2021	Norwegian Funds	Improvement of microclimatic functions in the areas of Na hrázi and Sokolská streets	CZK 5.5 million
Sector: public, category: Public entities at national level			
State-owned enterprises	State Environmental Fund	Improvement of microclimatic functions in the areas of Na hrázi and Sokolská streets	CZK 1 million
State-owned enterprises	State Environmental Fund	Rainwater retention at the municipal cemetery in Přerov	3.5 million CZK
State-owned enterprises	State Environmental Fund	Replacement of impermeable surfaces with permeable ones in the car park on Jižní, Jasínkova and Interbrigadistů streets	Millions of CZK
Government agencies	Nature and Landscape Protection Agency	Restoration of ponds in wetland areas in the cadastral area of Popovice u Přerova in the Žebračka National Nature Reserve	7 million
Sector: public, category: Public entities at national level			
State-owned enterprises	Morava River Basin Authority	Flood protection for the town, project: "Bečva, Přerov – flood protection above the weir – phase II"	CZK 70 million
State-owned enterprises	Morava River Basin Authority	PD "Bečva, Přerov – flood protection for the town above the weir – phase II". Implementation of measures for nature conservation and adaptation to climate change	CZK 1 million
Sector: public, category: Regional and sub-national government entities			
Local municipalities	Statutory city of Přerov	Investment in blue-green infrastructure	CZK 8 million
Sector: private, category: Individuals			
Direct	Citizen	Tree planting	0.01 million CZK
Sector: third sector, category: Non-governmental organisations			
Non-governmental organisation	Our Shared Landscape	Care for greenery in the landscape	0.05 million CZK
Non-governmental organisation	Predmostenzis z.s.	Care for greenery in the landscape	0.05 million CZK

This year, the section of the D1 motorway (Říkovice – Přerov) will be completed, which will partially affect the area of interest. Construction is proceeding in accordance with applicable legislation, which includes requirements for zoning decisions, building permits and final approval, including adaptation measures in response to ongoing climate change – to preserve drainage conditions in the area, manage rainwater, plant greenery (trees, shrubs), etc.

The costs of these relevant buildings are based on current legislation and are not part of the path to resilience (P2R).

Existing tools

Category	Subcategory	Purpose	Indicative amount of funding
Taxation	Budgetary allocation of taxes	Investment in MZI	10 million CZK
Taxation	Budget allocation of taxes	Contribution to NGO projects for the care and expansion of green spaces in the countryside and non-financial support for NGOs	CZK 0.8 million
Tax	Participatory budget	Contribution to projects for the care and expansion of green spaces in the countryside and to the non-financial performance of NGOs	CZK 1.2 million
Tax	Property taxes	Maintenance of property, especially municipal infrastructure	CZK 20 million
Risk mitigation	Insurance	Insurance of Přerov municipal property	CZK 5 million
Recording land value	Property and land tax	Investment in municipal infrastructure	CZK 1 million
Non-financial instruments	Subsidies	Compensation for loss of income from forest management in a nature reserve	CZK 3 million
Non-monetised inputs	Time (work)	Volunteer work	0.2 million CZK
Non-monetised inputs	Time (management)	Volunteer work	CZK 0.02 million

One-off tools used in the past

Category	Subcategory	Source	Purpose	Approximate amount of funding
Grants	Implementation grants	City of Přerov	Support for landscape management	1 million CZK
Results-based financing	Payments for ecosystem services	Ministry of Agriculture	Greening, payment to farmers for setting aside part of their land for landscape features	CZK 5 million
Risk mitigation	Insurance	City of Přerov	Insurance of the property of the town of Přerov	CZK 5 million
Tax	Income tax, VAT, etc.	Czech Republic	Maintenance of municipal property from income obtained through budgetary allocation of taxes	6 million CZK
Tax	Property taxes	City of Přerov	Care of property, especially city infrastructure	CZK 20 million
Land value capture	Property and land tax	Czech Republic	Property tax on land ownership	CZK 20 million

7.5.2 Additional strategic sources and instruments

Additional sources

Subcategory	Source	Justification	Indicative amounts of finance that could be raised
Sector: public, category: European institutions			
European Commission	European funds - OPŽP	Adaptation measures to eliminate hydrological risks, high temperatures and erosion.	CZK 10 million
European	European Funds - IROP	Updating the spatial plan – ÚSES, VKP, adaptation measures; acquisition of a landscape study	CZK 3 million
Sector: public, category: Public entities at national level			
National governments	State budget	Climate change adaptation	CZK 5 million
State-owned enterprises	State Environmental Fund	National Environmental Programme: adaptation measures to eliminate hydrological risks, high temperatures and erosion.	CZK 10 million
Government agencies	Nature and Landscape Protection Agency	Landscape care and support for the restoration of natural landscape functions	CZK 3 million
Sector: private, category: enterprises			
Micro, small and medium-sized enterprises	Private funds from companies	CO_2production, agricultural land use, environmental responsibility	CZK 10 million
large companies and multinational corporations	Private funds from companies	CO_2production, agricultural land use, environmental responsibility	CZK 10 million
Sector: private, category: individuals			
Philanthropy	Private funds	Climate change adaptation	0.2 million CZK
Visitors	Admission	Educational trail, museum, etc.	0.1 million CZK

