Pathways2Resilience baseline assessment

Zlín Region

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Abbreviations and acronyms

Acronym	Description
P2R	Pathways2Resilience
CRIP	Climate Resilience Investment Plan
RRJ	Regional Resilience Journey
KEC	Key Enabling Conditions
RES	Renewable Energy Sources
NPO	National Recovery Plan (Národní plán obnovy)
OP TAK	Operational Programme Technologies and Applications for Competitiveness
MIT	Ministry of Industry and Trade (Ministerstvo průmyslu a obchodu)
MoE	Ministry of Environment (Ministerstvo životního prostředí)
MoRD	Ministry of Regional Development
ŘSD	Road and Motorway Directorate (Ředitelství silnic a dálnic)
SPÚ	State Land Office (Státní pozemkový úřad)
LAG	Local Action Group (Místní akční skupina)
IROP	Integrated Regional Operational Programme
OPIE	Operational Programme Enterprise and Innovation for Competitiveness
PRV	Rural Development Programme
SEA	Strategic Environmental Assessment
DTM	Digital Technical Map
MEL	Monitoring, Evaluation and Learning

Glossary

Term	Short definition
Adaptation Investment Cycle (AIC)	An iterative, six-step process supporting the development of a Climate Resilience Strategy and Investment Plan, either in parallel or as a standalone process.
Adaptive Capacity	The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.
Baseline Assessment	A document assessing climate adaptation options against criteria like availability, costs, benefits, and feasibility. It serves as a reference point for future progress.
Climate Resilience	The capacity of social, economic, and environmental systems to cope with hazardous events or disturbances, while maintaining essential functions and evolving through adaptation and transformation.
Climate Resilience Investment Plan (CRIP)	A document identifying and prioritizing necessary investments for increasing a region's climate resilience, including sources of funding and implementation strategies.
Climate Resilience Strategy	A long-term plan that outlines goals and actions for building resilience to climate change impacts, integrating it into policy and governance.
Co-benefit	A positive effect that a policy or measure aimed at one objective might have on other goals, increasing overall societal or environmental value.
Enabling Conditions	Contextual factors—such as governance, finance, capacity, and data—that make it possible to implement effective climate adaptation strategies.
Key Enabling Conditions (KECs)	A set of six crucial conditions identified in P2R: access to knowledge, governance and stakeholder involvement, financial resources, capabilities and skills, behavioural change, and learning capacity.
Maladaptation	Adaptation actions that may lead to increased risk of adverse climate impacts or transfer of vulnerabilities to other regions, sectors, or future generations.
Monitoring, Evaluation and Learning (MEL)	A continuous process of assessing adaptation efforts, drawing lessons and improving strategies and implementation.
Pathways2Resilience (P2R)	An EU programme supporting 100 European regions in developing climate resilience through adaptation strategies and investment planning.
Regional Resilience Journey (RRJ)	A structured process designed by P2R to help regions develop or enhance climate resilience strategies through participatory and iterative planning.
Resilience Maturity	The level of development and preparedness a region has achieved in anticipating, responding to, and recovering from climate-related impacts.
Stakeholder Engagement	The meaningful inclusion of relevant actors in planning, decision-making, and implementation processes to ensure legitimacy, ownership, and effectiveness of resilience strategies.
Theory of Change (ToC)	A planning framework that explains how and why a desired change is expected to happen in a particular context, mapping the pathway from inputs to impacts.

Disclaimer

1 Introduction

1.1 Local profile

Geographical scope

The Zlín Region is a NUTS3 administrative region located in the south-eastern part of the Czech Republic, bordering Slovakia. It has a population of approximately 580 000 inhabitants, with Zlín as the capital city and a population of over 100 000. The region is divided into 13 administrative districts and 307 municipalities, which have elected political representatives.

Geographically, according to the EEA biogeographical classification, the Zlín Region falls within the continental area, although its southern part is located on the border with the Alpine zone. According to Eurostat, more than half of the territory lies in mountainous areas. Overall, it is a region with a medium level of urbanisation, with a mix of urban and rural development. The landscape is diverse - in addition to mountainous and hilly areas, it also includes fertile plains around the Morava River.

Tourism in the Zlín Region is mainly focused on domestic visitors. The main tourist season includes both summer activities and winter recreation in the mountainous parts of the region.

Thematic or sectoral scope

According to the European Commission's Joint Research Centre (JRC) Vulnerability Index and ESPON Climate Risk data, the overall predicted climate risks through the scenario taking into account the increasing trend of very high emissions for the Zlín Region are at a **medium level**. Of greatest concern is the **high risk of river flooding**, which threatens the region's infrastructure. This problem is mainly related to the flow of the Morava River and its tributaries.

Other climate risks such as **flash floods, fires, heat waves** and **drought** are at a **medium level**. This suggests that the region faces a wide range of climate change challenges, with a number of adaptation measures required, but no particular threat is extremely critical.

In terms of major natural disasters**, the frequency of localised events** (windstorms, hailstorms, atmospheric precipitation) **is** demonstrably **increasing**, as evidenced by climate models which suggest that the expected cumulative value of small damages is expected to outweigh the expected value of damages from major floods in the near future.

ESPON CLIMATE RISK, ABSOLUTE EXPOSURE, VERY HIGH EMISSIONS SCENARIO (2070-2100, RCP 8.5)									
Name of the region	Level	Region code	Total climate risk	Heat stress on population	Flooding on population	Flooding on infrastructure+	Flash flooding in the cultural sector	Forest fire on the environment	Drought in the primary sector
Zlín Region	NUTS3	CZ072	Medium risk	Medium risk	Medium risk	High risk	Medium risk	Medium risk	Medium risk
SOURCE: ESPON. NUTS classification: 2016. Category: Very low: [1-1.2], low: (1.2-1.4], medium: (1.4-1.6], high: (1.6-1.8], very high: (1.8-2]									

Key demographic and socio-economic data

The economy of the region is significantly oriented towards manufacturing industry, which employs a large part of the population. Agricultural land covers almost half of the region's land area, but the proportion of jobs in agriculture is relatively low. The unemployment rate has remained around 2% in recent years, one of the lowest in the country, although average wages remain below the national average.

The age composition of the population is characterised by an increasing proportion of people of post-working age. Nevertheless, the age structure is still favourable from an economic point of view. The average age of the population of the Zlín Region is 43.6 years.

The economy in the region was and is based mainly on the appreciation of input raw materials and semi-finished products. In terms of gross domestic product, the Zlín Region ranks 9th among the regions in the Czech Republic. The average GDP per capita of the Region is CZK 524 888. The industrial potential of the Zlín Region consists of enterprises in the manufacturing industry, which account for 15.1% of the total number of registered economic entities. In particular, these are enterprises in the metalworking and woodworking industries.

The Zlín Region faces several key socio-economic challenges:

1. **Demographic change**: the region is facing a declining population, especially of working age, which may lead to labour shortages and increased pressure on social services.
2. **Economic structure**: although the Zlín Region has a strong tradition in manufacturing, it is necessary to diversify the economy and promote innovation to increase the region's competitiveness.
3. **Transport infrastructure**: Insufficient transport connectivity can limit economic development and mobility of the population.
4. **Education and labour market**: It is necessary to align the supply of educational programmes with the needs of the labour market and to promote lifelong learning to increase the employability of the population in the necessary fields.
5. **Social cohesion**: Growing disparities between urban and rural areas can lead to social inequalities which need to be addressed through targeted social policies.

These challenges require a comprehensive approach and cooperation between the public, private and non-profit sectors to ensure sustainable development of the Zlín Region.

Coordinating organisation

The Pathways2Resilience (P2R) project in the Zlín Region is coordinated by the following partners:

- **Palacký University in Olomouc**, represented by **Assoc. PhDr. Hana Marešová, Ph.D., MBA,** Head of the Strategy and Quality Department - coordinates the work on the project. UPOL is responsible for methodological guidance, research background and academic supervision of participatory processes and climate resilience planning.
- **ASITIS s.r.o.** is the expert partner of the project, which under the leadership of **Ing. Štěpán Vizina** guarantees the content quality and provides technical support in the field of climate adaptation, innovation, participation and data use. ASITIS provides facilitation of processes and preparation of outputs of the climate resilience strategy.
- **The Zlín Region**, through the **Department of Environment and Agriculture** under the leadership of **Ing. Jana Káčerová**, **is the project area** and the **beneficiary of the project outputs**. The region is actively involved in the formulation of the strategy and its future use in regional policies.

Deliverable development process

The Zlín Region joined the European **Pathways2Resilience (P2R)** project as one of the 100 selected territories seeking to increase their climate resilience. The Zlín Region acts here as a **target area and beneficiary of the outputs**, which are mainly the regional strategy and the subsequent investment plan in the field of climate change adaptation.

One of the first outputs was participation in a **self-assessment according to the Resilience Maturity Curve (RMC) methodology**. This tool helped the county to assess its current level of preparedness against climate risks and identify areas where capacity needs to be strengthened. The assessment was conducted in a participatory manner, involving experts from the regional office, ASITIS representatives and other partners.

As part of the first phase of the **Regional Resilience Journey (RRJ),** the County has already implemented several key steps. **Mapping of key community systems** (e.g., water, health, infrastructure) and their interconnections through **climate impact chains** has taken place. At the same time, **key stakeholders** across public administration, private sector, academia and civil society were identified. In this context, the **involvement of vulnerable groups** was also emphasised. Initial **objectives for adaptation planning** were formulated, including qualitative benefits such as relationship to place, quality of life or community resilience.

The results of these activities form the basis for the follow-up phases of the project, in particular the development of a **climate resilience strategy** and the design of concrete measures and projects that will be further elaborated in **the investment plan**, which is the main output of the project. The aim is to prepare a set of measures that is not only of high professional quality, but also **feasible, financeable and with a broad level of support among the actors in the region**.

1.2 Priorities

1.2.1 Local level

At the local level, key economic, environmental and social strategies and policy objectives are influenced both by the municipalities' own development priorities and by overarching regional and national frameworks. In doing so, municipalities are increasingly focusing on **an integrated approach to development** that combines **economic sustainability, environmental protection and quality of life for residents**, and more recently, **climate change adaptation**. Below is an overview of the guidelines by thematic area:

Economic strategies and objectives

- **Strategic development plans for municipalities and cities** define the development of business, infrastructure, jobs and services.
- A frequent objective is to **support the local economy and employment**, e.g. brownfield redevelopment, promotion of enterprise zones, tourism.
- **Development concepts** often address modernisation of public infrastructure, accessibility of services and provision of mobility.
- Some cities are starting to incorporate **smart solutions (SMART)**, e.g. in transport, public lighting or building management.

Environmental strategies and objectives

Increasingly, municipalities are developing their own **climate and adaptation strategies** - either on their own or as part of development plans.

Key actions include:

- **Increasing the retention capacity of the territory** (seepage areas, green roofs, soak-away strips),
- **planting and maintenance of green areas**, protection against heat and drought,
- **stormwater management** and adaptation of public spaces to weather extremes,
- **landscape and watercourse revitalisation**, often in cooperation with farmers and water authorities.

In some cities, **energy concepts** and **community energy projects** are emerging, focusing on RES and energy self-sufficiency.

Social strategies and objectives

Local strategies often emphasise **the preservation of quality of life**, especially in rural areas:

- access to schools, nurseries, health care and social services,
- housing support for young families and the elderly,
- **increasing civic engagement** and maintaining public spaces.

Cities are implementing **community social service plans** or **strategies for families and seniors**, often linked to regional policy.

Municipalities also address **safety strategies and emergency plans**, including addressing the impacts of extreme weather events.

Adaptation strategies and their role

Adaptation to climate change is a **rapidly growing agenda** at local level, especially in cities such as **Uherské Hradiště, Uherský Brod, Vsetín, where they** already have an adaptation strategy in place, but also in other cities such as **Zlín, Otrokovice, Rožnov pod Radhoštěm and Valašské Meziříčí**.

The adaptation strategies of **Uherské Hradiště, Uherský Brod, Vsetín** include:

- **Mapping of climate risks** (drought, torrential rainfall, heat islands) and impacts on individual sectors
- **implementation of specific measures** in spatial planning and public investment,
- **public participation in** the form of sensory maps.

In smaller municipalities, adaptation measures are often implemented **on an ad hoc basis**, but with increasing support from the region and subsidy titles, they are expected to be systematised.

1.2.2 Regional level

Key strategies:

- **Zlín Region 2030 Development Strategy**
- **Smart Region Development Strategy WK 2030**
- **RIS3 of the Zlín Region**
- Concept of transport, education, health, nature protection, water management, etc. (see attached map of strategies for an overview)

Impacts on regional policy:

- New investment priorities will be shaped - e.g. construction and modernisation of hospitals, transport infrastructure, social services infrastructure.
- Emphasis on climate resilience in integrated spatial planning - including retention measures, storm water, green infrastructure.
- Implementation of SMART systems and digital governance (e.g. DTM, eHealth, digital education).
- Increased requirements for participation, transparency and equitable transformation - especially for projects with environmental and social impacts.

1.2.3 National level

Key strategies and programmes:

- **National Energy and Climate Plan (NECP)**
- **National Energy Concept**
- **National Adaptation Strategy of the Czech Republic**
- **Policy of territorial development of the Czech Republic**
- **National Regeneration Plan** (2021-2026)
- **EU Programming Period 2021-2027**

Impacts on the policy of the Zlín Region:

- Zlín Region should develop its own **adaptation strategy, possibly a resilience strategy** and update the **energy concept,** all in line with national policies.
- Calls and conditions of subsidy titles (NPO, OP TAK, OP Environment) significantly **determine investment priorities**, e.g. digitalization, RES, hospitals, education, blue-green infrastructure, etc.
- **Coordination with central authorities** (e.g. MIT, MoE, MoRD) is essential for successful project approval and investment preparation.
- Support to municipalities through regional mechanisms should **reflect priorities arising from the national level** - e.g. decarbonisation, water protection, energy self-sufficiency, etc.

1.2.4 EU level

Key frameworks:

- **European Green Deal**
- **EU Adaptation Strategy 2021**
- **EU Climate Change Adaptation Mission**
- **UN Sustainable Development Goals (Agenda 2030)**
- **Paris Climate Agreement**

Policy implications for the Zlín Region:

- Need to **adapt regional strategies to climate neutrality and resilience requirements** (e.g. implementation of energy and climate action plans, development of investment plans.
- Pressure to **transform the region's economy and energy sector towards a low-carbon future** - use of RES, community energy, building renovation.
- Shift towards **multi-sectoral and systemic management** - the county must consider environmental, social and economic aspects in decision making.
- **Access to European funding** (e.g. Horizon, LIFE, Operational Programmes - IROP, OPEP,...) is conditional on alignment with these objectives.

1.2.5 Private sector

Orkla Foods Česko a Slovensko, a.s. (Hamé brand) in Babice has implemented a unique technology for water recycling and recovery, which allows to save over 300 million litres of water per year, which represents 75% of the original consumption. The system involves the use of waste heat from hot water to preheat the water needed in production, saving approximately 5,000 MWh of gas per year. The investment in the project amounted to CZK 85 million and was implemented without public support. The project was awarded the Sustainability Star 2023 for its sustainable approach to water management.

Other private sector initiatives

- **Installation of photovoltaic systems**: Some companies in the Zlín region are investing in solar panels on the roofs of their premises, reducing dependence on traditional energy sources and contributing to the decarbonisation of the energy sector.
- **Green roofs and façades**: Businesses are considering implementing green roofs and façades on their buildings, which can contribute to cooling buildings, retaining rainwater and improving the microclimate of the surrounding area.
- **Seepage and retention systems**: Companies are building seepage areas and retention basins to capture rainwater, which they then use for technical purposes, thereby reducing drinking water consumption and relieving pressure on the sewerage network.

1.3 Just resilience considerations

In the Zlín Region, some population groups are particularly vulnerable to the impacts of climate change and may face difficulties in adapting:

- **Seniors and people with disabilities**: These residents are more vulnerable to extreme temperatures, such as heat waves, and may have limited access to cooling or air conditioning.
- **Children**: Younger populations are more vulnerable to health risks associated with climate change, including heat-related illnesses or poor air quality.
- **Rural people**: farmers in particular can be affected by drought, flooding or soil erosion, affecting their livelihoods and economic stability.
- **Economically disadvantaged groups**: People with lower incomes may have limited opportunities to invest in adaptation measures such as home insulation, shading or installation of air conditioning and are thus more exposed to the negative impacts of climate change.

These groups are given special attention in the planning and implementation of project outputs to ensure their protection and support in changing climate conditions.

1.4 Climate resilience objectives

Challenge statement

The Zlín Region faces a **wide range of climate risks**, with the **most serious being the risk of river flooding**, particularly related to the flow of the Morava River and its tributaries. Other threats are **flash floods, droughts, heat waves, fires** and **extreme precipitation**, the incidence and risk of which is currently assessed as **moderate**, but which are increasing **in frequency and impact** on the population, infrastructure and ecosystems. A significant cause of vulnerability is the **persistent lack of preparedness of infrastructure, risk management systems and limited capacity for systemic adaptation planning**.

The ideal outcome, then, is that the region has a **strategy and action plan that prioritises adaptation actions**, improves systemic capacities and prepares the ground for long-term investment in climate resilience **based on sound climate risk analysis and stakeholder engagement**.

Primary adaptation objectives

The following table summarises the main objectives of climate change adaptation in the Zlín Region within the framework of the Climate Resilience Strategy and Investment Plan. Blue-green infrastructure investment priorities are listed first as a key tool for achieving multiple benefits.

Primary objective of adaptation	Performance metrics (KPIs)	Economic justification, benefits and costs
Implementation of adaptation investments through blue-green infrastructure	- Area of new or revitalised blue-green infrastructure (m^2) - volume of rainwater retained (m^3)	Multiple benefits: water retention, heat island mitigation, flood damage reduction, increased property values, improved health and quality of life. Costs lower than reactive costs.

Primary objective of adaptation	Performance metrics (KPIs)	Economic justification, benefits and costs
Reduced vulnerability of infrastructure to flooding and extreme rainfall events.	- Number of buildings protected - length of roads protected (km)	Prevent damage, protect property and critical infrastructure, reduce costs of emergency measures.
Increase availability and use of climate data for planning and decision making	- Number of strategies/plans using climate scenarios - Hazard maps updated	Reduce risk of poor decisions, increase efficiency of public spending, better spatial and investment prioritisation.
Increased preparedness of health and social services for extreme temperatures and drought	- Number of facilities with implemented adaptation measures - Crisis plans adopted	Protecting the health of vulnerable groups, reducing the burden on the health system, savings in social services.
Strengthening crisis management and prevention of climate risks	- Number of crisis preparedness plans developed - availability and functionality of warning systems - number of preventive measures implemented	Increased capacity to react quickly and minimise losses in extreme events. Reducing damage through prevention and preparedness brings a high cost-benefit ratio.

Source: own elaboration based on the individual steps of the RRJ

Secondary resilience objectives

The following table summarises the secondary climate resilience objectives of the Zlín Region, focusing on capacity building, improving adaptation management and systemic development of institutions and stakeholders. The objectives support the long-term sustainability and effectiveness of the strategy.

Secondary resilience objective	Performance metrics (KPIs)	Economic rationale, benefits and costs
Increased institutional capacity to manage adaptation	- Number of public administration staff trained - Number of methodologies and internal processes developed	Stronger public administration increases the efficiency of implementation, reduces the cost of external experts and allows flexible management of adaptation.
Introduction of an integrated climate risk management system	- regularly updated adaptation/resilience strategy - Number of sectorally integrated plans	Better coordination between sectors, elimination of duplication of expenditure, increased chances of obtaining EU and national funding.
Promote inter-municipal cooperation and sharing of best practices	- Number of active inter-municipal initiatives - Number of shared projects	Cost savings, knowledge transfer, effective implementation in smaller municipalities without capacity.
Implementation of monitoring, evaluation and learning (MEL) systems	- Existence of a monitoring framework - Number of evaluation reports - number of measures updated on the basis of evaluation	Ensuring feedback loops, optimizing investments, increased credibility with donors and the public.
Increased stakeholder engagement and citizen participation	- Number of participatory activities - level of public and private sector involvement	Increased legitimacy and acceptance of actions, greater sustainability and alignment with local needs.

Revision of regional financial instruments and strengthening of investments in adaptation	- Existence of an inventory of existing instruments and support schemes - the volume of newly allocated funds for adaptation measures - number of projects supported	Ensuring long-term financing of adaptation measures, streamlining the use of public funds, better preparing the region for drawing on external resources (e.g. EU, SFŽP).

source: own elaboration based on individual steps of the RRJ

1.5 Planned investments

The following table indicates an integrated but incomplete overview of the main investment plans, whose investment costs are expected to exceed EUR 20 million. CZK on the territory of the Zlín Region divided by thematic areas. Each project is accompanied by a brief description and identification of the relevant potential adaptation component to climate change.

Area	Project	Description	Potential adaptation component
Education	Higher School of Education and Secondary School of Education Kroměříž - reconstruction of the roof	Repair and insulation of the school roof	Reduction of heat loss, preparation for heat waves
Education	Gymnasium and Junior High School Zlín - reconstruction of the gymnasium	Reconstruction of the gymnasium and connecting neck	Energy efficiency, preparation for extreme weather
Education	Gymnasium Valašské Klobouky	Connecting neck, kitchen and canteen	Improved ventilation, thermal comfort
Education	ISŠ Valašské Meziříčí	Reconstruction of changing rooms and school entrance hall	Energy saving, improved microclimate
Education	ZUŠ Zlín - reconstruction of the art building	Reconstruction of the interior	Improvement of light and thermal conditions
Education	Reconstruction ofZlín region property (Hotel School Kroměříž)	Reconstruction of SŠ in 2026	Energy efficiency, adaptation of buildings
Education	Secondary School of Hotels and Services Kroměříž - Pioneer Meadow	New classrooms	Greenery, water retention, shading
Education	SPŠP - COP Zlín	Reconstruction of the youth home - 2nd-4th stage	Reduction of energy consumption
Culture	MKM - Fortress Rymice	Reconstruction of the building	Drainage, moisture protection
Healthcare	KMN - Entrance and garage facilities for the Health Service	Construction of garages and securing the entrance	Ensuring operation during weather extremes
Healthcare	KMN - Completion of the south wing	Project preparation	Improving the resilience of the building
Healthcare	KMN - West Wing Reconstruction	Project preparation	Energy efficiency, cooling
Healthcare	KMN - North Extension (Urgent)	New emergency reception	Healthcare resilience to extremes
Healthcare	KMN - Hospital Modernisation	Comprehensive modernisation	Cooling, energy efficiency
Healthcare	VSN - Central Building 1	Project preparation	Hospital infrastructure resilience
Healthcare	VSN - Building B1	Project documentation (emergency, eye)	Thermal comfort, access to care
Healthcare	VSN - Building G	Vertical extension	Improving logistics at extremes
Healthcare	VSN - modernisation of the premises	Modernisation of the hospital campus	Energy efficiency
Healthcare	UHN - renovation of building 11	Building reconstruction	Resistance to weather extremes
Healthcare	KNTB - new emergency medicine polyblock	Construction of an emergency room	Resilience of healthcare to extremes
Social services	SSL Vsetín - DS Hovězí	New home for the elderly	Greenery, cooling, preparation for heat waves
Social services	SSL UH - DS Uherské Hradiště	New home on the UHN campus	Greenery, heat resistance
Social services	SSL UH - Velehrad-Buchlovská	Conversion into a senior citizens' home	Greenery, shading, preparation for heat waves
Social services	DS Zlín	Operation of a home for the elderly	Screening, vegetation

Area	Project	Description	Potential adaptation component
Social services	DS Lukov	PBŘ, fire protection measures	Security, building protection
Social services	DS Burešov	Reconstruction of the kitchen	Energy efficiency, cooling
Social services	SSL Vsetín - DS Rožnov	Reconstruction of laundry room	Water and energy saving
Social services	SSL UH - DZP Velehrad Vincentinum	Fire protection measures	Protection of the building
Social services	SSL Vsetín - DS Rožnov	PBŘ, building modifications	Building resistance, safety
Transport	Road II/494 Vrbětice-Slavičín	Road reconstruction	Drainage, slope stabilisation
Transport	Road III/43346, 43349 Litenčice	Road reconstruction	Heat-resistant surface treatment
Transport	Road III/48713 Velké Karlovice	Bridge reconstruction	Flood resistance
Transport	Road II/492 Luhačovice	Stabilisation of the landslide near the wastewater treatment plant	Infrastructure protection
Transport	Road II/150 Loučka	Repair of retaining walls	Stability of slopes during rainfall
Transport	Road II/490 Zlín	Inlet	Climate-controlled construction
Transport	Road II/490 Uherský Brod	Bypass	Traffic relief, emission reduction
Transport	Road III/4349 Chropyně	Bypass	Improvement of traffic flow
Transport	Key constructions - Zlín bypass	Bypass of Zlín	Improvement of air quality
Education	Higher School of Education and Secondary School of Education Kroměříž - reconstruction of the roof	Repair and insulation of the school roof	Reduction of heat loss, preparation for heat waves
Water management	VD Vlachovice	Waterworks for water supply	Key adaptation infrastructure
Water management infrastructure	Expansion of the sewerage network in the villages	Construction or modernisation of sewerage systems	Interception of heavy rainfall
Water management infrastructure	Reconstruction of stormwater sewers in Zlín and Uh. Hradiště	Increase in capacity	Flood protection for buildings
Water management infrastructure	Modernisation of wastewater treatment plants in Vsetín and Otrokovice	Increase in efficiency	Coping with fluctuations in water quantity
Water management infrastructure	Building retention and seepage tanks	Rainwater retention	Reducing the load on sewers

source: own elaboration based on the individual steps of the RRJ

1.6 Economic rationale

Increase the efficiency of public spending

- **Adaptation measures reduce the cost of** future disasters, service outages, and damages (e.g., flooding, overheating of buildings, loss of transportation infrastructure).
- **Prevention is more cost-effective than dealing with the damage afterwards** - the ratio of adaptation costs vs. damage can be 1 : 4 to 1 : 10.

Ensuring continuity and quality of public services

- E.g. **health, social care and education systems** must function even during weather extremes (heat waves, blackouts, transport disruptions).
- Investing in resilience ensures the **long-term usability and functionality of infrastructure** that might otherwise be at a loss.

Supporting market and business development

- Creating **green jobs** in construction, maintenance and technological innovation for adaptation.

- Ensuring **reliable water, energy and transportation services are** key to the competitiveness of local businesses.

Social and ethical considerations

- **Vulnerable groups** (seniors, children, low-income households) are most exposed to extreme events but have the least capacity to adapt.
- Improving public spaces, green spaces and microclimates contributes to the **health and quality of life of the whole population**, with **long-term economic benefits** (lower morbidity, higher productivity).

Ensuring access to finance and meeting EU conditions

- The Zlín Region can only **benefit from EU funds (IROP, OPEP, Modernisation Fund, Recovery and Resilience Facility)** if projects **respect the DNSH principle** and integrate adaptation.
- A region that **does not take climate risks into account** risks having **to return subsidies or face ineffective investment** (maladaptation).

1.6.1 The scale of the adaptation deficit

The adaptation deficit refers to the **gap between the level of current preparedness and the level of resilience** to climate change **needed**.

In the Zlín Region, the adaptation deficit is manifested by:

Region	Manifestations of the deficit
Water management	Inadequate retention and infiltration measures in urbanised areas; high risk of torrential rainfall and drought
Public buildings and public spaces	Overheating of schools, hospitals and homes for the elderly including adjacent areas; lack of shading, green roofs, air conditioning
Transport	Critical infrastructure not designed for extreme precipitation, landslides, or overheating
System management	No fully integrated climate planning system across sectors and levels

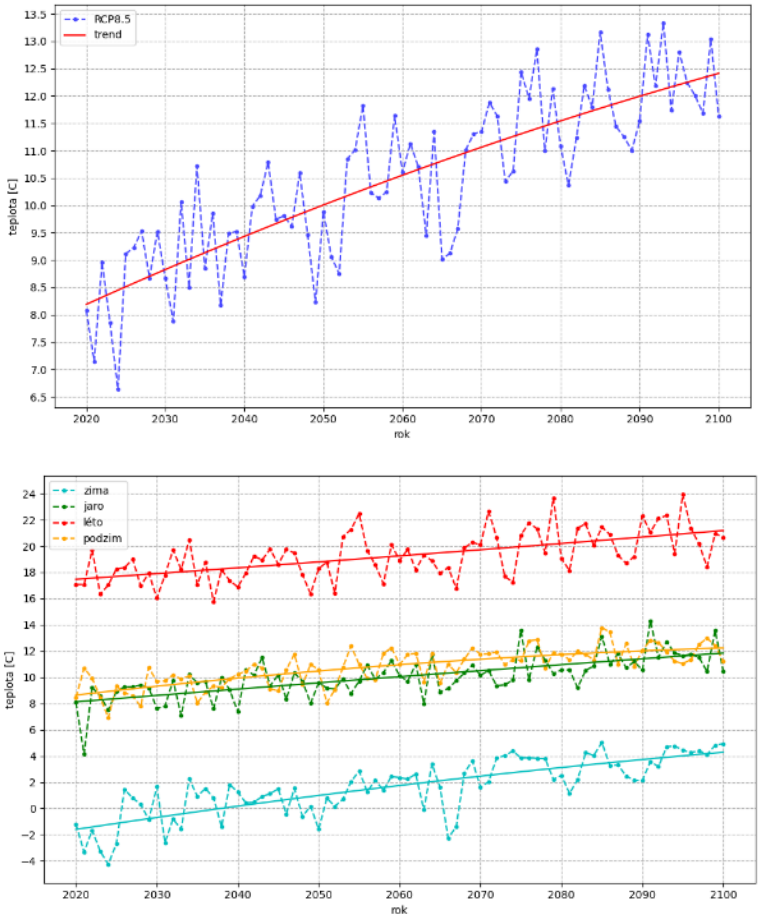
Source: own elaboration based on the steps of the RRJ

2 Climate risks

2.1 General climate profile of the region

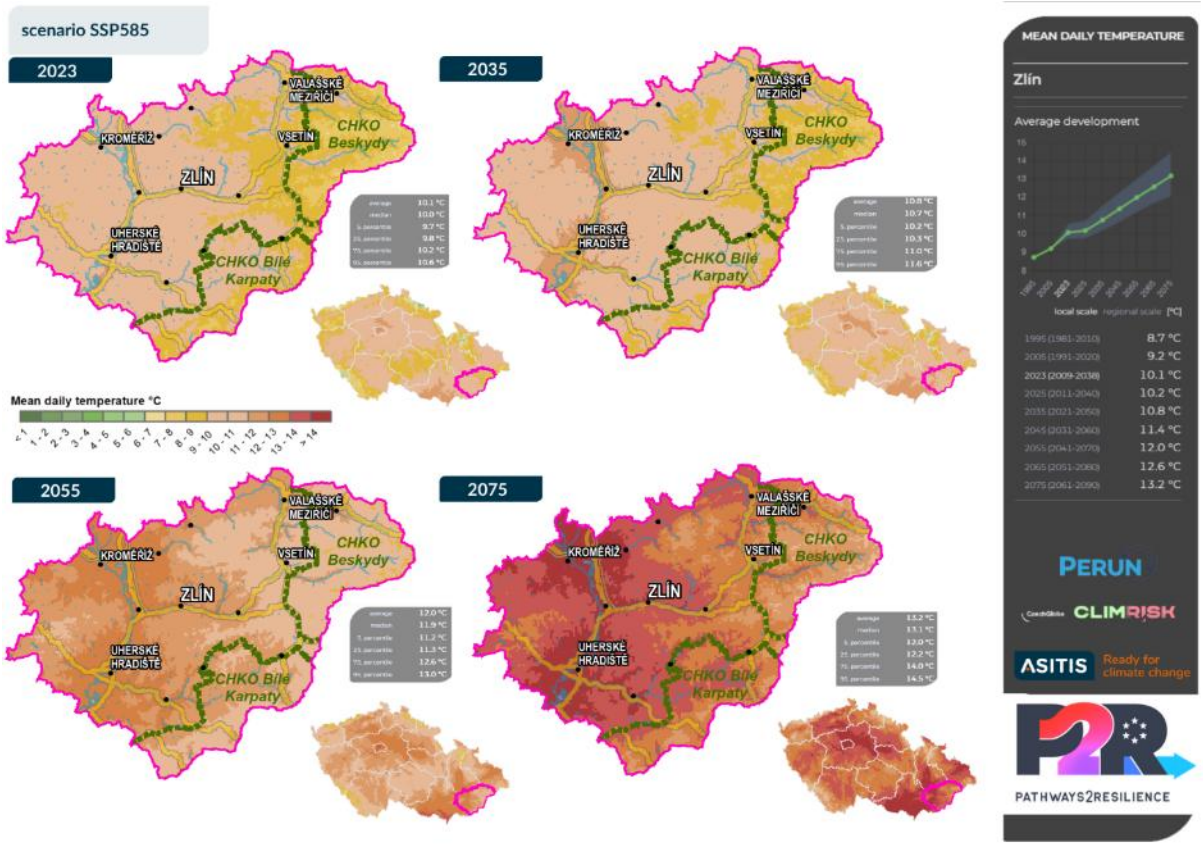
The Zlín Region is located in the **eastern part of the Czech Republic**, in an area with a **diverse landscape** that includes both **the lowlands along the Morava River** and the **hilly and mountainous areas** in the northern and eastern part of the region (Hostýnské vrchy, Javorníky, Bílé Karpaty). Due to this geographical diversity, **climatic conditions vary according to altitude**, but overall the region can be characterised as **moderately warm with a humid climate** and significant seasonal variations in temperature and precipitation.

- **Average temperatures**
  - **The annual average temperature** in the lowland areas along the Morava (Uherské Hradiště, Kroměříž) is around **8-9 °C**, while at higher altitudes (Hostýnské vrchy, Bílé Karpaty) it drops to **4-6 °C**. An increase to **11-13 °C** is expected in the following decades**:**
  - **Summer** (June-August) tends to be relatively warm, with average daily temperatures **of 18-20 °C** in the lowlands, but **heat waves with temperatures exceeding 35 °C** can also occur.
  - **Winter** (December-February) is cool, with average temperatures of **-1 to -3 °C** in the lowlands, but can average **-5 °C in** the higher altitudes. **Snow cover** is **longer in** the mountain areas, while winters are increasingly milder in the lowlands.

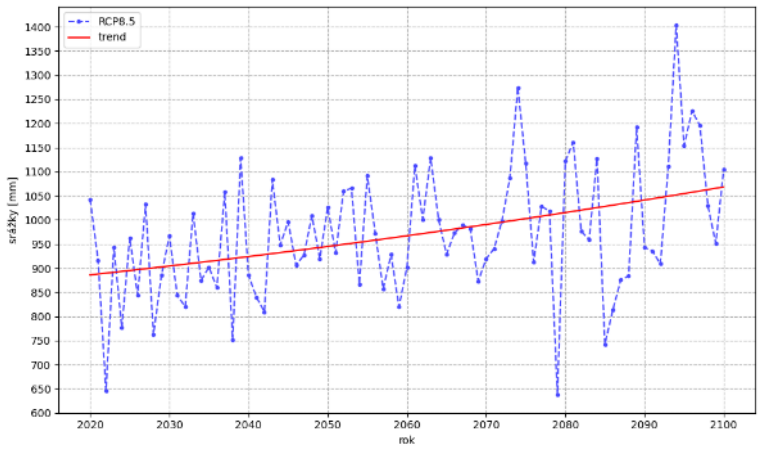


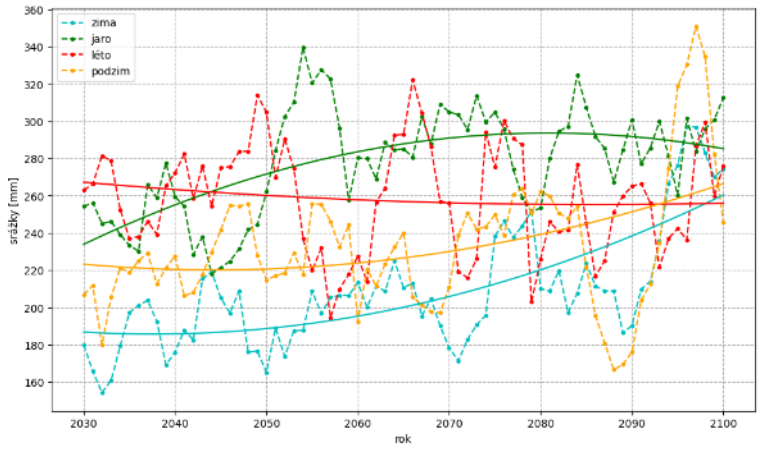
Source: Own elaboration based on EURO-CORDEX (MPI ESM LR SMHI RCA4 model, RCP 8.5 scenario)

Predicted evolution of mean daily temperatures:



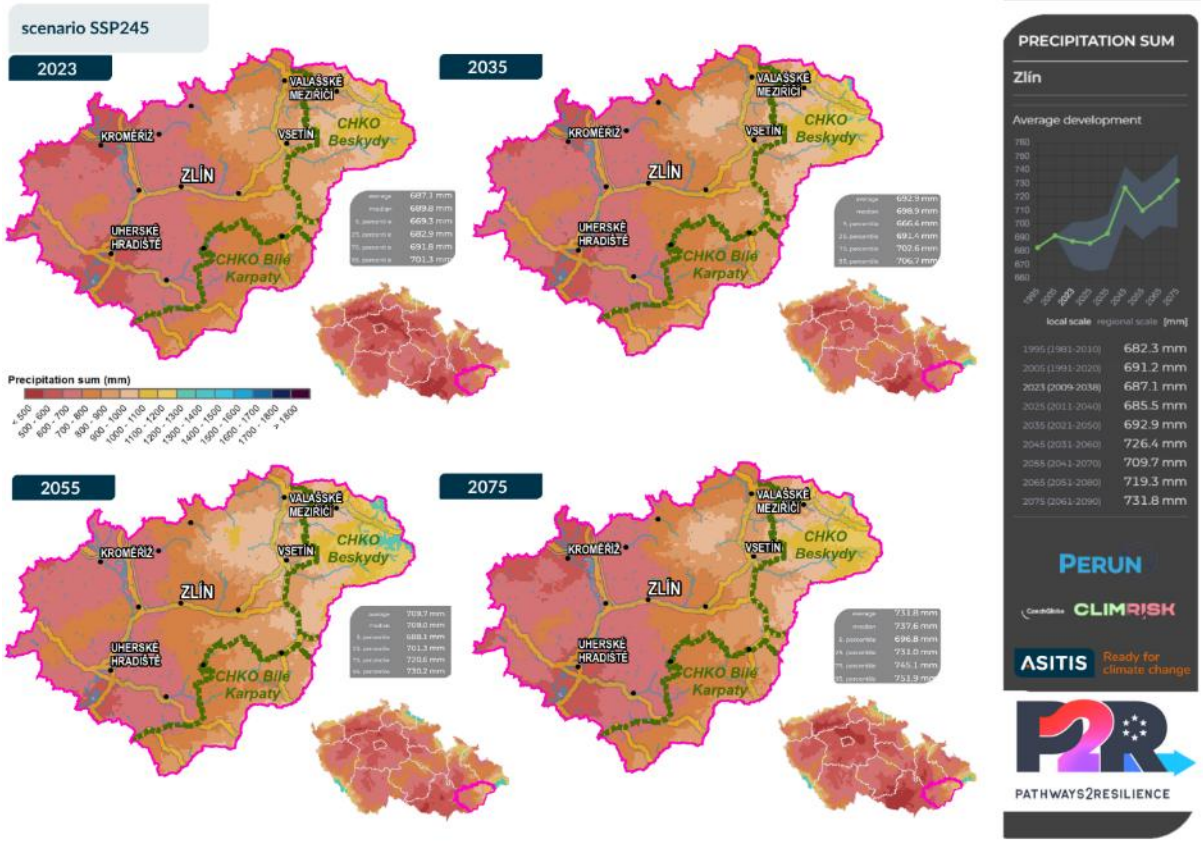
- **Precipitation ratios**
  - **The average annual precipitation** varies **between 600-700 mm** in the lowlands and up to **1200 mm** in the higher altitudes.
  - **Most precipitation** falls in the **summer months**, often in the form of **torrential rains and thunderstorms**.
  - **The rainfall deficit** in recent years has led to **an increased risk of drought**, especially in the lower-lying areas around the Morava River.
  - **Winter precipitation** is variable, often **in the form of snow** at higher altitudes, while **rainfall and thundershowers** predominate in the lowlands.