Additional instruments

Category	Subcategory	Purpose	Indicative amounts of finance that could be raised
Crowdfunding	Private	Financial support for a specific project expanding blue-green infrastructure to strengthen resilience	0.5 million CZK
Fundraising	private	Implementation of adaptation measures under the climate change adaptation strategy	CZK 1 million
Joint facilities for comprehensive land consolidation (KPÚ)	public	Implementation of proposed joint facilities resulting from comprehensive land consolidation	**approx. CZK 5–10 million** (depending on the scope of the CLT)
Debt	Loans / commercial credits	Adaptation	CZK 2 million
Private finances		Adaptation	CZK 2 million

7.6 Mitigation financing synergies

The climate change resilience strategy should be an overarching framework linking existing strategic documents and specific project activities of the city. It can build on **the Adaptation Strategy of the City of Přerov**, which has already identified key climate risks, and further develop them in terms of prioritisation and implementation of measures. **The Sustainable Energy and Climate Action Plan (SECAP)** brings a mitigation dimension to the strategy, i.e. reducing greenhouse gas emissions, and the resilience strategy should ensure that these measures are also climate-resilient. The city's participation in the **Valorada** project provides valuable tools for assessing climate risks and helps to make better decisions about future investments – the resilience strategy should systematically use these outputs. Overall, the strategy can thus be an effective tool for **unifying and coordinating all existing and future adaptation and mitigation measures,** including the preparation of major investments in climate neutrality, so that they are well integrated, economically efficient and sustainable in the long term.

Specific synergies between mitigation and adaptation measures can be seen, for example, in the implementation of green walls and green roofs, which on the one hand reduce energy requirements for heating (roofs) and air conditioning (walls) and on the other hand cool the space, absorb CO2, contributing to rainwater management and slowing down its runoff from the area.

The creation of paths for pedestrians (including the legalisation of shortcuts) and cyclists, the strengthening of cycling infrastructure (bike racks, chargers, bike boxes, etc.) and pedestrian infrastructure (benches, litter bins, rest areas, shelters, etc.) encourages greater use of walking and cycling. This reduces motor traffic and helps to reduce exhaust emissions.

7.7 Barriers to financing

Barrier name	Description	Typology of Barrier	Relevant sources and/or instruments	Importance (H/M/L)	Strength of barrier (H/M/L)	Sector and stakeholders involved	Possible actions
Public support	Weak sense of responsibility for the state of the environment and insufficient perception of the urgency of adaptation	Human	Elections, citizen interest, participation, small grants	**H**	**M**	Public, NGOs, schools	Awareness raising, community projects, participatory planning
Political support	Unclear priorities, low continuity during changes in	Personnel	Elections, political programmes, city budget	**H**	**H**	City leadership, representatives	Political dialogue, binding strategies, highlighting benefits

Barrier name	Description	Typology of Barrier	Relevant sources and/or instruments	Importance (H/M/L)	Strength of barrier (H/M/L)	Sector and stakeholders involved	Possible actions
	city leadership						
Planting small landscape features and maintaining them	Difficult long-term maintenance, lack of human resources	Legislative + human resources	PRV, OPŽP, SFŽP, KPÚ, subsidies for landscape measures	**H**	**M**	Farmers, landowners, MAS, TSMP	Simplification of support, training, sustainable operating models
Financial support from national and e sources (state, region)	Limited funding options nd long-term adaptation measures in urban environments	Financial	SFŽP, OPŽP, national investment plan, RUD	**H**	**M**	City Council, region, ministries	Active use of calls, lobbying, project readiness
Financial support from European sources	Low flexibility, administrative burden	Financial	OPŽP, LIFE, IROP, EFRR	**H**	**M**	Cities, designers, subsidy providers	Strengthening project management, methodological assistance
Private sector	Low motivation to invest in publicly accessible infrastructure	Human resources + economic	CSR, tax breaks, public-private partnerships	**M**	**H**	Companies, employers, developers	Highlighting reputational gains, financial incentives, joint projects

8 Next steps

The document identified key building blocks and weaknesses in the current approach of the city of Přerov to building climate resilience. One of the main shortcomings is **the lack of systematic monitoring of investments in blue-green infrastructure and adaptation measures** implemented outside the public sector, i.e. by households, businesses and other private actors. **The amount of funds invested in adaptation in private property is unknown,** as is the participation of private companies in publicly accessible measures (e.g. shading, water retention, planting greenery).

At the same time, **there is no assessment of the effectiveness and return on investment of measures already implemented in terms of socio-economic and environmental benefits**, such as improved quality of life, reduced infrastructure maintenance costs or increased resilience to extreme weather.

The next step will be to create **a monitoring framework** that will make it possible to track not only the implementation of the investment plan, but also the involvement of the private sector and residents. This framework will **be integrated into the SECAP structure**, which is the city's main strategic document for climate change mitigation and adaptation. Although a revision of the adaptation part of the SECAP is not planned at this stage, the climate resilience framework will be **linked** to the SECAP **in terms of concept, organisation and data.**

The aim is **to strengthen the management and monitoring structure**, ensure better coordination between municipal departments, municipal organisations and external partners, and link measures to the city's budget and investment planning. The key challenge remains **to establish regular evaluation of target achievement,** add quantified indicators and start collecting data on the synergistic benefits of adaptation investments – not only in urban areas, but also in suburban and rural areas.