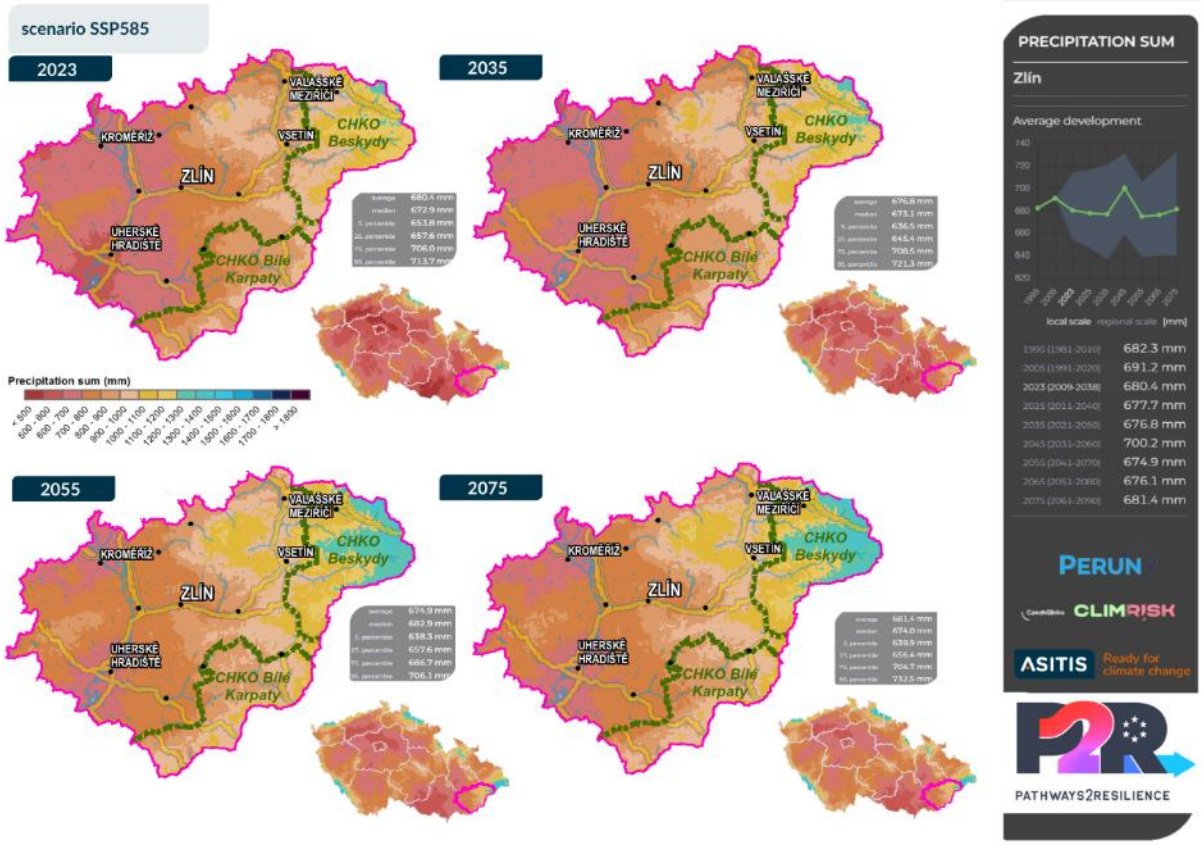




Source: Own elaboration based on EURO-CORDEX (MPI ESM LR SMHI RCA4 model, RCP 8.5 scenario)

Predicted evolution of precipitation sums:





According to the quantitative climate risk analysis, the most significant threats to the Zlín Region are **river floods, heat stress, forest fires, drought and extreme weather events associated with convective storms**. Each of these risks will require specific adaptation measures in the future, with recurrent flooding being the greatest concern.

1. River flooding

The Morava River and its tributaries form a large catchment area covering a large part of south-eastern Moravia and also affecting areas in Slovakia. Due to frequent episodes of excessive water level rise in the river and its tributaries**, flooding** is one **of the most serious environmental threats** in the region. The most devastating floods hit the area in **1997**, when **25 000 inhabitants** had to leave their homes and the flood protection measures at that time proved to be completely inadequate. Despite extensive investment in flood protection structures and riverbed improvements, the risk remains high, especially during heavy rainfall and spring thaw.

2. Heat stress for the population and the economy

According to ESPON data, heat stress in the Zlín Region is classified as **medium**, but its value is close to the threshold of high climate risk. By the end of the century, average summer temperatures are expected to increase by up to **4 °C** and winter temperatures by **2.8 °C** compared to the period 1961-1990. Current measurements show that the **Czech Republic has warmed twice as fast as the global average between 2000 and 2020**. Prolonged heat waves can have serious impacts on **the health of the population**, especially **the elderly, children and people with health problems**, and can also disrupt **the economy**, for example by increasing the cost of cooling buildings or reducing labour productivity.

3. Drought and its impacts

Drought is an increasingly common problem, especially during the summer months. **Changes in rainfall patterns and higher average temperatures** lead to **accelerated evaporation of water from soils and watercourses**, affecting **agriculture, water resources and biodiversity**. The long-term trend shows that **groundwater supplies are decreasing in some parts of the region**, increasing the risk of problems with **drinking water supply** in dry periods. The most affected areas are the **lowlands and fertile areas along the Morava River**, where dependence on water resources is highest.

4. Forest fires and their impacts

According to ESPON data, **the risk of forest fires** is one of the three biggest climate threats for the Zlín Region. The main part of the fire-fighting resources in the Czech Republic is managed at the regional level, and the occurrence of fires varies **significantly depending on temperature and precipitation**. **The years with the highest number of wildfires** include **1998, 2003, 2011, 2012, 2015 and 2018**. Although the Zlín Region is not currently one of the areas with the highest frequency of wildfires in the Czech Republic, **rising temperatures and prolonged droughts may increase the risk in the future**.

5. Extreme weather events - storms, windstorms, hailstorms

With rising temperatures, the **frequency and intensity of convective storms**, which bring **strong winds, gales, hurricanes, intense rainfall and hail**, is increasing. The Zlín region is prone to these phenomena, especially in the summer months. **Severe storms can cause**:

- **Damage to infrastructure** (damage to roofs, power lines, transport infrastructure),
- **Agricultural losses** (crops destroyed by hail and prolonged drought),

- **Risk of power outages** (mainly due to trees falling on power lines),
- **Danger to the population** (increased risk of injuries during storms and severe storms).

In recent years, storms have become increasingly frequent in the region and have caused **significant damage to property and landscape**.

The Zlín Region will have to deal with **floods, heat waves, droughts, forest fires and extreme weather events** in the coming decades. All these factors will affect the **population, infrastructure, agriculture and the environment**. Adaptation to climate change therefore requires a **comprehensive approach** including **flood protection, heat stress mitigation measures, water availability, enhanced fire prevention and better preparedness for extreme weather events**.

2.2 Impact of past or ongoing climate events

Climate risk	Event	Timing and duration	Geographical extent	Associated impact	Measures taken	Estimated damage in the Zlín Region in 2024 prices
River floods	Floods 1997 - Morava,	July 1997,	Morava River and tributaries (Dřevnice, Olšava, Bečva)	Damage to infrastructure, evacuation of inhabitants	Construction of flood protection measures, retention reservoirs	CZK 7.8 billion
	Floods 2024 - Jesenicko, North Moravia, Morava	September 2024				CZK 2.4 billion
	Floods 2010	2 waves - May and June 2010				CZK 1.45 billion
Flash floods	Flash floods 2009	June 2009	Vsetín district, Rožnovská Bečva river basin and the foothills of the White Carpathians	Intense rainfall led to a rapid rise in the levels of smaller streams, causing spills outside the riverbeds and subsequent damage to property, transport and water management infrastructure	Improved drainage systems, warning systems, water retention in the landscape	Hundreds of millions. CZK
	Flash floods 2010	May - June 2010	Rožnovská Bečva river basin			over CZK 1 billion
	Flash floods 2011	June 2011	Vizovice and Bystřice pod Hostýnem area.			Hundreds of mil. CZK
	Flash floods 2024	June 2024	Fryšták and Racková in the Zlín region			tens of mil. CZK
			Valašské Klobouky			units mil. CZK
Heat waves	Heat wave 2015	August 2015, duration approximately 10 days	entire Zlín region, mainly urban areas, lowlands along the Morava	Increased mortality, health complications in vulnerable groups, overloading of health care facilities, temperatures exceeding 33 °C, increased risk of fires, as well as reduced labour productivity	Warnings to residents, establishment of cooling centres, water distribution, building of MZI elements - cooling of cities, warnings against leaving children and animals in cars, recommendations to limit physical activity	tens of millions of CZK
	Heatwave 2024	August 2024, duration approximately 7 days				Units millions. CZK
Drought	Drought 2015	Spring to autumn 2015	entire Zlín Region, but primarily agricultural areas, lowlands	Significant decrease in agricultural production, decrease in groundwater levels, increased risk of fires	Introduction of water saving measures, support for farmers affected by drought	Hundreds of millions of CZK

Climate risk	Event	Timing and duration	Geographical extent	Associated impact	Measures taken	Estimated damage in the Zlín Region in 2024 prices
	Drought 2018	Spring to autumn 2018		Decrease in agricultural yields, reduction in water resources, negative impact on forest cover	Restrictions on water abstraction, financial support for affected sectors	Hundreds of millions. CZK
	Drought 2019	Spring to autumn 2019		Continued decline in agricultural production, reduced water levels, deterioration of soil quality	Implementation of water retention projects in the landscape, promotion of efficient water management	Hundreds of millions. CZK
Strong storms and winds	Storms other than tornadoes (hail, flash floods...), ,	June - July 2021	the whole region, especially hilly areas	Tree falls, flooding of roads and rising stream levels - damage to property, disruption of transport and energy supply.	Infrastructure reinforcement, weather monitoring, restoration of energy supply	Hundreds of millions. CZK
	Series of events (storms, hail, localised flooding)	May - June 2016				
		June - July 2024				
	Hurricane Herwart	October 2017				
Forest fires	Fire near Lukovecek	July 22	Forest areas, especially Hostýnské vrchy and Bílé Karpaty, specific fire - Forest area between Lukoveček and Přílepy in Zlín region	Damage to ecosystems, risk to inhabitants	Prevention of fires, early detection and firefighter intervention	units mil. CZK

source: own processing based on data from the web, media, social networks and expert estimates

2.3 Climate risk assessment

The level of impact of climate phenomena on individual sectors was assessed in 2 steps.

1. Firstly, the impact values of climate events were averaged by each of the areas defined in the IPCC table and the level of impact against a given climate event was determined at the level of whole sectors. These sectors were also assigned the corresponding key KCS from the P2R:

Sectors		Impact level (H - high, M - medium, L - low)								
P2R (KCS)	IPCC	Extreme heat	Cold periods	River flooding	Heavy rainfall and flash floods	Landslide and erosion	Hydrological drought	Wildfires	Severe wind storm	Heavy snowfall and ice
Nature-based solutions to support ecosystems	Terrestrial and freshwater ecosystems	H	M	M	M	L	L	H	M	M
Water management	Water	L	-	M	M	L	M	L	-	L
Land use and food systems	Food and other ecosystem products	H	M	H	M	L	M	M	M	M
Critical infrastructure protection	Cities, municipalities and key infrastructure	H	M	H	H	M	M	L	H	H
Health and human well-being	Health, well-being and society	H	M	L	L	L	M	M	L	M
Local economic systems	Poverty, livelihoods and sustainable development	L	L	H	M	L	L	M	L	L

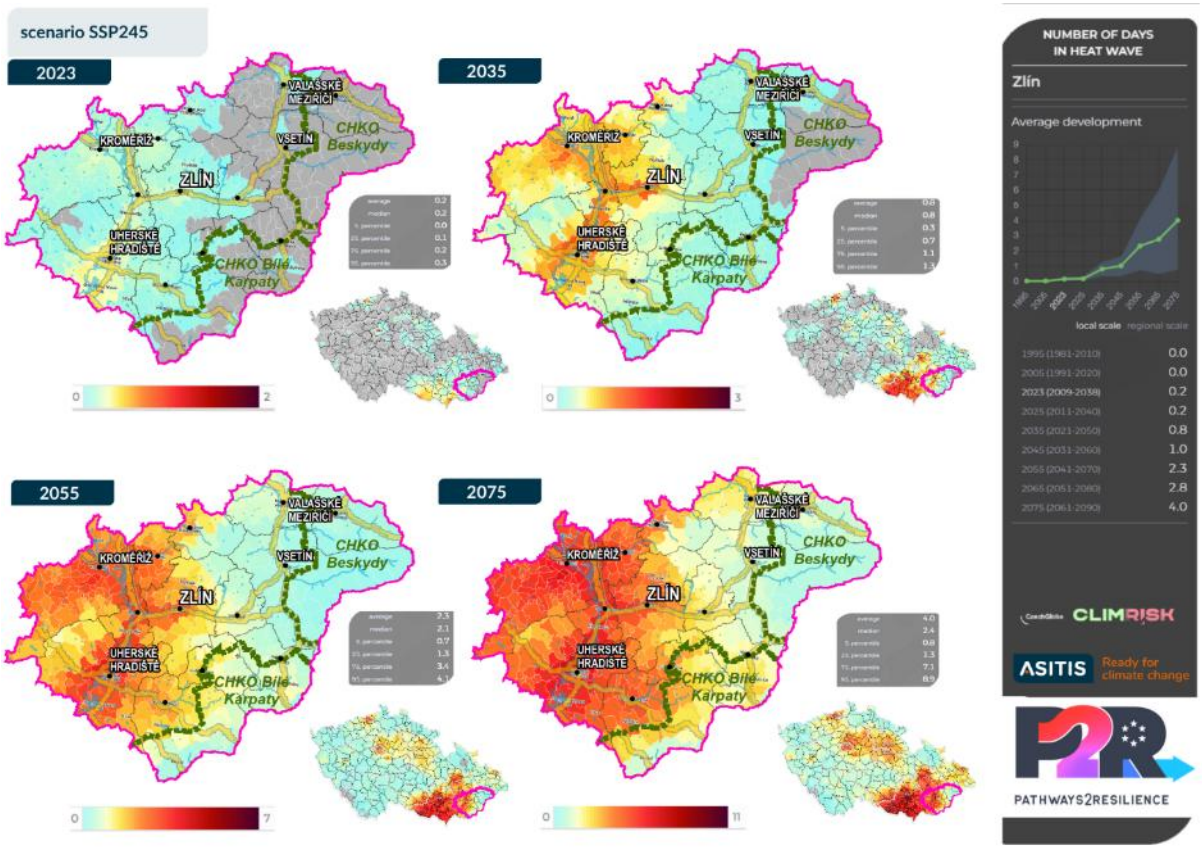
source: own elaboration based on IPCC data and individual KCS from the RRJ (P2R)

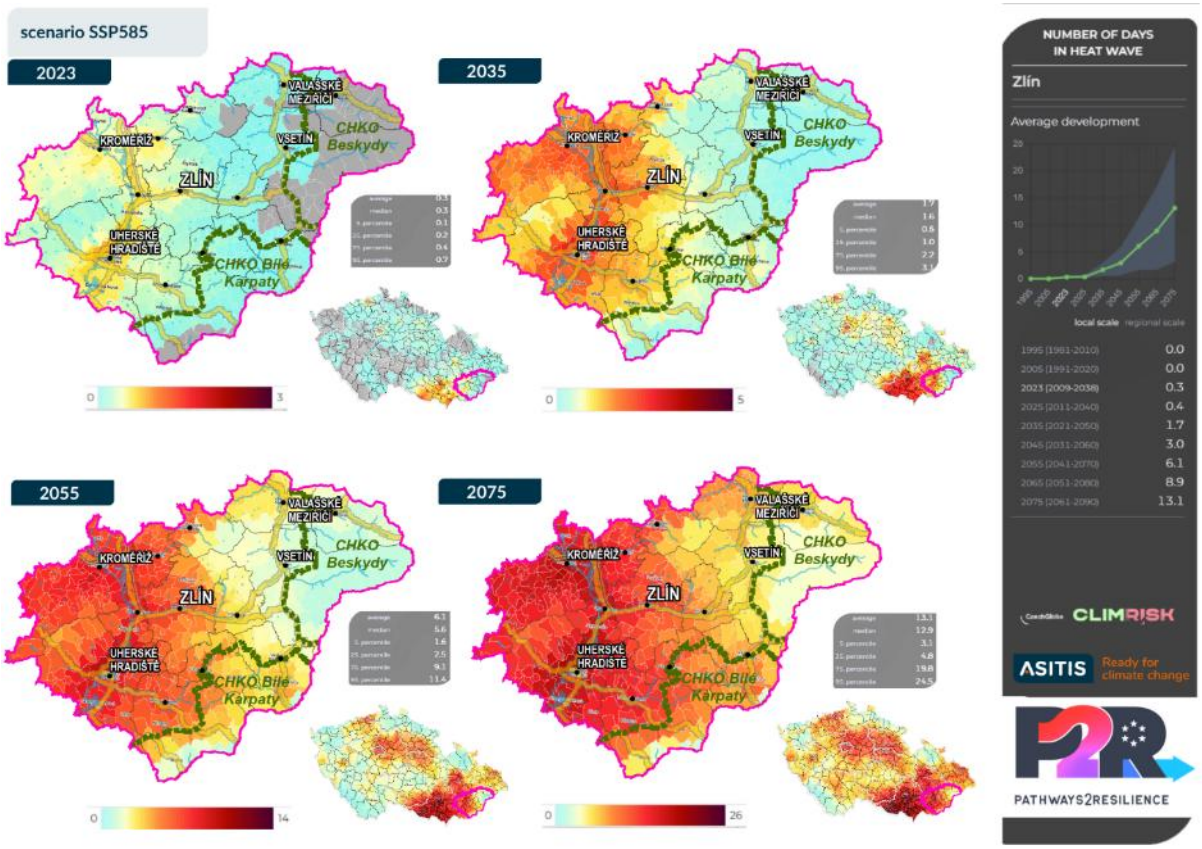
2. For climate events with the largest impacts, the level of risk and temporal and spatial variability were sought based on available data (CLIM RISK, PERUN, etc.):

2.3.1 Extreme heat

- Increase in extremes leading to longer and more intense **heat waves:**
    - **Number of days in a heatwave - this** is defined as at least 3 consecutive days with a maximum daily temperature >=30°C, where at least once the maximum temperature exceeds 35°C and the minimum temperature does not drop even below 20°C. These days are a risk to human health (significantly increasing the risk of cardiovascular incidents), but also to nature as there is increased evaporation. This results in a tendency to drought or more frequent wildfires. Therefore, this index can be used to assess the risk of drought, fires and, most importantly, the impacts on human health.
- The most at risk groups are the **elderly, children and people with health problems**, especially in cities where **urban heat islands** occur.

Predicted evolution of the number of days in a heat wave:





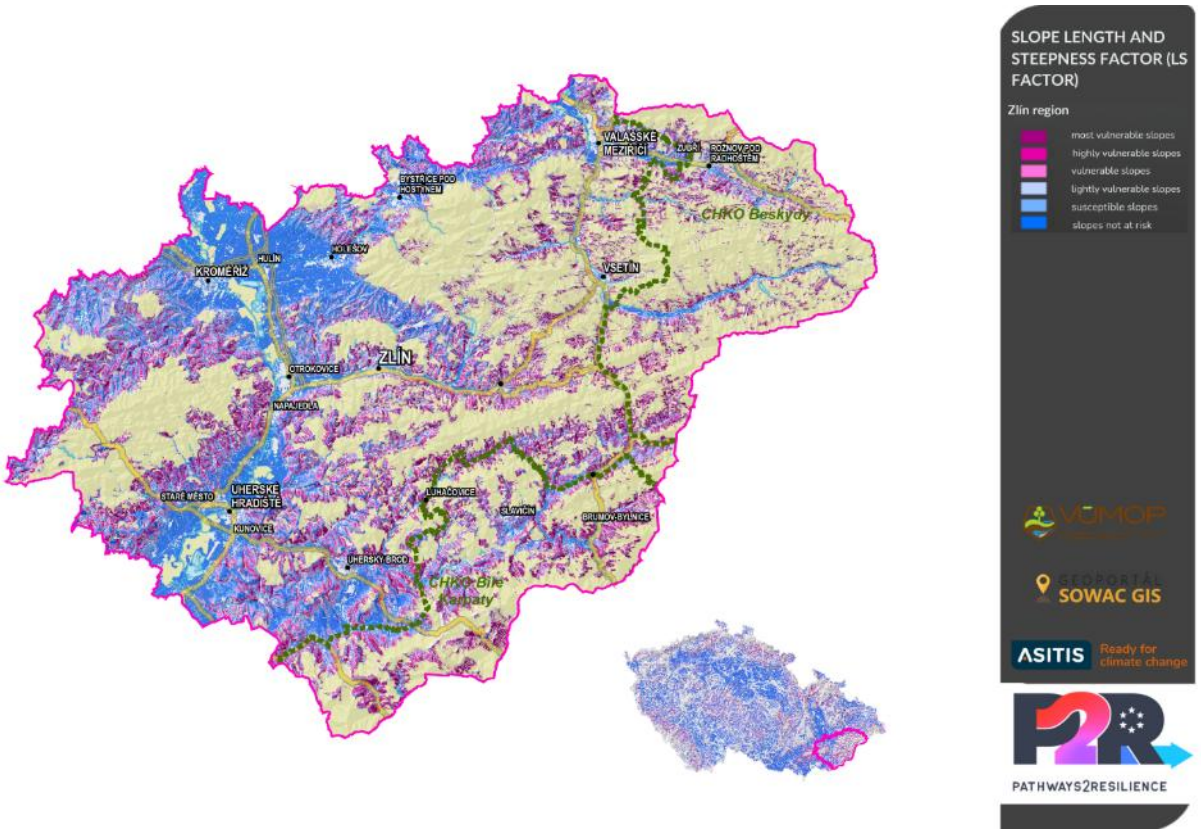
2.3.2 Heavy rainfall and flash flooding

- **Number of days with intense rainfall above 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 Zlín Region 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 stress on sewerage and drainage systems**, which may not be designed to cope with such volumes of water,
    - **soil erosion** on the edges of villages and towns and in agricultural landscapes,
    - **threats to infrastructure and property** in low-lying parts of villages and towns or near watercourses.

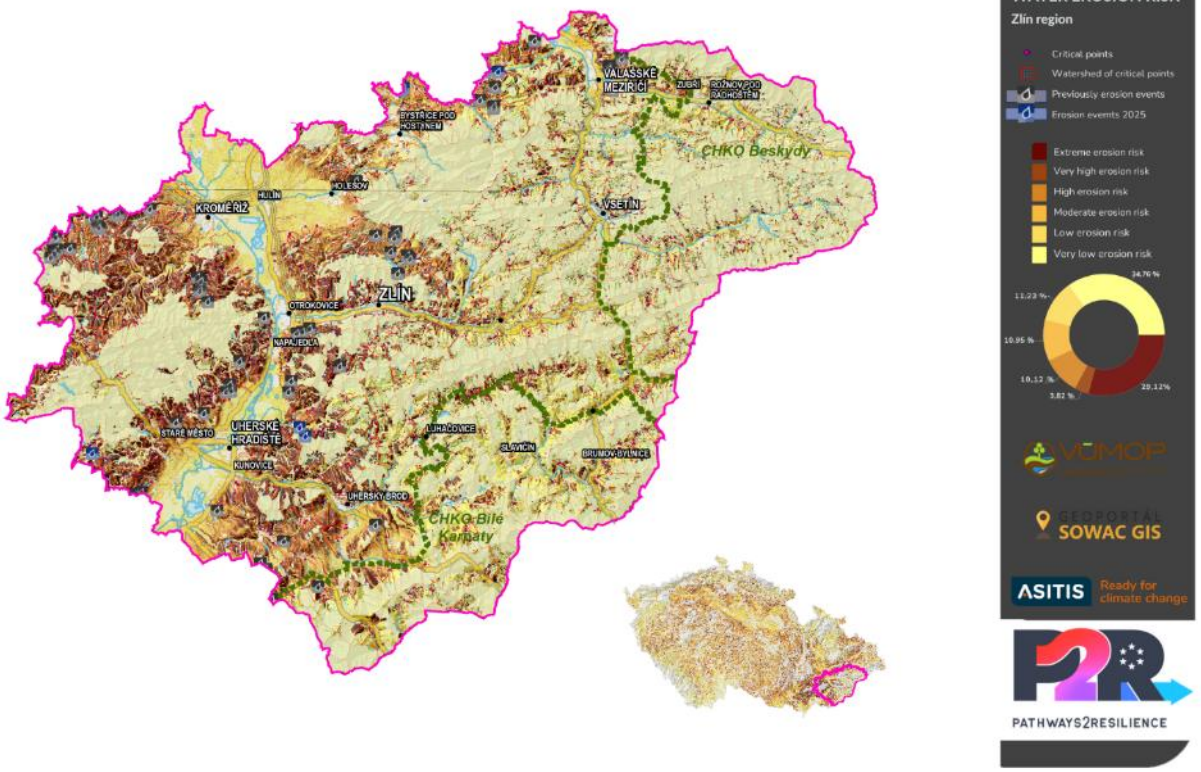
Predicted development of the number of days with intense rainfall above 30 mm:

  - This increase represents a **significant increase in the frequency of extreme precipitation events**, several times more than the current situation.
- **Slope gradient and length of slopes:**
  - **Expressed in terms of the so-called LS topographic 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)** - steepness of the slope.
  - In areas with a high LS factor, such rainfall results in **increased soil transport**, leading to degradation of the soil profile, siltation of streams, 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 Zlín Region 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 brings silt and sediment into watercourses, reducing channel capacity and increasing the risk of localised flooding.
  - Siltation of detention basins and storm drains impairs the City's responsiveness to rainfall events.
  - Topsoil runoff leads to degradation of suburban soils and loss of water retention capacity of the landscape.
  - This increases the county's vulnerability to drought and flooding.

- **Topographical factor in the Zlín Region:**



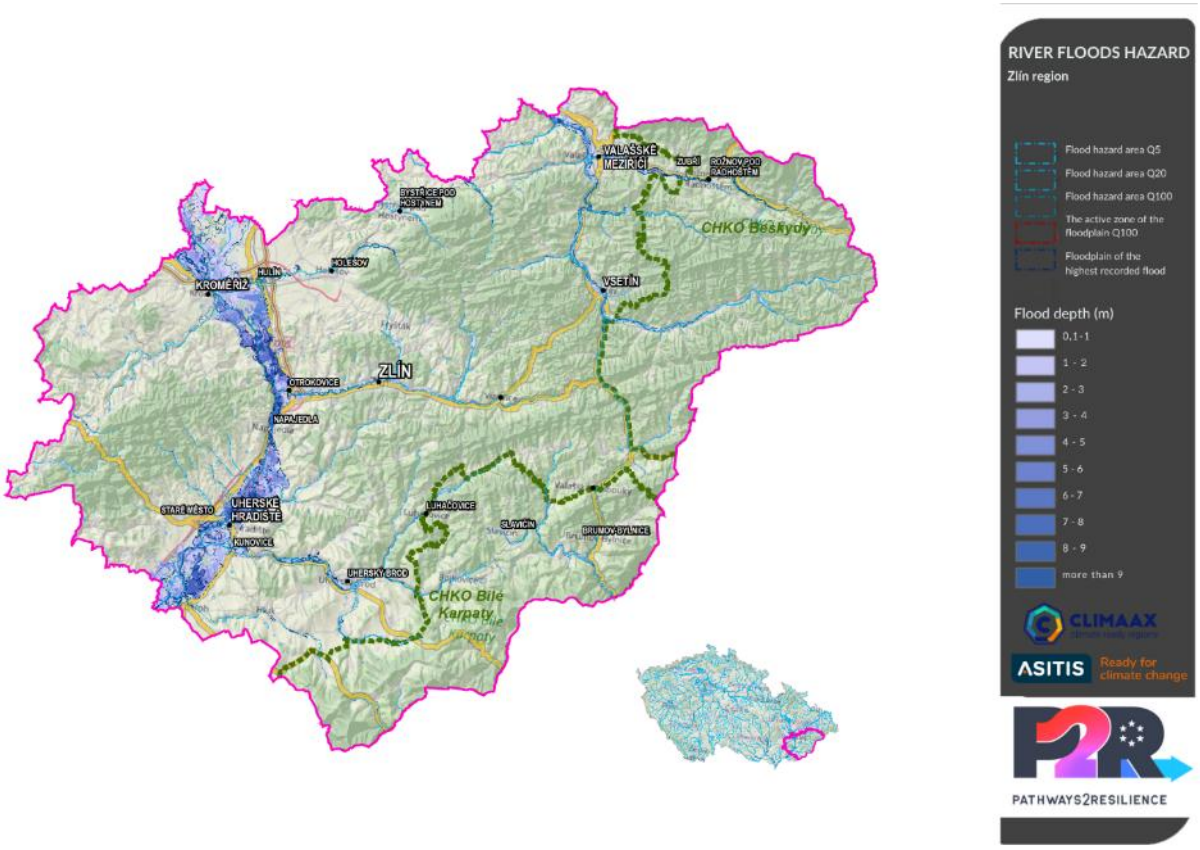
- **Threat of flash floods and water erosion in the Zlín Region**



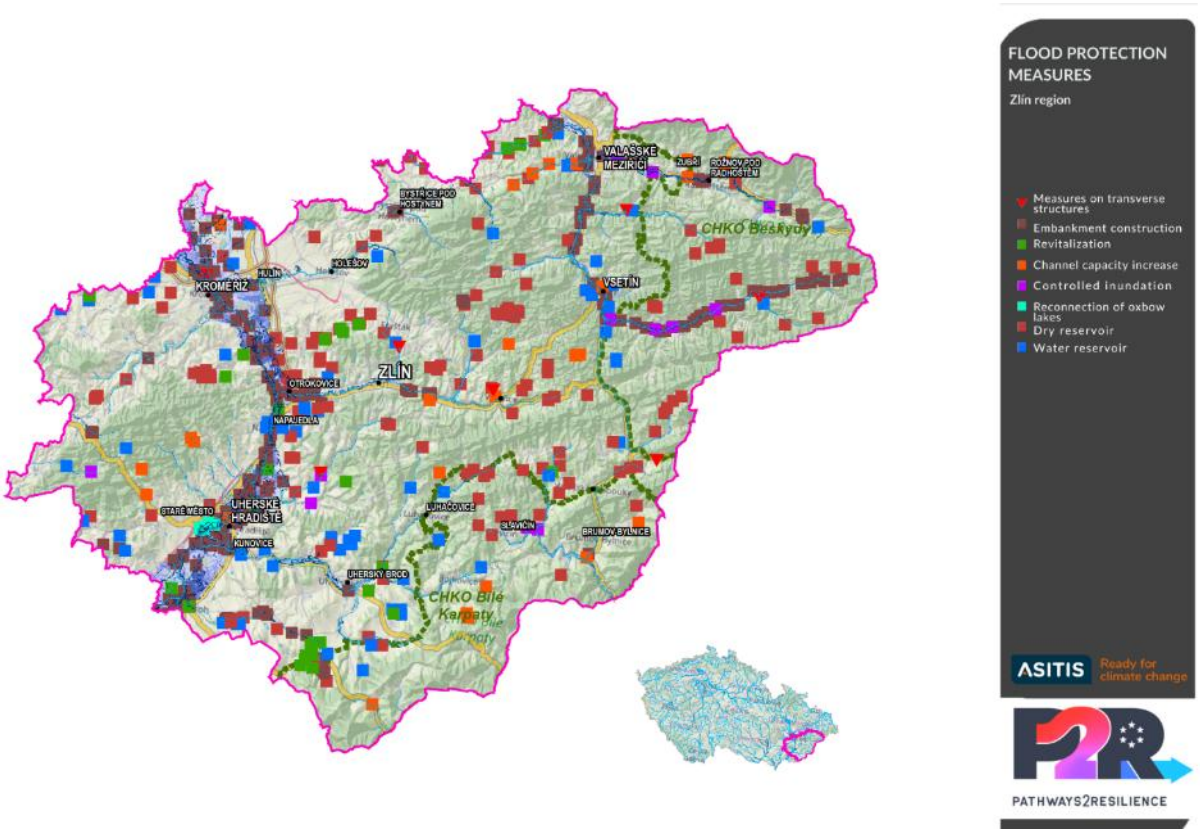
2.3.3 River flooding

The most significant threat to the Zlín Region in terms of flood risks is posed by the swollen flows of the **Morava** River and its tributaries - especially **the Dřevnice, Olšava and Bečva** rivers. These rivers pass through densely populated areas and also affect the intravitals of towns such as Otrokovice, Uherské Hradiště, Kroměříž and Valašské Meziříčí. During extreme rainfall and snowmelt, water spills into floodplains, which often include residential areas, transport infrastructure and industrial zones. In some locations, the depth of the spillway can reach several metres at 100-year water levels (Q100), threatening lives, property and key services.

- **River flood risk in the Zlín Region**



- **Design of flood protection in the Zlín Region**

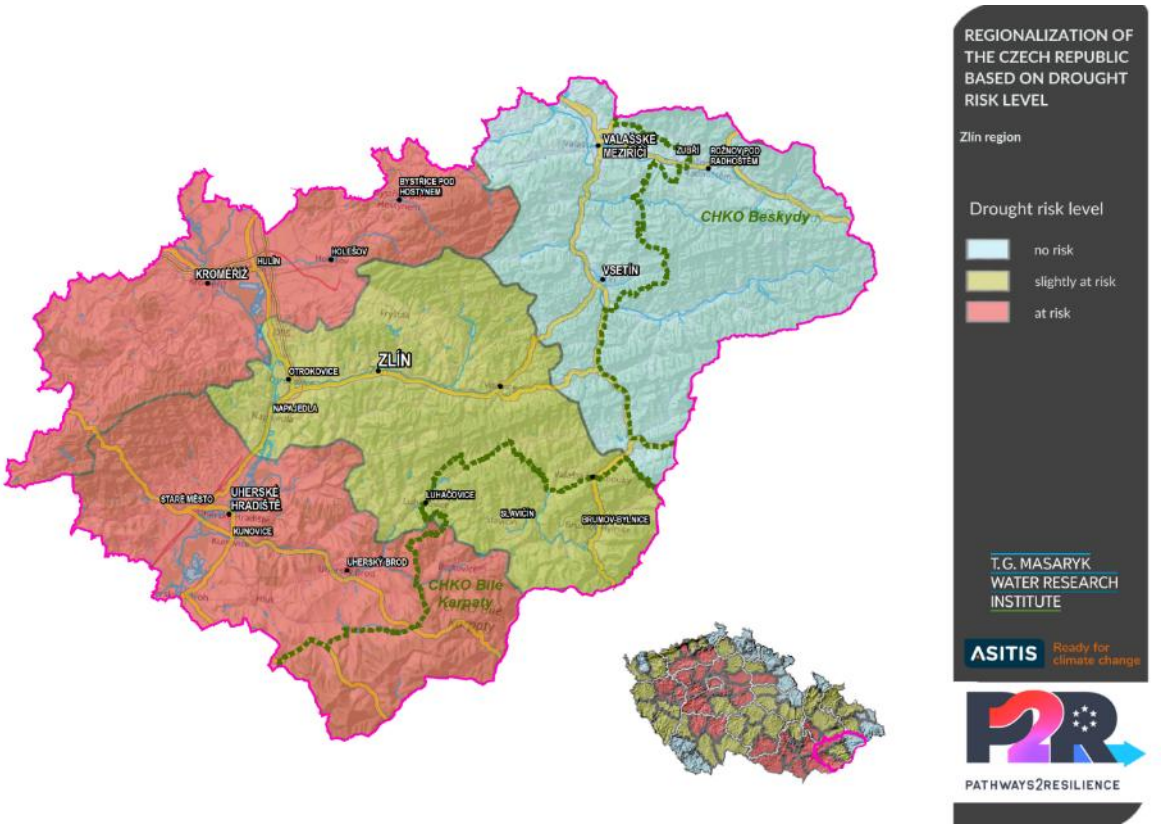


2.3.4 Hydrological drought and agricultural drought

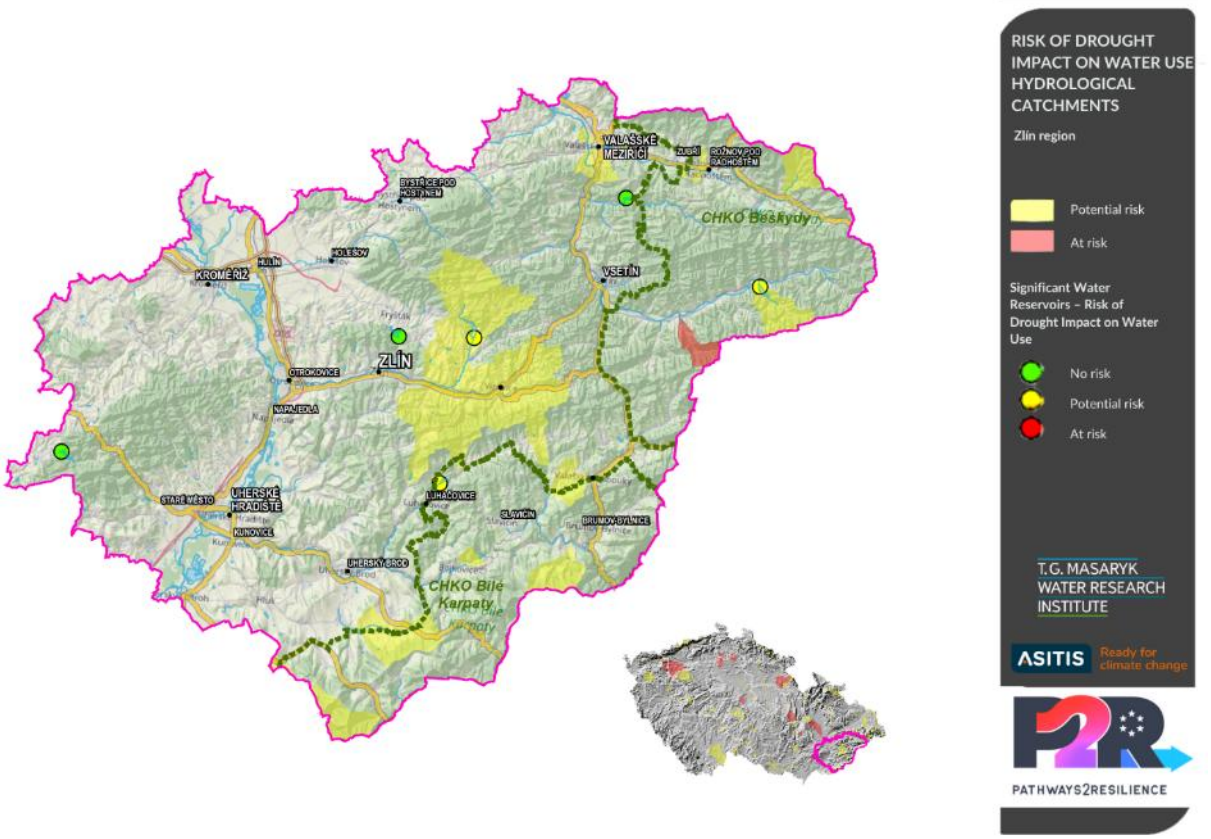
The threat of the so-called hydrological drought is assessed on the basis of:

- **Regionalisation of the territory of the Czech Republic according to the degree of drought threat** - this was developed for individual districts, which are divided into several risk classes according to the values of the observed water deficit volumes and the frequency of drought occurrence. This regionalisation uses hydrological models (e.g. the Bilan model) and cluster analysis on inter-basin data 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 indicating areas with different levels of risk, which can be used for strategic planning of measures against the negative impacts of drought.
    - **The Zlín Region** is affected by all three levels of risk, reflecting the considerable heterogeneity of geographical and climatic conditions within the region - from the fertile lowlands around the Morava River to the mountainous areas of the White Carpathians or the Hostýn Hills.
- **Risks of drought impacts on surface water use for hydrological basins -** based on hydrological data from about 400 profiles with a long-term time-slice (1986-2015), hydrological basins were assessed in terms of the risk of drought impacts on water availability for different purposes - human supply, agriculture, industry and ecosystems. Basins facing summer water balance deficits are particularly at risk.
    - The Zlín Region includes 1 risk catchment and 7 catchments with potential risk.
    - There are several strategic water reservoirs in the Zlín Region that provide water supply, recreation and ecological flows. Among the most important are the Slušovice and Luhačovice reservoirs, for which a potential risk of drought impact on water use has been identified, especially in summer months with low inflows.

- **Regionalisation of the territory of the Zlín Region according to the level of drought risk**

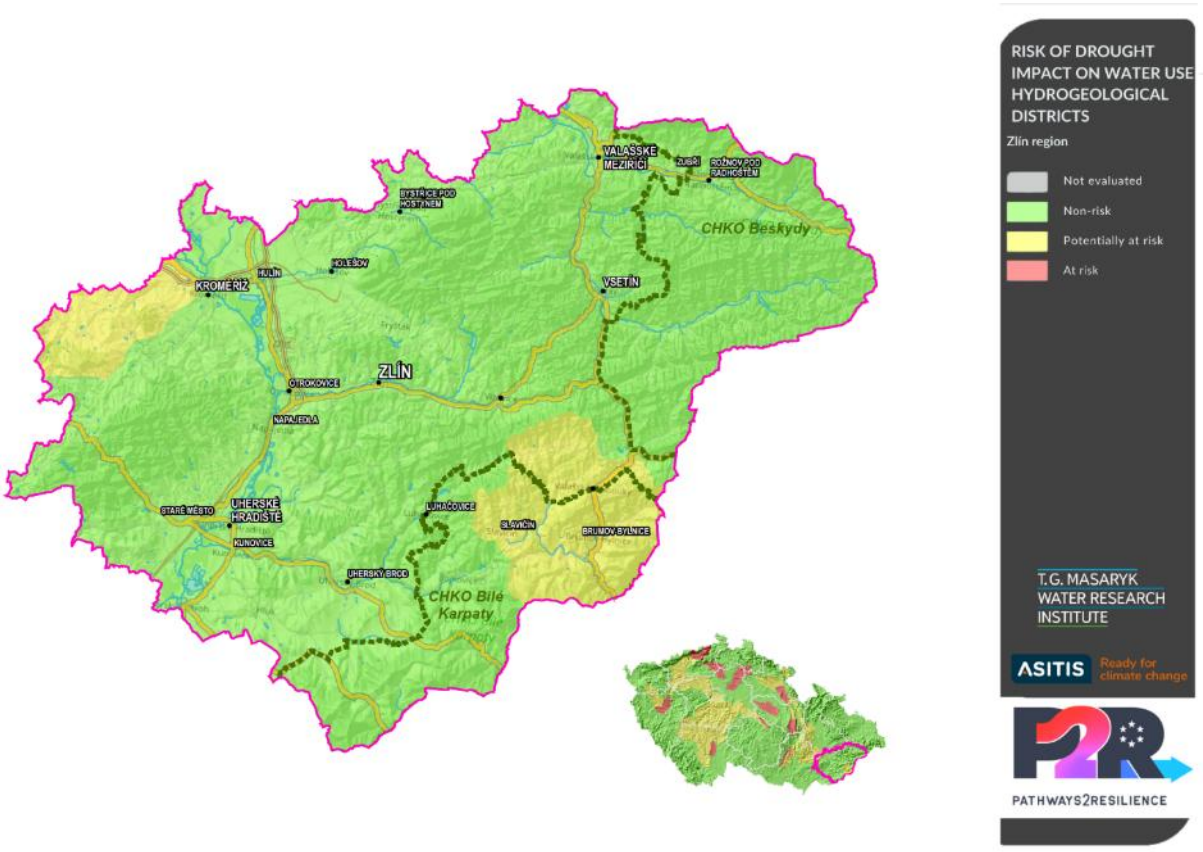


- **Risks of drought impacts on surface water use for hydrological basins in the Zlín Region**



- **Risks of drought impacts on groundwater use for hydrogeological districts -** Specific groundwater abstractions were analysed in 58 hydrogeological districts, with a number of them confirming a tight balance, particularly where groundwater is used to supply residents. Vulnerability was determined by water availability during drought and categorized from low to critical. Some regions were found to have insufficient supplies to cover withdrawals during drought.
    - In the Zlín Region, two hydrogeological regions with potential risk of drought impacts on groundwater use were identified.

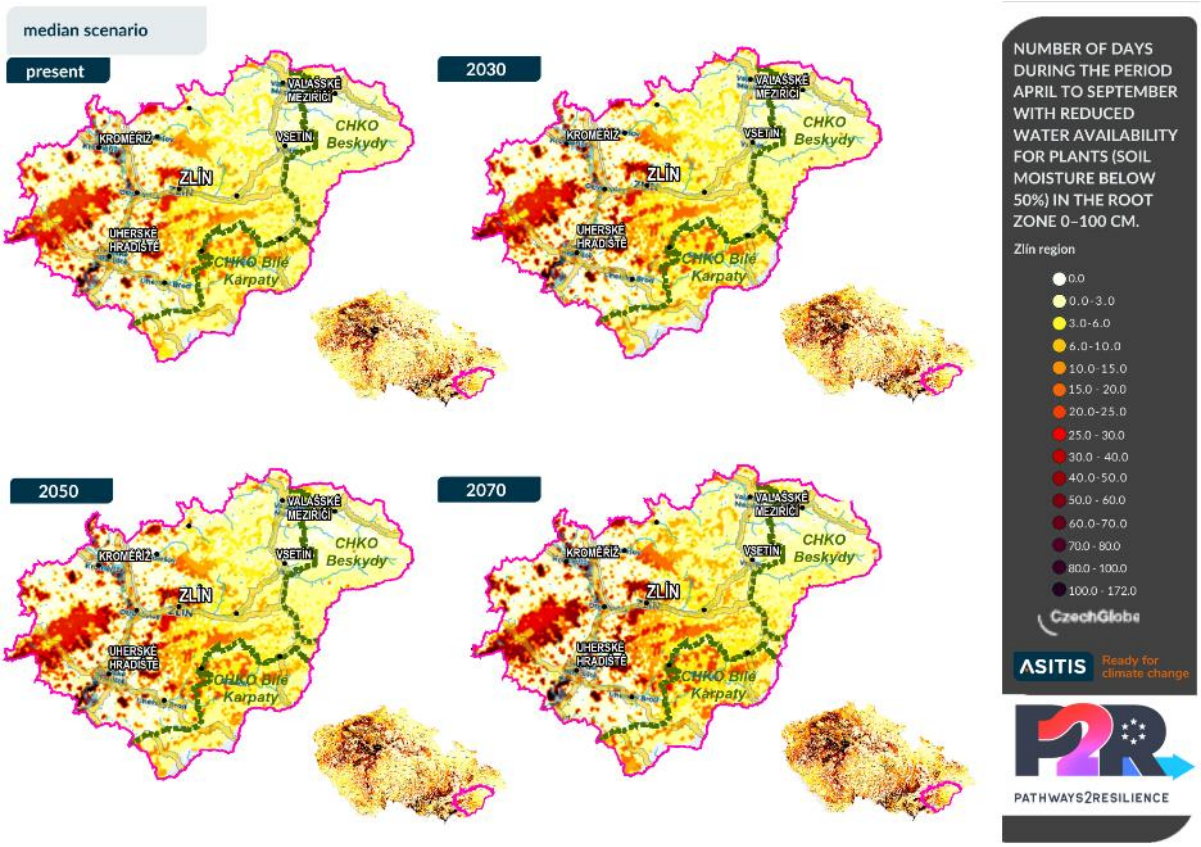
- **Risks of drought impacts on surface water use for hydrogeological regions in the Zlín Region**



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

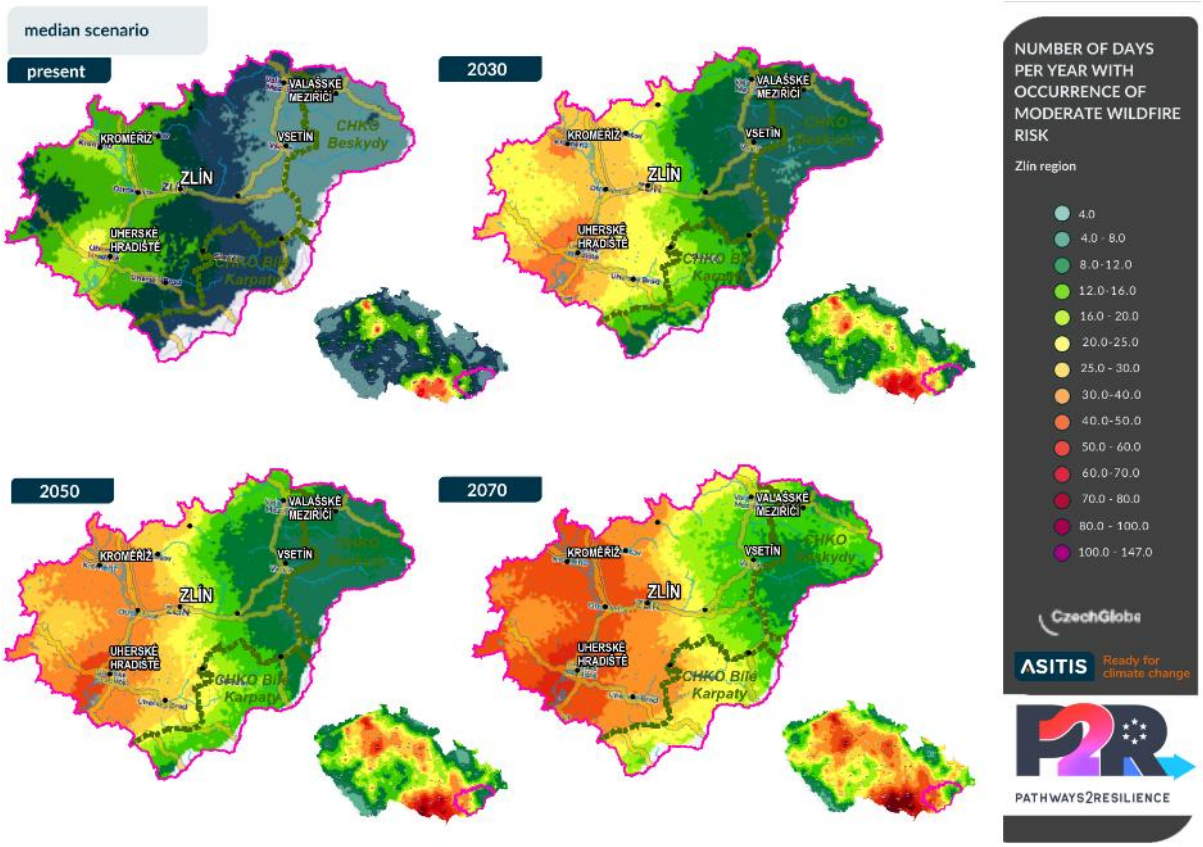
- **Lack of moisture in the soil root layer during the growing seasons -** number of days from April to September with reduced water availability for plants (water content below 50%) in the root layer 0-100 cm:
    - The Zlín region experiences an average of 4-5 weeks of drought in April-September, when soil moisture in the root zone is significantly reduced. Years of extreme drought are particularly critical, posing a serious risk to agriculture, public greenery and the stability of the region's ecosystems.
    - The length of these dry periods is likely to increase and the area of crops at risk will also become increasingly large.

- **Threat to the Zlín Region from soil root moisture deficiency during the growing seasons**



- **Severe storms and wind**
  - The Zlín Region is one of the areas with frequent occurrences of **convective storms** that can bring:
    - **Strong wind gusts** (local windstorms, hurricanes),
    - **Intense hailstorms** that damage crops and property,
    - **Flash floods**, especially in mountainous areas,
    - **Tornadoes**, which occur less frequently but have been recorded in Moravia in recent years.
- **Forest fires**
  - Rising **temperatures and drought** can contribute to an increase in the **risk of wildfires**.
  - Although the Zlín Region **is not one of the areas with the highest incidence of forest fires**, the situation may worsen in the future, especially in dry periods.

- **Number of days per year with occurrence of moderate wildfire risk in the Zlín Region**



Adaptation to these challenges will be key to maintaining quality of life, protecting the region's infrastructure and economy.

2.4 Adaptation needs

The Zlín Region faces a number of climate challenges that have been increasing in intensity and frequency in recent years. On the basis of the risk assessment presented in **section 2.3**, key adaptation needs have been identified. These needs reflect not only the real impacts of climate extremes, but also the specificities of the territory, the structure of public infrastructure, the development intentions of the public and private sectors, and the limited capacities of territorial actors at municipal and institutional level.

The most important **adaptation needs** include ensuring higher retention and absorption capacity of the landscape and urbanised areas, restoring water and wetland features and implementing blue-green infrastructure in public spaces. Drought and overheating are already having a negative impact in cities such as Zlín, Uherské Hradiště and Vsetín. In response to this, tree planting, the introduction of green roofs and facades, the shading of public buildings and the adaptation of road surfaces with regard to drainage and absorption capacity need to be significantly strengthened. At the same time, there is an increasing need to protect the population from heavy rainfall, not only by building retention basins and dry polders, but also by reconstructing sewerage networks. These needs are reflected in the planned investments not only of the region, but also of municipalities and state enterprises such as the Morava River Basin, the Road and Motorway Directorate (ŘSD) and the State Land Office (SPÚ), which implement linear constructions, water management measures or complex land improvements.

Equally important is the need to **increase the resilience of public services**, especially health and social care. Health facilities, schools and homes for the elderly must be able to provide a safe indoor environment even during heat waves or infrastructure failures. In this respect, building renovation should be planned with a view to natural cooling, improving microclimates and introducing decentralised water management solutions.

At the same time, it was identified that a significant part of the **adaptation needs of** the Zlín Region are institutional in nature: there is a lack of methodological leadership of municipalities, coordination across departments, sufficient capacity for climate planning and a data collection system for decision-making. This also applies to ensuring synergies between investments of the region, the state and the private sector, which usually does not yet climate-proof their investment projects, although many of them (e.g. logistics centres, industrial zones, development complexes) bring fundamental changes in land use and may increase vulnerability to extreme events.

Both national and European resources are available to address these needs, in particular the Operational Programmes OPEP, IROP, the Modernisation Fund (e.g. RES+ calls) and the LIFE programme. In addition, the financial instruments managed by the SFŽP, MoE are also essential, be it programmes for landscape adaptation, green infrastructure, land improvements or linear investments. Joint investments with the Morava River Basin Authority, the Regional Water Management Authority, the SPU and other central actors also play an important role. However, the possibilities of regions and municipalities often face limits related to the need for co-financing, complexity of calls, lack of support staff or insufficient project readiness.

Although resources exist, significant **adaptation constraints** remain. Technical constraints include in particular outdated or insufficient infrastructure (e.g. unified sewerage), limited possibility to build in confined valleys or areas with complex morphology. Institutionally, the region and municipalities lack a stable expert base, cross-departmental coordination and systematic support for integrated planning. Financial constraints are particularly evident in smaller municipalities that do not have the capacity to co-finance or maintain green measures in the long term. These are compounded by social limits - low public awareness of the benefits of adaptation, low levels of resident participation or resistance to changes in public space. There is also a specific role for the private sector, which in most cases does not have an adaptation strategy, although its investments have a significant impact on territorial development and climate risks.

The adaptation needs of the Zlín Region will change over time. As climate extremes become more frequent, pressure on public budgets, infrastructure and the health system will increase. Population ageing, suburbanisation and urbanisation pressure on undeveloped areas may further exacerbate vulnerability. This increases the need to monitor and update strategy and investment priorities. Uncertainties associated with climate, demography and economic developments require that the climate resilience strategy is not a static document, but incorporates flexible management tools, scenario planning and the ability to manage adaptively over time.

2.5 Existing or planned climate risk management and adaptation actions

Level	Policy/strategy/initiative	Objectives and implementation	Sector / Focus / Priorities of the Zlín Region	Gaps or issues	Private sector actions
Local (city)	**SECAP Slavičín**	Reduction of CO_2 emissions by 40% by 2030, adaptation, sustainable transport	Energy, climate, transport	Need for external financing, administrative complexity	Insulation, PV, energy services from local companies
Local (ORP)	**Vsetín Adaptation Strategy (approved 25 April 2022)**	Mitigation of impacts of drought, heat, intense rainfall; participatory action plan	Urban planning, infrastructure, urban greenery	Limited technical and financial capacity	Local companies - workshop support, implementation of partial measures
Local (ORP)	**ORP Vsetín Flood Plan (update 9/2023)**	Increased flood preparedness, digitalization and monitoring	Water management, population protection	Does not include more comprehensive climate adaptation	Private sector - monitoring, warning devices
Local (city)	**Adaptation Strategy Uherský Brod (9 December 2019)**	Climate adaptation against extremes: drought, floods	Urban planning, infrastructure	The document is rather general in nature, with fewer specific measures	Private companies involved in infrastructure design work
Local (city)	**Adaptation Strategy Uherské Hradiště (14 June 2021)**	Proposal for specific measures for public space: greenery, water regime, health protection	Urban greenery, water regime, public health	Poor awareness raising, implementation dependent on investment	External developers + local companies implement small projects
Local (city)	**Smart concept Vsetín - RES (2020)**	Promotion of renewables, smart public infrastructure (lighting, waste)	Energy, RES, smart city	Dependence on subsidies, limited financial resources	Implementation of public lighting and RES installations by companies
Local (ORP)	**SECAP Valašské Klobouky (2024)**	Sustainable Energy and Climate Action Plan ORP, air improvement	Energy, air, climate	Procurement through public procurement, implementation still early in the process	Private sector - project elaboration and initial measures
Local (city)	**Strategy Valašské Klobouky 2030 (2017)**	Adaptation to climate change, spatial development, emission/water/air reduction	Urban planning, environment, transport	General objectives; detailed measures rather addressed by subsequent action plans	Private companies participate in infrastructure and conceptual development
Regional	**Concept for the development of the road network of classes II and III of the Zlín Region**	Includes a proposal for monitoring and detailed evaluation of the existing road network owned by the ZK.theZlín region. Describes the methodology for the evaluation of projects on the road network owned by Zlín region.	3.1 Sustainable mobility	Insufficient funding, dependence on subsidies, need for coordination with municipalities	Construction companies for reconstruction, engineering companies for project preparation
Regional	**Action plan for noise protection measures for main roads owned by the Zlín Region**	The aim of this strategic document is to reduce the number of people affected by noise above the limit values by the proposed measures. The Action Plan mainly identifies urban and transport measures (relocations and reconstructions with low-noise road surfaces) and recommends the prohibition of inappropriate construction of acoustically protected buildings (residential and family houses) in the vicinity of roads with high traffic loads.	3.1 Sustainable mobility	High implementation costs, long-term project preparation, legislative constraints	Building material suppliers, acoustic specialists
Regional	**Concept for the development of rail transport in the Zlín Region**	The aim is to strengthen the tools for strategic development and cooperation between the state, the region, towns and municipalities on the basis of the development of support for the backbone service by rail transport and the completion of the concept of terminals and cooperation of individual modes of transport.	3.1 Sustainable mobility	Dependence on state investment policy, limited regional budgets	Technology companies, rail technology suppliers
Regional	**Transport Master Plan of the Zlín Region**	The aim is to strengthen the tools for strategic development and cooperation between the state, the region, towns and municipalities in the field of transport policy of the Zlín Region.	3.1 Sustainable mobility	Complex coordination of plans between municipalities, ageing infrastructure	Planners, IT companies for traffic modelling
Regional	**Transport Service Plan of the Zlín Region**	The aim is to ensure that the public transport system of the Zlín Region is perceived as an alternative to individual transport, where a high-quality, functional, reliable and stable system of fast, regular and competitive interval and accessible public transport is ensured in accordance with the demand for mobility and the sustainability of financing, with an emphasis on the availability of basic infrastructure, safety and support for environmentally friendly forms of transport, using the technical and technological characteristics of individual modes of transport and creating conditions for their mutual cooperation.	3.1 Sustainable mobility	Low efficiency of some lines, need to modernise the fleet	Carriers, Coordinator of public transport in the Czech Republic (KOVED)
Regional	**Intelligent solutions for traffic management in the Zlín Region**	The aim is to elaborate the basic objectives of the ITS Action Plan of the Czech Republic (MD CR) at the regional (regional) level, in the context of the development of national and European documents and experiences. New optimization of public transport and its development in the field of line and rail transport, including the Integrated Transport System of the Zlín Region.	3.1 Sustainable mobility	Financial intensity, demanding integration of systems	IT and technology companies
Regional	**Road safety strategy in the Zlín Region 2022 - 2030**	The long-term goal is to achieve VISION ZERO, i.e. safe road traffic without fatal and severe consequences.	3.1 Sustainable mobility	Difficult to change behaviour of road users, limited resources	Training providers, safety technology
Regional	**Concept of Roma integration in the Zlín Region for 2020 - 2024**	The aim is to contribute to the improvement of the current position of Roma in all spheres of life and to achieve conflict-free coexistence through the cooperation of the Region with towns, municipalities and non-profit organisations.	2.5 Effective territorial governance and civil society	Difficult to measure results, low participation of target groups	NGOs, community centres
Regional	**Concept for the development of social services in the Zlín Region**	The aim of the concept will be to propose, on the basis of a comprehensive analysis, the effective completion of the transformation of services of contributory organisations with the aim of deinstitutionalisation and humanisation with an impact on the network of social services.	2.3 A socially cohesive region	Slow transformation process, lack of capacity	Social service providers, construction companies
Regional	**Medium-term development plan for social services 2023-2025**	The document sets out strategies for the provision and development of social services in the Zlín Region.	2.3 A socially cohesive region	Need to secure funding, mismatch between capacity and demand	Social service providers
Regional	**Concept of family and senior policy of the Zlín Region for the years 2024 - 2030**	The aim of the Concept of Family and Senior Policy for the period 2020 - 2022 is to improve the quality of life of families and seniors in the Zlín Region.	2.3 A socially cohesive region	Limited budget for new activities, low public participation	Non-profit organizations
Regional	**Development Plan of Contributory Organizations of the Zlín Region in the**	The aim of this strategic document is to describe the medium-term outlook of measures that will be aimed at the	2.3 A socially cohesive region	Complex transformation	Consultancy firms, construction sector

Level	Policy/strategy/initiative	Objectives and implementation	Sector / Focus / Priorities of the Zlín Region	Gaps or issues	Private sector actions
	Social Sphere for the Period 2024 to 2028	development of the contributory organisations established by the Zlín Region in the social field.		process, financial limits	
Regional	**Concept of tourism development of the Zlín Region 2020-2030**	The aim of the concept is to strengthen tools for strategic development of tourism in the territory of the Zlín Region with regard to the evaluation and use of the potential of CR.	1.1 Sustainable business development in the region	Lack of funding for promotion, lack of coordination	Tourism entrepreneurs
Regional	**Concept for the development of cycling in the Zlín Region**	The aim is to propose a system of short- and long-term measures leading to the maintenance and further effective development and optimisation of cycling based on an analysis of the current state of cycling, the network of cycling routes and cycle paths in Zlín region.	3.1 Sustainable mobility	Lack of funds for building routes, complex property rights	Construction companies, planners
Regional	**Regional Annex to the National RIS3 Strategy for the Zlín Region (Regional Innovation Strategy of the Zlín Region) until 2030**	The aim is to help increase competitiveness based on innovative entrepreneurship.	1.1 Sustainable business development in the region 1.2 Cooperation in research, development, innovation 1.3 Investment activity in the Zlín Region 1.4 Sustainable labour market 2.1 Educated population	Slow implementation of innovations, limited cooperation of companies	Companies in the field of research and development
Regional	Strategy for the development and support of the creative ecosystem of the Zlín Region 2025-2030	Strategic framework for the support and development of cultural and creative industries. The aim is to create favourable conditions for the sustainable development of the cultural and creative sector.	Cultural and creative sectors	Insufficient funding, underestimation of creative professions	Cultural and creative industries, entrepreneurs
Regional	**Update of the Rural Development Strategy in the Zlín Region until 2030**	The aim is to identify development problems in the territory and to find ways to solve them by targeted support of relevant development activities using available financial resources (European, national, regional and regional).	3.5 Balanced development of the territory	Low activity of municipalities, poor promotion of support opportunities	Consultancy firms, farmers, private sector in municipalities
Regional	**SMART REGION - Strategy for the development of the Smart Region of the Zlín Region 2021-2026**	The aim is to define the basic directions in which the region wants to co-create and stimulate the environment for the introduction of smart technologies and contribute to the application of sustainable development principles in the territory of the region, using modern technologies to improve the quality of life and make public administration more efficient.	Cross-sectionally	High implementation costs, need for a change in the mindset of authorities	IT and technology companies
Regional	**Integrated plan for the development of ICT fields in the Zlín Region**	This is a ten-year and very ambitious plan, whose vision is that the Zlín Region will be a "globally attractive IT region for motivated and talented people" in 2033	1.2 Cooperation in research, development and innovation	Lack of experts, slow development of infrastructure	ICT companies
Regional	**Regional action plan for the development of education in the Zlín Region III**	The KAP sets priorities and individual steps necessary to achieve the objectives of education policy in the territory based on need, urgency, benefits and supportability by real data and analyses.	2.1 Educated population	Inequalities in access to education, lack of qualified teachers	Educational organisations
Regional	**Update of the Zlín Region Development Strategy 2030**	The basic strategic development document of the Zlín Region for the period until 2030. Update of 2023. approved 2024.	x	Low coherence with climate change adaptation, no binding adaptation targets	Businesses, regional chambers, educational institutions
Regional	**Development Plan 2024 - 2025**	The Development Plan is a strategic document that represents an annually updated and coherently managed set of activities through which the conceptual documents of the Zlín Region are implemented.	Cross-sectionally	Weak linkage to climate resilience, infrastructure and economic dimension prevails	Contractors, consultants, project suppliers
Regional	**Territorial Energy Concept of the Zlín Region**	The aim is to coordinate the development of the energy system and resources in the territory of the region and to meet the requirements of Act No. 406/2000 Coll., on energy management and Act No. 86/2002 Coll., on air protection	3.2 Energy security	Slower implementation of RES, low energy self-sufficiency, dependence on fossil resources	Energy companies, ESCOs, RES producers and installers
Regional	**Long-term plan for education and development of the education system in the Zlín Region 2024-2028**	It is the main strategic document of the region in the field of education.	2.1 Educated population	Lack of teachers in technical and science fields, weak integration of environmental topics	Private schools, education companies, companies involved in apprenticeships
Regional	**Plan for coverage of the Zlín Region with ambulance bases**	The document determines the number and location of the call-out bases depending on the demographic, topographic and risk parameters of the territory of individual municipalities so that the location of an incident on the territory of individual municipalities can be reached from the nearest call-out base within 20 minutes.	2.2 Health care	Uneven distribution of bases, lack of connection with climatic risks such as extreme weather	Vehicle, technology and construction contractors
Regional	**Healthcare of the Zlín Region 2030**	It is mainly a proposal for the development of medical disciplines in the Zlín region, partly a proposal for the development of medical infrastructure and equipment.	2.2 Health care	Imbalance between demand and supply of care, ageing of health care staff	Private healthcare facilities, investors in technology
Regional	**Support plan for the development of social and health services on the social-health frontier in the Zlín Region**	The Healthcare Concept of the Zlín Region 2030 highlights topics in the field of health care with overlapping into the field of social services, with the fact that the issue of the social and health borderline will be elaborated in a separate document in interdisciplinary cooperation between the Department of Health and the Department of Social Affairs. The document under preparation addresses these topics. It maps out 6 key areas and proposes measures that can be addressed at the regional level.	2.2 Health care	Lack of integrated services, shortage of staff in outreach services	NGOs, care providers
Regional	**Water Supply and Sewerage Development Plan of the Zlín Region**	The documents are the basis for the preparation of the Water Supply and Sewerage Development Plan of the Czech Republic. The content includes, among other things, the definition of surface and groundwater sources considered for the purpose of treatment for drinking water in accordance with the requirements of Council Directive 75/440/EEC.	3.3 Resilient environment	Need for investment in infrastructure, complex coordination	Water companies, planners
Regional	**Concept of nature and landscape protection of the Zlín Region until 2030 (outside the Protected Landscape Area)**	Updating of the basis and determination of development and activities in the field of nature and landscape protection in Zlín region.	3.3 Resilient environment	Insufficient financial instruments to support landowners, low motivation for ecological management	Foresters, landowners, environmental initiatives

Level	Policy/strategy/initiative	Objectives and implementation	Sector / Focus / Priorities of the Zlín Region	Gaps or issues	Private sector actions
Regional	**Regional concept of environmental education, training and awareness of the Zlín Region for the period 2024-2030**	The Concept of Environmental Education, Education and Awareness has its importance in terms of systematic and long-term impact on the population of the Zlín Region through activities that are important as prevention of environmental damage, its protection and protection of the health of the population.	3.3 Resilient environment	Low public awareness of climate risks, lack of modern educational formats	Eco-centres, educational agencies
Regional	**Update of the Waste Management Plan of the Zlín Region for the period 2016 - 2025**	Sets out the principles for waste management, objectives and measures to achieve them, including objectives and measures for waste prevention, as well as preferred methods of waste management and a set of indicators to assess the fulfilment of the objectives of the Zlín region WFD.	3.3 Resilient environment	Difficult to meet sorting targets, lack of investment	Waste companies
National	**National Action Plan for Adaptation to Climate Change (NAP Adaptation)**	Comprehensive framework for climate change adaptation in the country, inter-ministerial approach	Water, health, forests, agriculture, cities	Lack of linkages with local level and low funding	-
National	**State Environmental Policy of the Czech Republic 2030**	Increasing resilience to climate change, integrating adaptation into national policies	Air, nature, water, landscape	General objectives, lack of specific measures	-
EU	**EU Climate Change Adaptation Strategy (2021)**	Moving from planning to implementation, linking science, policy and practice, emphasis on equity	Public planning, infrastructure, nature, finance	Voluntary implementation, uneven application	-

source: own elaboration based on publicly available databases of strategies by territorial level

Základní průřezové strategické dokumenty, cíle a jejich vazba na klíčové systémy odolnosti kraje vůči klimatické změně

	Místní ekonomické systémy	Zdravotní infrastruktura a kvalita života	Kritická infrastruktura	Vodní hospodářství	Využití půdy a potravinářství	Ekosystémy
Strategie rozvoje ZLK 2030	1.1 Udržitelný rozvoj podnikání 1.2 Spolupráce v oblasti výzkumu, vývoje, inovací 1.3 Investiční aktivita ve Zlínském kraji 3.3 Odolné životní prostředí 3.3.1 Zajištění naplnění principů cirkulární ekonomiky 3.5 Vyvážený rozvoj území	2.1 Vzdělaná populace 2.2 Péče o zdraví 2.3 Sociálně soudržný kraj 2.5 Efektivní správa území a občanská společnost	3.1 Udržitelná mobilita 3.2 Energetická bezpečnost 3.2.3 Příspěvek k posílení energetické bezpečnosti a infrastruktury 3.4 Digitální region 3.5 Vyvážený rozvoj území	3.3 Odolné životní prostředí 3.3.2 Směřování k životnímu prostředí bez znečišťujících látek 3.3.3 Adaptace na změnu klimatu	3.3 Odolné životní prostředí 3.3.2 Směřování k životnímu prostředí bez znečišťujících látek 3.5 Vyvážený rozvoj území	3.3 Odolné životní prostředí 3.3.4 Biologická diverzita jako základ ochrany přírody 3.5 Vyvážený rozvoj území
Strategie rozvoje chytrého regionu ZLK 2030	1.1 Široké partnerství a koordinace aktivit na území kraje s využitím SMART řešení 2.1 Silné povědomí o atraktivitě chytrého regionu ZK 3.7 Rozvinuté SMART podnikání, moderní formy ekonomiky a cestovní ruch	2.1 Silné povědomí o atraktivitě chytrého regionu ZK 3.6 Provázaná zdravotní a sociální péče s využitím digitálních prostředků	3.1 Kvalitní ICT a vybudovaná e-governance 3.2 Dostupná, ekologická a bezpečná SMART mobilita 3.4 Vybudovaný SMART energetický systém		1.2 Koncepční přístup k plánování a realizaci SMART řešení	3.3 Kvalitní SMART environment včetně ekosystémových služeb

Sektorové a ostatní koncepce Zlínského kraje a jejich vazba na klíčové systémy odolnosti kraje vůči klimatické změně

Místní ekonomické systémy	Zdravotní infrastruktura a kvalita života	Kritická infrastruktura	Vodní hospodářství	Využití půdy a potravinářství	Ekosystémy
Krajská příloha Národní RIS3 strategie za Zlínský kraj (Regionální inovační strategie Zlínského kraje) do 2030	Koncepce vývoje sociálních služeb ve Zlínském kraji	Koncepce rozvoje silniční sítě II. a III. tříd Zlínského kraje	Plán rozvoje vodovodů a kanalizací Zlínského kraje	Aktualizace Strategie rozvoje venkova ve Zlínském kraji do roku 2030	Koncepce ochrany přírody a krajiny Zlínského kraje do roku 2030 (mimo území CHKO)
Integrovaný plán pro rozvoj ICT oborů ve Zlínském kraji	Střednědobý plán rozvoje sociálních služeb 2023-2025	Koncepce rozvoje kolejové dopravy ve Zlínském kraji	Plán pro zvládání sucha a stavu nedostatku vody Zlínského kraje	Zásady územního rozvoje Zlínského kraje	Krajská koncepce environmentálního vzdělávání, výchovy a osvěty Zlínského kraje pro období 2024-2030
Strategie rozvoje a podpory kreativního ekosystému Zlínského kraje 2025 – 2030 - Zlínský kraj	Koncepce rodinné a seniorské politiky Zlínského kraje pro roky 2024 - 2030	Generel dopravy Zlínského kraje	Povodňový plán Zlínského kraje		Plán odpadového hospodářství Zlínského kraje 2016 – 2025
	Plán rozvoje příspěvkových organizací Zlínského kraje v sociální oblasti pro období let 2024 až 2028	Plán dopravní obslužnosti území Zlínského kraje			Aktualizace plánu odpadového hospodářství Zlínského kraje pro období 2016 - 2025
	Dlouhodobý záměr vzdělávání a rozvoje vzdělávací soustavy ve Zlínském kraji 2024-2028	Inteligentní řešení pro řízení dopravy ve Zlínském kraji			
	Plán pokrytí území Zlínského kraje výjezdovými základnami zdravotnické záchranné služby	Strategie bezpečnosti silničního provozu ve Zlínském kraji 2022 – 2030			
	Zdravotnictví Zlínského kraje 2030	Koncepce rozvoje cyklistiky na území Zlínského kraje			
	Plán podpory rozvoje sociálních a zdravotních služeb na sociálně zdravotním pomezí ve Zlínském kraji	Územní energetická koncepce Zlínského kraje			
		Krizový plán Zlínského kraje			
		Havarijní plán Zlínského kraje			

2.6 Adaptation objectives

The Zlín Region has set adaptation targets in cooperation with ASITIS, Ltd., not only on the basis of data analysis and strategic documents and concepts, but also on the basis of broad involvement of key stakeholders and participatory processes. A joint stakeholder dialogue will take place in June 2025 in Zlín to support the development of a shared vision for climate resilience and to define priority adaptation objectives for the region. Other forms of engagement have also been included in the process, such as face-to-face meetings, questionnaire surveys, as well as through self-assessment in the Resilience Maturity Curve. These activities supported the identification of the region's needs, the alignment of adaptation priorities with the expectations of different groups, and the creation of a foundation for transformative actions to increase resilience to climate change.

3 Regional capacity

3.1 Resilience Maturity Curve

The so-called **Resilience Maturity** Curve (RMC) is a new monitoring, evaluation and learning model developed by Pathways2Resilience experts. 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 the immediate and long-term adaptation needs of the region.

The Resilience Maturity Curve is structured around a self-assessment questionnaire that is aligned with the following points and with the steps of the P2R programme, including the key supporting conditions and the adaptation investment cycle.

The Zlín Region was identified as having an ***average level of resilience maturity*** in the Resilience Maturity Curve (RMC) self-assessment.

The two phases of the Regional Resilience Journey (RRJ) were rated at a **medium level** of capacity, while the so-called **"Building a Shared Vision"** phase was rated as low, with all four steps in this phase at a low level.

Similarly, capacity in understanding the system was also rated as low. The overall combined score of the region was described as **medium**. Areas requiring particular attention include ***management, engagement and collaboration***, and ***experimentation, learning and reflection***, which were rated low.

Identified needs and actions:

- **Strengthen governance, stakeholder engagement and interdisciplinary collaboration** to enable more effective adaptation planning and implementation.
- **Increased capacity** for experimentation, learning and reflection to enable more flexible and innovative approaches to climate change adaptation.
- **Improving access to** and use of **quality data and knowledge** in decision-making processes.
- **Developing specific adaptation and investment plans** focused on the region's priorities, such as flood protection measures, addressing risks associated with heat waves and increasing the resilience of infrastructure to extreme weather events.

Measures planned for implementation include continuing to map climate impact chains, systematising the involvement of vulnerable groups and developing clearly measurable adaptation targets and indicators, including strengthening private sector participation in adaptation activities.

3.2 Role of key enabling conditions

Here is a detailed overview for selected so-called **Key Enabling Conditions (KECs)** as assessed **for the Zlín Region** under the **P2R** programme. Each item includes **current practice**, identified **gaps** and potential **opportunities for development.**

Knowledge and data	
Current work	The Zlín Region makes limited use of data from national and European sources (ESPON, JRC, CHMI, CzechGlobe). Cooperation is mainly with Tomáš Bata University, which is a leader in the use of data in the region and produces its own datasets (e.g. FLAPRIS). Data are used in projects and strategic documents, systematic involvement in decision-making is limited, but e.g. FLAPRIS outputs are piloted in the flash flood warning system and in crisis management.
Gaps	Lack of systematic data sharing; lack of technological tools for advanced analysis; limited private sector involvement; need for upskilling of climate data staff.
Opportunities	Strengthen cooperation with research institutions; increase use of technological tools (dashboards, GIS); develop staff skills; use EU programmes to support innovation and technology.

Capabilities and skills	
Current work	The region makes use of existing public administration capacities mainly in project management and the development of strategic documents. Best practices are based on cooperation with external experts and project partners.
Gaps	Insufficient capacity in expert climate analysis and its integration into decision-making; need for retraining and up-skilling of staff especially in technical and economic aspects of adaptation.
Opportunities	Opportunities to participate in national and European training programmes; development of partnerships with universities and professional organisations; use of projects for targeted competence enhancement of regional staff.

Behavioural change	
Current work	Elements of behavioural change appear in sub-projects focused on awareness raising (e.g. EVVO, flood prevention, water management). Standard public information and education activities are used.
Gaps	Lack of systematic involvement of behavioural change in strategy documents and decision-making processes; low level of citizen involvement in strategy development. In case of stakeholder involvement, the right form leading to further activities is not always chosen.
Opportunities	Expanding participatory approaches, using digital tools for communication and public engagement; building partnerships with schools, NGOs and community initiatives to promote behaviour change.

Experimentation, strategic learning and reflective adjustment	
Current work	The region promotes innovation through the activities of the Technology Innovation Centre (TIC) Zlín and by linking to the regional RIS3 strategy. RIS3 strategic areas include, for example, the development of smart technologies in manufacturing (Industry 4.0), the application of ICT solutions (e.g. smart cities, territory management) and the promotion of the circular economy. Projects are piloting new approaches to climate change adaptation (e.g. BeReady). Iterative learning is not yet systematically integrated into the region's decision-making processes.
Gaps	Lack of a structured framework for strategic learning and reflection on adaptation outcomes; lack of linking outputs from innovative activities (e.g. TIC or RIS3 projects) to adaptation measures in the county; lack of systematic monitoring and evaluation of the impacts of adaptation activities in the context of climate resilience.
Opportunities	Use of TIC Zlín as a platform for testing and scaling up innovative adaptation measures; linking climate adaptation activities with RIS3 priorities - e.g. introduction of smart technologies in water resources management, promotion of energy efficiency and renewable energy sources in cooperation with the Energy Agency of the Zlín Region, or use of data platforms for monitoring climate impacts; creation of a system for reflection and feedback during implementation of measures in cooperation with the RIS3 coordination team and partners from the application sphere.

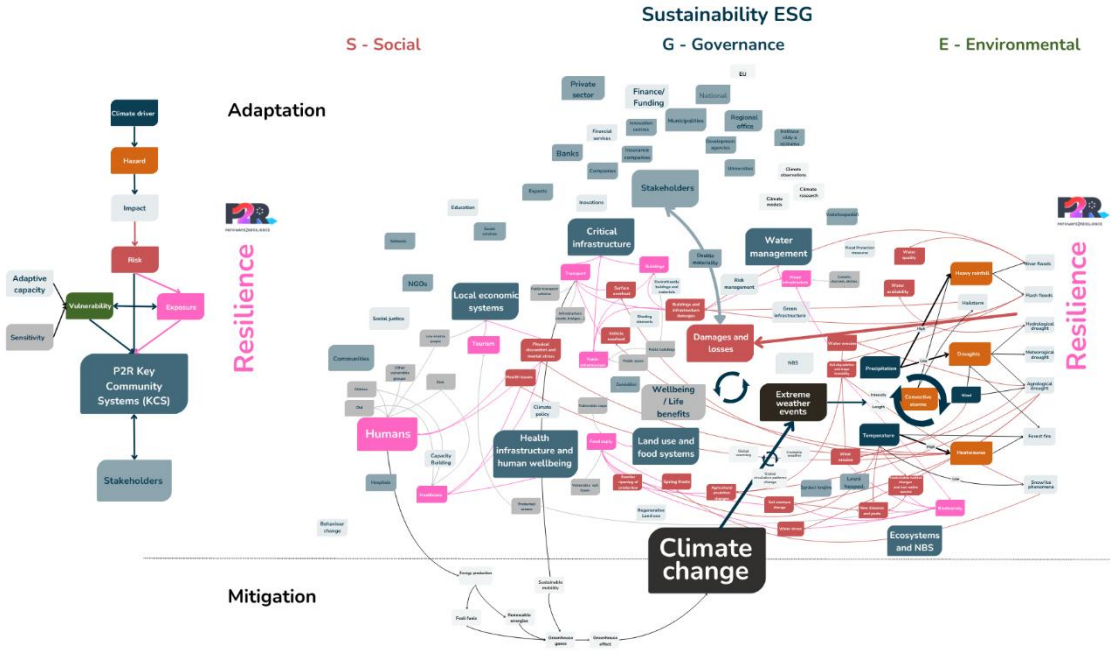
4 Systems and stakeholder mapping

4.1 Systems map

Key system/subsystem	Barriers	Opportunities
Water management	Insufficient flood control capacity on smaller streams; aging infrastructure; weak integration of blue-green infrastructure.	Development of NBS; subsidy programmes (NAP, OPEN); use of nature-based measures.
• Flood and erosion control measures	Limited financial resources; property law complications.	Synergies with nature protection; natural retention measures.
• Blue-green infastructure	Poor integration into spatial planning.	Development of smart cities; water retention in the landscape.
• Water management structures	Outdated technologies; low efficiency.	Upgrading with RES; digitalisation of operations.
Critical infrastructure	Vulnerability to extreme weather; ageing networks.	Upgrading for climate resilience; smart solutions.
• Public infrastructure	Low resilience of schools, hospitals, public spaces, car parks,...	Funding from NPOs, SFŽP; integration of adaptation, public participation
• Construction	Lack of adaptation standards.	Sustainable building technologies, materials, environmentally friendly procurement in construction.
• Transport	Vulnerability of roads and railways, public transport fleet	Modernisation, development of sustainable transport.
• Energy	Dependence on fossil fuels, vulnerability of overhead infrastructure	Community energy, RES, smart grids, more resilient robust infrastructure
• Other Utilities	Low resilience to flooding, storms.	Decentralisation, modernisation.
• Digital infrastructure and data	Poor use for climate; low data capacity.	Climate dashboards, sensors, satellite data.
Local economic systems	Low diversification; climate sensitivity.	Promoting green transformation; sustainable tourism.
• Tourism	Dependence on weather (winter sports). overtourism.	Diversification, development of ecotourism, cycling.
• Industry and manufacturing	Energy intensity, low carbon transformation.	Industry 4.0, circular economy, RES.
• Innovation and green transformation	Low commercialisation of innovation.	RIS3, TIC Zlín, support for start-ups.
Health infrastructure and quality of life	Poor preparation for combined threats.	Modernisation of emergency plans; education.
• Crisis management	Lack of comprehensive scenarios.	Strengthen interdisciplinary cooperation.

Key system/subsystem	Barriers	Opportunities
• Behaviour change	Low public involvement.	Digital tools, school programs.
• Vulnerable populations.	Low resistance to extremes.	Specific measures (cooling zones, evacuation plans).
• Social cohesion and communities	Urban-rural inequalities.	Promotion of community plans, participation.
Land use and food production	Erosion, loss of biodiversity, vulnerability to drought.	Agri-environmental measures; precision agriculture.
• Agriculture	Dependence on traditional crops.	More resilient crops, irrigation.
• Forestry	Drought, pests.	Species diversification, forest regeneration.
• Food	Low self-sufficiency.	Support for local chains.
• Urban planning and spatial planning	Poor integration of adaptation.	Blue-green infrastructure, smart cities, balanced territorial development, rural development.
Ecosystems	Habitat loss, fragmentation.	Biocorridors, retention landscape features, NBS.
• NBS	Limited use in practice.	Integration into planning; synergy with nature conservation.

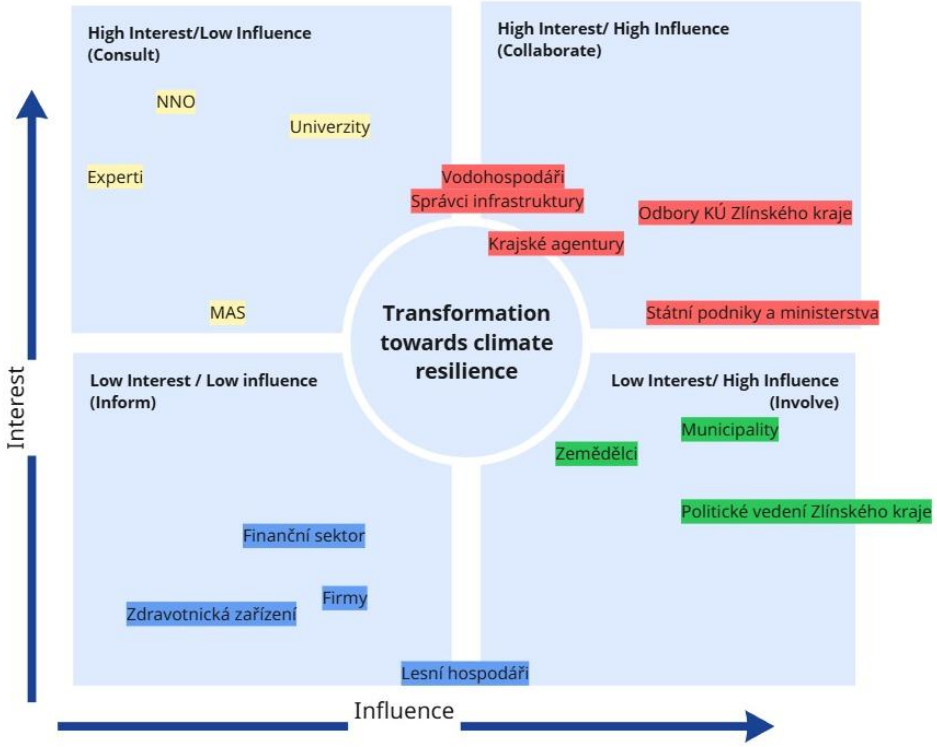
Source: own elaboration based on RRJ activities - mapping of relevant KCS systems.



4.2 Needs and roles of stakeholders

Stakeholder group	Key system(s) - KCS	Level	Needs	Contribution potential	Vulnerable group	Engagement status
Regional political leadership	All KCS - strategic management	Regional	Public demand, coordination of strategic priorities	Approval and advocacy of adaptation and mitigation strategies, setting of regional priorities		Councillors involved, informing leadership, guarantor of political will
Departments of the Regional Office of the WK	Water management, critical infrastructure , urban planning	Regional	Coordination of data, strategies, concepts, funding, capacity, legislative frameworks	Implementation and coordination of development strategies and their adaptation components, public investment management	Yes, social strategy	6 key departments involved, especially active in the departments of Environment and Strategic Development
Regional agencies	Local economic systems, innovation	Regional	Collaboration on financing, integration of adaptation into development	Promoting sustainable development, networking	Yes, social agencies are included	Reached out, invited to stakeholder dialogue, interested to cooperate especially TIC
Municipalities	Water management, urban planning, ecosystems	Local	Financial support, technical advice	Implementation of specific measures, NBS, spatial planning		Different degree of involvement by city
State-owned enterprises, MoE	Water management, nature protection	National/regional	Legislative framework, coordination, inter-ministerial cooperation	Territory management, implementation of strategic measures		Invitation to stakeholder dialogue, different levels of involvement
NGOS	Ecosystems, social cohesion	Local/regional	Financing, human resources	Awareness raising, local projects, work with communities	Yes, working with communities	Invitation to stakeholder dialogue, more detailed coordination needed
Universities	Innovation, water management, health and human well-being	Regional/national	Research funding, links with practice	Science, research, education		UTB engaged with its research, need for greater integration of outputs into strategy
Healthcare facilities	Health and human well-being	Local/regional	Financial support, know-how	Prevention, crisis preparedness, awareness raising	Yes, sick, elderly	Hospitals involved, questionnaires , personal consultations, participation in stakeholder dialogue
Utilities networks administrators	Critical infrastructure	Regional/local	Investment in upgrades	Ensuring network resilience		Reached, interested in cooperation

Stakeholder group	Key system(s) - KCS	Level	Needs	Contribution potential	Vulnerable group	Engagement status
MAS	Land use, ecosystems, water management	Local	Finance, methodological support	Sharing examples of practice, implementation of smaller projects		Reached, low level of involvement so far
Experts	All KCS by specialisation	Regional/national	Space for involvement in implementation, funding work	Methodological support, research, consultancy		Consulted, only partially involved so far
Financial sector	Local economic systems	National/regional	Overview of projects, investment opportunities	Financing resilience projects		Engagement (interviews, questionnaires). Synergies of cooperation not yet sufficiently clarified.
Farmers	Land use and food production	Local/regional	Support for sustainability, motivation	Change of management, adaptation to drought	Yes, rural communities	Different degree of involvement, different attitudes
Forest managers	Land use, ecosystems	Local/regional	Promoting diversity, resilience of stands	Landscape protection, biodiversity		Partial involvement but different attitudes
Companies	Local economic systems	Regional/local	Motivation, financial and legislative framework	Implementation of green innovation, emission reduction		Outreach /questionnaires, personal consultations, participation of selected people in dialogue) very different reactions



4.3 Local champions

At the time of the submission of this document, a number of key stakeholders have offered their cooperation in the Zlín Region's journey towards climate resilience**. The Department of Environment and Agriculture of the Regional Office of the Zlín Region**, together with the **Department of Strategic Development of the Region,** offers support in the expected discussion with the political leadership of the Region, but also active involvement in the review of financial instruments, including regional subsidy titles, and participates in the search for realistic models of adaptation coordination within the Region. They also contribute not only their expertise in the preparation and implementation of measures such as water retention in the landscape or watercourse revitalisation.

The Technological Innovation Centre (TIC) Zlín offered cooperation in linking innovation and adaptation through activities aimed at supporting regional green transformation and cooperation with the private sector. **Tomas Bata University in Zlín** contributes expertise and research capacity, particularly through the FLAPRIS project, which supports the regional warning system and improves the region's ability to respond to extreme climate events.

The State Land Office (SPÚ) is cooperating in the preparation of measures within the framework of a study of the runoff conditions of the Žídelná region and is supporting the implementation of nature-based adaptation measures through land management. **The Morava River Basin Authority** offers expert cooperation in the preparation and implementation of flood control measures and the provision of data in the field of watercourse management. **The Agency for Nature Conservation and Landscape Protection of the Czech Republic (AOPK)** offers cooperation through the implementation of landscape measures supported by subsidy programmes to restore natural habitats, improve landscape retention capacity and enhance biodiversity.

In the private sector, an example of an active approach is **Orkla Foods Česko a Slovensko, a.s.** (Hamé brand)**, which** offers to share experiences from its water recuperation project in production aimed at reducing water consumption and increasing energy efficiency. LAGs and NGOs also play an important role, supporting the dissemination of good practice examples, awareness raising and the implementation of local adaptation projects.

5 Governance

5.1 Multi-level governance context

Structure and local governance

The Zlín Region manages climate and resilience measures primarily through strategic documents such as the **Zlín Region Development Strategy 2030**, the **Regional Energy Concept**, the **Concept for Nature and Landscape Protection and** other sectoral strategies (e.g. transport, health, crisis management). Adaptation to climate change and resilience building are included as cross-cutting themes rather than as a separate agenda, which allows for some flexibility but also reduces systematicity and institutional anchoring.

5.1.1 Existing governance structures and frameworks

At the county level, the climate agenda is most often dispersed among several departments - notably:

- **Strategic Development Department** (creation of the Zlín Region 2030 Development Strategy, Development Plans and other strategic documents, coordination of the Zlín Region Fund),
- **Department of Environment and Agriculture (**nature protection measures, water management, emission monitoring),
- **Investment and Property Department** (adaptation of buildings and infrastructure),
- **Department of Transport** (sustainability and resilience of transport systems).

Coordination between these departments takes place through working groups in the development of strategic documents, but less so in the implementation phase. **The ORP (municipalities with extended competence)** also play a crucial role, providing a range of adaptation measures at local level, including crisis management, flood plans or spatial planning. Larger cities (e.g. Zlín, Uherské Hradiště, Vsetín) prepare or implement their own adaptation activities, often in cooperation with research institutions.

Responsibility for the climate agenda and coordination

Responsibility for climate change adaptation policies in the region is not explicitly assigned to one institution or position (e.g. climate coordinator). Coordination is therefore **distributed among** departments for the time being and dependent on a specific document or project. There is a lack of a **central focal point** to manage cross-sectoral coordination and methodological guidance in the area of climate resilience. The initiative is often taken by partners from the academic and research sectors.

The Zlín Region is currently using or considering using the following tools to support and implement adaptation measures:

1) Education and Environmental Education (EE)

Adaptation topics are gradually being incorporated into environmental education, especially through regional school facilities, environmental centres and in cooperation with the non-profit sector. The aim is to raise awareness of climate risks and adaptation options among the younger generation and educators.

2) Use of regional subsidy titles (Zlín region Fund - Development and Crisis Management, RRP, PBI, Environment, etc.)

Adaptation measures are - partly - supported through existing programmes and calls:

- **Rural Renewal Programme (RRP)** - possibility to finance adaptation elements in villages (water retention, planting of greenery),
- **Public Benefit Investments (PBI)** - scope for projects that increase the resilience of infrastructure,
- **Environmental programmes** - focusing on e.g. water management in landscapes and forests.

Some of these programmes already reflect adaptation objectives (e.g. points for projects bringing adaptation benefits), but there is a lack of **systematic inclusion of climate criteria** across the programmes.

Based on the activities of the RRJ, it is worth discussing the creation of **a new specialised instrument** or sub-programme explicitly aimed at supporting adaptation measures in the territory (e.g. pilot projects, feasibility studies, nature-based solutions, adaptation of public buildings).

3) Projects of the Region or its contributory organisations

County investments in schools, health, transport or social services represent a significant opportunity for the integration of adaptation elements:

- Reconstruction of school buildings with regard to energy performance and thermal comfort,
- Grassing and planting of greenery at health facilities (cooling of microclimate),
- Revitalisation of transport infrastructure with water retention elements (permeable surfaces, etc.).

However, adaptation objectives are not yet systematically specified in **the design preparation**, which limits the possibility of achieving climate benefits.

Gaps and challenges

The main challenges in the area of governance and adaptation to climate change in the Zlín Region include:

- **Fragmentation of responsibilities** among trade unions without a clear leader,
- **Lack of systemic monitoring of the impacts of climate action**, including lack of public availability and data linkage,
- **Low institutional capacity** dedicated to the climate agenda (staff and methodological),
- **Low integration of climate risks into budget planning** and investment priorities.

The Zlín Region is trying to address these shortcomings through, among others, participation in the Pathways2Resilience programme, which aims to **support systemic changes in the area of governance, monitoring, evaluation and participation** in adaptation policy. One of the steps is, for example, to strengthen **multi-level governance**, involving representatives of municipalities, academia and the professional community in the development of climate strategies and investment plans.

5.1.2 Engaging non-governmental stakeholders

Partnerships to address adaptation challenges

In the Zlín Region, several activities are underway focusing on long-term partnerships in the areas of environment, energy and rural development.

For example:

- The Region cooperates with **the Morava River Basin** in the implementation of revitalisation measures and flood protection planning. The partnership includes the involvement of municipalities and project documentation preparers in the preparation of adaptation interventions in the landscape.
- The Zlín Region supports cooperation with **the Energy Agency of Zlin region**, which provides consultations to municipalities, schools and public institutions in the field of energy savings and renewable resources. Adaptation is often part of complex projects for building renovation, energy management or installation of green roofs.
- Within **LAGs** (e.g. LAG Vizovicko and Slušovicko, LAG Luhačovské Zálesí), local projects focusing on water management in the landscape, tree planting, support for community energy or water retention on agricultural land are addressed.
- Cooperation with **secondary schools** and **universities** (e.g. UTB in Zlín) focuses on sustainability education, student involvement in solving public space problems and environmental awareness.

Involvement of academia, private sector and civil society

Academia is involved in the development of adaptation policy mainly through research projects and field research on the impacts of climate change - e.g. in cooperation with the Czech Hydrological Institute, Mendel University or the TGM Water Research Institute.

The private sector is mainly involved through energy companies, consultants and planners who design and implement specific measures for municipalities (e.g. plantations, storage tanks, PV plants, environmentally friendly technologies).

Civil society is involved in the region mainly through:

- Local environmental associations (e.g. CSOP, ZO CSOP Veronica),
- **Líska, z. s., which acts as a regional centre for environmental education, education and awareness**, connecting schools, NGOs, municipalities and other actors and developing educational and community projects with a strong link to the local landscape,
- active communities addressing local air, water and public space quality issues.

Mechanisms for public participation

In the Zlín Region, there is no single instrument for participation in adaptation, but a number of activities are underway to engage citizens and communities:

- **Public hearings** in spatial planning and EIA processes, where climate risks are becoming an increasingly common issue.
- **Participatory budgets** in some towns and municipalities (e.g. Zlín, Otrokovice), which fund resilience-building measures - e.g. community gardens, shading, tree planting.
- **Community events** and **campaigns**, such as Earth Days, ecology days, tree planting and clean-up events, which strengthen public awareness of the need for adaptation and personal engagement.

- The work of LAGs and regional partnerships on 'community-led local development' (CLLD), which often includes climate aspects under the themes of 'healthy landscapes', 'water in the landscape' or 'climate education'.

5.1.3 Alignment of Pathways2Resilience outputs with formal processes and plans

The outputs of the **Pathways2Resilience (P2R)** programme - in particular **the Zlín Region Resilience Strategy**, **Investment Plan** and proposed system changes - will need to **be linked to existing regional strategies and formal decision-making processes**. To this end, it will be important to ensure early involvement of relevant institutions that have the competence to comment and approve these outputs.

Institutions and timing of the review

The main actors that will need to review P2R outputs are:

- **Department of Strategic Development of the Regional Office of the Zlín Region** - responsible for coordination of strategic documents, will play a key role in integrating the outputs into the Zlín Region Development Strategy 2030.
- **The Department of Environment and Agriculture** - will assess the draft measures for compliance with the Regional Environmental Policy, the Regional Energy Concept and the Concept of Nature and Landscape Protection.
- **Zlín Region Council and Assembly** - final outputs, in particular the investment plan and proposed strategic documents, will be subject to formal approval at the level of elected bodies.

Expected timetable:

- Q3 2025: internal commenting on P2R outputs will take place, involving the departments of the regional office and external partners in the framework of expert working groups.
- Q1 2026: submission of draft outputs to the Council of the Zlín Region and subsequently to the Regional Assembly for approval or inclusion in official strategic and planning documents.

Political and bureaucratic frameworks affecting approval

Several formal frameworks and processes influence the development and approval of P2R outputs:

- **Act No. 183/2006 Coll., on Spatial Planning and Building Code (Building Act)** - some measures proposed in the investment plan may be linked to spatial planning documentation and will need to be assessed for consistency with municipal spatial plans or the Regional Spatial Development Principles.
- **Directive 2001/42/EC (SEA - Strategic Environmental Assessment)** - if the outputs of the P2R lead to the creation of a new strategy or an update of an existing strategic document, it will be necessary to carry out an SEA including consultation with the public and the authorities concerned.
- **The political cycle of the region** - the elections for the Zlín Regional Assembly (next in 2028) determine the political setting and approval dynamics. P2R outputs will need to

be prepared to be compatible with the deadlines for preparing new versions of the Zlín Region 2030 Development Strategy or Development Plan (usually every 2-3 years).

- **Consistency with national and European strategies** - in particular the National Adaptation Strategy of the Czech Republic, the EU Taxonomy, the Green Deal and the requirements of the Modernisation Fund and the OP Environment, which affect the eligibility of investments proposed in P2R outputs.

Ensuring **alignment and integration of P2R outputs with these formal processes is essential to ensure** that their results are not just expert suggestions but become part of regional decision-making and budget planning. Discussions with responsible departments and county officials will need to be held at early stages to create the space to institutionalise these outputs.

6 Monitoring, evaluation and learning (MEL)

Zlín Region is currently using several completed and ongoing mechanisms to monitor the implementation, effectiveness and appropriateness of climate change adaptation activities. These mechanisms are based on existing strategic and conceptual documents, which the Region systematically implements and regularly evaluates.

The strategic framework and development programme of the Region

The basic monitoring tool is the evaluation of the implementation of the **Zlín Region Development Strategy 2030**, which integrates the themes of climate change adaptation, environmental stability and territorial resilience. This document is continuously monitored using specific indicators. **Responsibility for this process** lies with the Department of Strategic Development, which collects data across the regional departments and prepares evaluation reports for the Zlín Regional Council. The results serve as a basis for revising strategic priorities and budget allocations in subsequent years.

Regional Energy Concept

The Zlín Region has developed a **Regional Energy Concept**, which includes both mitigation and adaptation elements. Its implementation is monitored through indicators such as energy consumption in the public services sector, the share of renewable energy sources (RES) or the level of savings achieved through energy measures. The monitoring is carried out by the Energy Agency of the Zlín Region in cooperation with the Regional Department of Environment. The monitored data are used for project planning and preparation of applications to the Modernisation Fund or the Operational Programme Environment.

Concept of nature and landscape protection

Another relevant tool is the **Nature and Landscape Protection Concept of the Zlín Region**, which focuses on increasing the retention capacity of the landscape, restoring wetlands and promoting biodiversity. Monitoring of the measures is carried out through regular data collection on implemented projects and environmental analyses (e.g. development of forestation, area of close to nature ecosystems, status of protected areas), often in cooperation with the AOPK ČR. The results are taken into account when updating priority areas for further interventions.

Flood protection and climate risks

The Zlín Region has been **monitoring flood protection** for a long time, especially in relation to historical events (e.g. floods in 1997). Monitoring includes both technical elements of protection (condition of dams, retention basins) and planning tools (sub-basin plans, local flood plans). The responsible institutions are the Morava River Basin Authority, the Fire Brigade, the Regional Fire Brigade and the Regional Flood Commission. Identified shortcomings lead to specific proposals for measures, which are subsequently financed from national or European sources.

Energy and technical monitoring of regional buildings

Some of the public buildings owned by the Zlín Region are equipped with measurement and control systems that allow monitoring their **energy performance and resistance to extreme climatic phenomena** (e.g. overheating, insulation, rainwater management). **The data obtained** are used for both operational optimisation and investment proposals (e.g. installation of PV,

green roofs, improvement of building envelope), with these measures contributing to increasing the adaptive capacity of buildings.

Although the Zlín Region already has some mechanisms in place to monitor the implementation of strategic and conceptual documents, **these systems are not directly aimed at systematically collecting data related to the resilience of systems to climate change**. Monitoring frameworks often track sub-indicators or technical parameters, but **there is a lack of consistent evidence and linkage to specific climate resilience objectives**. At the same time, the publication of results and their evaluation is **difficult to track and lacks transparency**, making it difficult to assess whether and how the stated adaptation goals are being met.

The Pathways2Resilience programme aims to open a discussion on the need for systemic changes in data management, monitoring settings, evaluation of the effectiveness of actions and learning from actions taken. This includes supporting the region's capacity to track Multiple Resilience Dividends (MRDs) and introducing transparent and actionable assessment tools that reflect the complex impacts of climate change on the Zlín Region.

7 Finance

7.1 Budgetary process

The budget process is governed by Act No. 250/2000 Coll. on Budgetary Rules of Territorial Budgets, which regulates the formation, status, content and functions of budgets of local self-government units and sets out the rules for the management of the funds of local self-government units.

The financial management of the Zlín Region is governed by the annual budget and the medium-term budget outlook. The medium-term budget outlook is a tool for medium-term financial planning of the development of its economy. It is drawn up on the basis of the contractual relations concluded and commitments entered into, usually for 2 to 5 years following the year for which the annual budget is drawn up. The financial year is the same as the calendar year.

The Budget and Finance Unit of the Economic Department is responsible for the budget process.

The budget process has several stages:

- Preparation - involves the collection of data on expected revenue and expenditure, the Budget and Finance Unit coordinates and guides the various departments in the preparation of the detailed budget breakdown.
- Approval - the draft budget is submitted to the Regional Council for discussion and approval. The county publishes the draft budget on its website and on the official notice board at least 15 days before the date of its discussion at the council meeting. Citizens of the respective local self-government unit may submit their comments on the draft budget in writing within the time limit set at the time of its publication or orally at the time of its discussion at the council meeting.
- Implementation - implementation of the budget according to the approved structure
- Monitoring and possible adjustments - during the year, the budget is monitored and possibly adjusted according to the actual needs and financial situation. Adjustments are made by means of budget measures approved by the Council and the Regional Assembly of the Zlín Region
- Evaluation - at the end of the year, an evaluation is carried out, which includes an analysis of how the funds have been used and whether the set objectives have been achieved.

As mentioned above, the various departments of the Regional Office play an important role in the preparation of the Zlín Region budget. The departments, within the scope of their competence, collect the basis for the budget - divided into revenue, operating (current) and investment (capital) expenditure and a binding limit for operating expenditure.

The budget includes binding indicators that must be followed by the executive bodies of the county, legal entities established or incorporated within the jurisdiction of the county in their management, other persons (recipients of subsidies or contributions from the budget. Binding indicators may include the amount of revenue and expenditure for each budget chapter, the amount of budget financing, amounts relating to the financing of contributory organisations (operating contributions), etc. Exceeding the values of these indicators is a breach of budgetary discipline with all its consequences. Changes to the binding indicators require the approval of the Representatives at a time before expenditure not covered by the approved budget is incurred.

7.2 Revenue and capital investment process

The process of drafting revenue and capital investment proposals for the Zlín Region is tightly linked to the annual approval of the regional budget and the medium-term budgetary outlook. This process is based on Act No. 250/2000 Coll., on budgetary rules for territorial budgets, and is closely linked to the strategic planning of the Region, in particular through documents such as the **Development Strategy of the Zlín Region**, the **Medium-Term Budget Outlook of the Zlín region** or **the Programme Frameworks of IROP, OPIE, PRV**, etc.

Capital expenditures are planned according to the budget composition, in relation to individual thematic areas (e.g. transport, education, culture, environment, health). The selection and preparation of investments is usually managed by the relevant departments of the Regional Office of the Zlín region and subsequently approved by the Council and the Regional Assembly.

Investment project proposals are assessed according to the following criteria:

- **consistency with the strategic documents of the Region and spatial plans**,
- **availability of financing** (own resources, subsidies, repayable resources),
- **project readiness phase** (project documentation, planning permission, building permit),
- **the impact on the operating budget**, and
- **economic efficiency** - e.g. assessment of **net present value (NPV)**, **internal rate of return (IRR)** or **benefit-cost ratio (BCR)**, especially for larger investments or projects with expected multiplier effects.

7.3 Budget envelope

On the basis of **the analysis of current and capital expenditures of the Zlín Region and 13 cities with extended jurisdiction (ORP)**, an estimate of the current and planned financing of climate change adaptation in the region was prepared.

Where **specific items related to adaptation** were available **(e.g. water management projects, maintenance and development of green areas, drainage elements, energy savings and PV), they were accounted for in full**. Where detailed items were missing, an educated guess was used that **1-3% of current operating expenditure was adaptation related (green maintenance, emergency preparedness) and 8-12% of capital expenditure was adaptation investment related (green, water, energy measures).**

The values have been increased by the estimated share of state enterprises and institutions (Morava River Basin, Forests of the Czech Republic, Regional Development Agency, SFDI) that implement measures supporting adaptation in the region (~ CZK 200 million per year).

The table below shows the **current estimate of adaptation financing for the period 2025-2027**, set in three scenarios:

Scenario	2025	2026	2027
Upper	1 056 514 thous. CZK	1 050 000 thous. CZK	1 050 000 thousand CZK 1,050,000
Central	845 211 thousand CZK	426 119 thous. CZK	420 079 thous. CZK
Lower	676 169 thous. CZK	340 895 thous. CZK	336 063 thous. CZK

source: own elaboration based on the medium-term budget outlook of the Zlín Region and the budgets of the 13 ORP, note: for 2026 and 2027 data were not available for some of the documents, therefore the central and lower scenarios are based only on the values that appeared in the approved documents and are only a very indicative estimate

The upper scenario assumes active use of available subsidy titles and implementation of adaptation projects even where medium-term plans of municipalities have not yet been published, but adaptations are commonly taking place. The lower scenario is a conservative option that considers a lower uptake rate and postponement of some projects.

Key assumptions and dependencies:

- Stable tax collections provide the county and municipalities with the means to co-finance adaptation projects.
- New legislation (e.g. EPBD, ESG reporting) will accelerate the implementation of adaptation measures.
- Drawing from the Modernisation Fund, OPIE, SFP and other sources is expected.
- Involvement of state-owned enterprises (Morava River Basin, Forests of the Czech Republic, RDS) significantly increases the volume of investments in adaptation in the region.
- Inflationary pressures and construction prices may reduce the real purchasing power of budgets, so it is important to consider the upper scenario as a reserve capacity.

7.4 Costs of climate change and near-term investment needs

Financial impacts of historic weather events

The table below summarises the **financial impacts of historical weather and climate events in the Zlín Region**, which in the past have caused billions of dollars of damage to infrastructure, property, agriculture and forests and have had a significant impact on public budgets and the lives of the region's residents. It includes key events such as the 1997, 2010 and 2024 floods, recurrent droughts and heat waves, and severe storms and hurricanes, which are evidence of the region's increasing climate vulnerability. These data highlight the **need for systematic adaptation measures** that can reduce the long-term impacts of climate extremes and help protect the region's economy and quality of life.

Event	Date	Key impacts	Total cost	Relevant studies/data
Floods 1997	July 97	Damage to infrastructure, evacuation of residents, loss of property	CZK 7.8 billion	Government Report On Floods 1997, SFŽP, ZLÍN REGION
Floods 2010	May-June 2010	Floods on tributaries of the Morava River, damage to roads, property	CZK 1.45 billion	Flood Assessment 2010, Morava River Basin, Zlín Region
Floods 2024	September 24	Damage to infrastructure and agriculture	CZK 2.4 billion	Estimates Zlín Region, Morava River Basin, Fire Brigade Zlín Region
Flash floods 2009	June 09	Damage to property and infrastructure (Vsetín region)	Hundreds of millions. CZK	Reports Of The Morava River Basin, Fire Brigade ZLÍN REGION
Flash floods 2010	May-June 2010	Damage to infrastructure and property (Rožnovská Bečva)	> CZK 1 billion	Morava River Basin, Zlín Region

Event	Date	Key impacts	Total cost	Relevant studies/data
Heat wave 2015	August 15	Increased mortality, overloaded healthcare system, decrease in productivity	Tens of millions of CZK. CZK	Czech Republic, Czech Ministry Of Health, Czech Republic, Czech Republic
Drought 2015	spring-autumn 2015	Decline in agricultural production, water shortage	Hundreds of mil. CZK	Agrarian Chamber, CHMI, Zlín Region
Drought 2018	Spring-autumn 2018	Decrease in yields, decrease in groundwater levels	Hundreds of mil. CZK	Agrarian Chamber, CHMI
Severe storms 2021	June-July 2021	Damage to infrastructure, property, supply disruption	Hundreds of millions. CZK	Fire Brigade Of The West Bohemia, Czech Hydrometeorological Office
Hurricane Herwart	October 17	Damage to forest stands and infrastructure	tens of millions. CZK	Forests Of The Czech Republic, Fire Brigade Of The Czech Republic
Fire near Lukovecek	July 22	Damage to forest stands	units mil. CZK	HZS ZLÍN REGION, Forests Of The Czech Republic

source: own processing based on publicly available data on the web, media, social networks and estimates

Costs of climate change (inaction)

The table below shows **evidence of the real and estimated costs of inaction to climate change in the Zlín Region**, which includes damage caused by recurrent floods, droughts, heat waves, bark beetle calamity and other extreme weather events. These events have already caused more than CZK 15 billion worth of damage and, according to models and analyses (CHMI, EEA, Forests of the Czech Republic), they represent annual costs and losses of hundreds of millions to billions of CZK, which emphasises the economic necessity of implementing adaptation measures that will help reduce these costs and protect the economy and inhabitants. of the region.

Evidence	Date	Key impacts	Total costs	Key costs
Flood assessments 1997, 2010, 2024	1997, 2010, 2024	Damage to infrastructure, property, evacuation	CZK 11.65 billion	Repair of roads, bridges, restoration of property
Drought impact assessment 2015-2019 (CHMI, Zlín region)	2015-2019	Decrease in agricultural yields, decrease in water levels	> CZK 1 billion	Support to farmers, loss of yields
Heatwave 2015, 2024 (CZMÚ, MZe ČR)	2015, 2024	Increased mortality, overload of health care	Tens of millions of CZK. CZK	Health care, cooling operation
Study "Economic impacts of climate change on Europe" (EEA)	2020	Climate change impacts on regional economies	~800 mill. CZK ~800 per year	Losses in production, higher energy costs
Morava River Basin report on flash floods	2009, 2010, 2011, 2024	Damage to infrastructure, property	> CZK 2 billion	Repairs, emergency measures

Evidence	Date	Key impacts	Total costs	Key costs
Estimates of the Forests of the Czech Republic on drought and bark beetle calamity	2015-2020	Damage to forest stands	Hundreds of mil. CZK per year	Loss of timber production, restoration

Existing adaptation funding and financing

The following table summarizes the **current and estimated planned expenditures on climate change adaptation in the Zlín Region and 13 ORP in the period 2025-2027**. It is based on the budgets of the Region and cities, and on medium-term outlooks where available. Where identified adaptation projects (greenery, water, water harvesting and retention elements of blue-green infrastructure, energy) were included and where specific items were not available, an educated guess was used based on past implementation by municipalities and regional organisations. It includes investments from public budgets, the Modernization Fund, ODA, NPOs and estimated private sector contributions. Overall, it can be assumed that approximately up to **EUR 100 million** can be invested in adaptation in the region over the period, contributing to reducing the impacts of climate risks and increasing the resilience of the territory.

Sector	Item	Amount (€m)	Period	Public/private	Benefits	Source(s)	Notes
Environment	Greenery, water management, VS elements	28	2025-2027	Public	Water retention, urban cooling, biodiversity	ZLÍN REGION and ORP budgets	OPE, SFŽP, municipal budgets
Energy	RES, PV, energy savings in buildings	22	2025-2027	Public	Emission reduction, cost savings	Modernisation Fund, NPO, OP TAK	Zlín Region, municipalities, contributory organisations
Water management	Flood control measures, retention basins	14	2025-2027	Public	Property protection, water infiltration	SFŽP, Morava River Basin	Cooperation with municipalities
Transport	Road drainage, green infrastructure	10	2025-2027	Public	Flood risk reduction	ZLÍN REGION budget	Investments in roads
Social area	Adaptation and energy savings in social services buildings	4	2025-2027	Public	Energy saving, comfort	ZLÍN REGION budget, OPE	Homes for the elderly
Private sector	Greenery, retention measures on the premises	8	2025-2027	Private	Water retention, temperature reduction	ZLÍN REGION estimates	Corporate campuses, developers

Sector	Item	Amount (€m)	Period	Public/private	Benefits	Source(s)	Notes
Municipalities and cities	Local adaptation projects	12	2025-2027	Public	Greenery, drainage elements, water	ORP budgets	13 ORP cities
Total		98					

Source: own elaboration based on incomplete data on the use of European resources and expert estimates

In order to estimate the financing of adaptation in the Zlín Region, the budgets of the Zlín Region were analysed according to the Medium-term outlook of the Zlín region budget 2026-2028, where planned capital and operational expenditures relevant for climate change adaptation were identified, especially investments in greenery, water management, seepage and retention elements and energy measures. The share of these expenditures was estimated at 8-12% of capital expenditures and 1-3% of current operating expenditures as relevant for adaptation measures. The same approach was also applied in the analysis of the budgets of the 13 cities with extended jurisdiction, where specific investments for greenery, water, VS elements and energy savings were available, they were counted directly, and in other cases the same qualified estimate as for the county was applied. The publicly available allocations from the Modernisation Fund, the Operational Programme Environment (OP Environment) and the National Recovery Plan (NRP) were also incorporated into the funding framework, where for example the Modernisation Fund brings an indicative allocation of €150-250 million. CZK 15050 per year for RES and energy savings, the OPEP provides allocations for greenery, water management and VS elements, and the NPO focuses on PV and energy savings in public sector buildings. The estimate of private sector funding is based on projects implemented by companies and developers in the region, such as retention measures, green roofs and water harvesting systems. In addition, regular investments by the Morava River Basin and the Czech Forests, which implement flood control measures, watercourse revitalisation, channel reconstruction and anti-drought measures in the region, were included, with a conservative annual estimate of EUR 50-100 million. CZK for the Zlín Region.

The total amount of **EUR 98 million (approx. CZK 2.5 billion)** is based on the **sum of identified investments and qualified estimates for 3 years**, which corresponds to approx. CZK 800-800 per year to finance adaptation in the region.

7.5 Strategic sources, instruments and barriers evaluation

7.5.1 Existing sources and instruments

Existing resources

Source:	Sector	Purpose	Indicative amount of finance in CZK
European Commission (IFF, LIFE, ERDF, Cohesion Funds)	Public (EU)	Adaptation funding (green, water, RES, cities, infrastructure)	5-10 mil/project; hundreds of mil/year regionally
National governments (MoE, SFŽP, MIT, MMR)	Public (national)	OPIE, Modernisation Fund, SFŽP, NPO - key subsidy programmes	50-200 miles per year regionally
Regional budgets and funds (Zlín Region)	Public (regional)	Direct allocations and funds for adaptation projects (greenery, water, energy)	Tens-hundreds of miles per year by region

Source:	Sector	Purpose	Indicative amount of finance in CZK
City and municipal budgets and funds	Public (municipalities)	Local adaptation projects (green, water, RES)	Units-tens of millions per year by municipality
State Environmental Fund (SEF)	Public	Subsidies for water management, blue-green infrastructure, RES	50-80 miles per year regionally
State Agricultural Intervention Fund (SAIF)	Public	Retention and landscape measures, planting of greenery, agroforestry	approx. 30 million per year regionally
PGRLF programme	Public	Retention and erosion control measures in the landscape	units mil per year
Modernisation Fund	Public (EU/national)	RES and energy savings relevant for adaptation	approx. 200 million per year regionally
Private resources from companies and developers	Private	Investments in green, water, RES on commercial and residential properties	Tens of miles per year regionally

Existing instruments

Tool	Sector	Purpose	Indicative amount of adaptation finance in CZK
Grants	Public	OPIE, SFŽP, NPO, Modernization Fund, regional and municipal subsidy programmes	500-900 miles per year in the region
Debt	Public/private	Municipal and regional loans, or EIB loans for adaptation and energy projects	Units-tens of millions/project
Fees/User Charges	Public/municipalities	Water, sewerage, waste charges used to finance green spaces	Units miles/year Municipalities
Non-monetised inputs	Public/municipal	Voluntary actions, community planting, municipalities' own work	Difficult to quantify (thousands to hundreds of thousands per year)
Blended finance	Public/private	PPP/ESCO projects (energy, savings, blue-green infrastructure)	Units-tens of millions/project
Intergovernmental Transfers	Public	Transfers between state, region and municipalities for adaptation projects	150-300 miles per year in the region

Source: own elaboration based on expert estimates and catalogue of P2R resources and instruments

7.5.2 Additional strategic sources and instruments

Additional resources

Source:	Type (public, private or hybrid)	Rationale	Indicative amounts that could be raised
EIT Climate-KIC	Public (EU)	Innovative and systemic adaptation projects, cooperation with regions	0,5-5 Mio/project
European Investment Bank (EIB)	Public (EU)	Loans and technical assistance for adaptation projects, RES, cities, infrastructure	10+ mil/project
European Bank for Reconstruction and Development (EBRD)	Public (EU)	Loans and investments for adaptation and climate resilience	Units-tens of millions/project

Source:	Type (public, private or hybrid)	Rationale	Indicative amounts that could be raised
Council of Europe Development Bank (CEB)	Public (EU)	Loans and grants for social cohesion with a climate focus	units-tens of millions/project
Philanthropic and foundation resources	Private	Smaller community and pilot adaptation projects	Units of miles/year regionally
European PPP and ESCO models	Combination public/private	Return on investment in energy savings and green infrastructure	units-tens of millions/project

Additional instruments

Tool	Sector	Rationale	Indicative amounts that could be raised
Equity	Private	Input of private investors in RES and adaptation solutions projects	Units-tens of millions/project
Results-based Financing	Public	Payment for results achieved in adaptation (e.g. emission reductions)	potentially units-tens of millions per year
Risk Mitigation	Private/insurance companies	Climate risk insurance, guarantees	Depending on extent of damage, cannot be quantified precisely
Taxation	Public	Tax breaks or special charges to support adaptation	Minimally used so far
Land Value Capture	Public	Financing adaptation from land appreciation (e.g. developer fees)	Potentially units-tens of miles per year
Non-financial instruments	Public/private	Standards, obligations and regulatory instruments	No direct financial allocation

Source: own elaboration based on expert estimates and catalogue of P2R resources and instruments

7.6 Mitigation financing synergies

This document serves as a practical tool for the Zlín Region and its municipalities to prepare for systematically addressing climate change and future climate neutrality. Although the Region of Zlín has not yet adopted its own strategy, climate goals or commitments, the document provides an overview of available tools and sources of financing for adaptation and mitigation and helps to create the conditions for formulating such commitments in the future.

The document supports the first steps towards the systematic collection and preparation of projects focusing on water retention, urban green space development, energy savings and renewable energy sources, areas that may be at the core of future climate action by the region and municipalities.

It also provides a clear identification of the barriers that currently hinder the implementation of adaptation and mitigation measures, such as lack of information on financing, administrative complexity of subsidy processes and lack of coherent coordination between municipalities. It proposes practical measures to remove these barriers and gradually increase the readiness of municipalities and cities to draw down funding for measures that strengthen the region's resilience to climate impacts.

The document can be used as a building block for the preparation of a climate change adaptation action plan and emission reduction strategy at the level of the Zlín Region or its cities, in line with the objectives and good practice examples of the regions involved in the Climate Neutral and Smart Cities mission. At the same time, it provides a concrete framework for regional and municipal authorities to coordinate and plan investments in infrastructure and measures supporting the resilience of the territory.

This document thus enables the Zlín Region and its municipalities to systematically prepare the conditions for the future fulfilment of climate neutrality objectives, while increasing the efficiency of the use of existing and available financial resources for climate change adaptation and mitigation.

7.7 Barriers to financing

Barrier name	Description	Typology of Barrier	Relevant resources and/or instruments	Importance (H/M/L)	Barrier strength (H/M/L)	Sector and stakeholders	Possible actions
Lack of information on funding for measures	There is a wide range of funding opportunities but information is not in a central location. Information is primarily focused on grant titles, not on other forms of funding.	Political	Subsidies, grants, debt, equity, PPP, fees	H	H	Public bodies, companies	Make financial resources and available instruments available in one place.
Mismatch between applicant needs and grant focus	The applicant has to 'hit' the object of the grant, which may hinder the implementation of the optimal option.	Political	Subsidies, grants	H	M	Public bodies, companies	Simplify grant rules and refine focus according to adaptation needs.
High administrative complexity of obtaining subsidies	Lengthy process of applying for subsidies, complex selection of contractors, fixed deadlines for implementation.	Political	Subsidies, grants	H	H	Public entities, companies	Simplify the process of applying for and administering grants.
Time mismatch for grants and subsidies	Need for sufficient project preparation, limited timeframe for calls.	Political	Subsidies, grants	M	M	Public entities, companies	Publication of call schedules several years in advance.
"Dependence" on subsidies and grants	Projects are mainly implemented thanks to subsidies, lack of willingness to use own funds.	Political	Subsidies, grants	M	M	Public entities, companies	Strengthen the use of own resources and other financing instruments.
Lack of staff capacity	Insufficient capacity to prepare complex projects, especially from European Commission programmes.	Institutional	Grants, subsidies	M	H	Public bodies, universities	Strengthen cooperation with universities and experienced applicants.
Not using instruments other than grants	Lack of experience in using other funding instruments (debt, PPP, equity, fees).	Political, institutional	Debt, equity, fees, PPP, taxes, green bonds	H	M	Public entities, companies	Training and sharing of good practice examples of financing adaptation beyond subsidies.
Mistrust in PPP projects	Concerns about the legal and financial risks of PPP projects.	Political, institutional	PPP	M	M	Public entities, companies	Sharing experiences with successful PPP projects.

source: own elaboration based on expert estimates and catalogue of P2R resources and tools

8 Next steps

While the baseline assessment provides an important framework for understanding the climate risks and existing capacities of the region, a significant level of uncertainty remains in several areas, particularly on investment planning issues. Given the limited availability of accurate data, it has been necessary to resort to a number of simplifications, educated guesses and expert assessments, for example in quantifying adaptation-relevant expenditures in public budgets or in identifying investment barriers and opportunities in particular sectors.

This uncertainty can affect the accuracy of the proposed measures and their prioritisation, and thus the effectiveness of the implementation of adaptation actions. It also plays out in estimating synergies with mitigation and in designing an investment framework focused on multiple resilience benefits.

Planned revisions and updates

In light of the above, a discussion will be initiated in 2026 on options for revising key parts of the baseline report - in particular the chapters on financing, adaptation needs and draft investment priorities. The revision should follow further stakeholder dialogues, deeper sectoral analysis and newly available datasets, including data on actual investments and pilot project outputs.

Improving the quality of input data and refining estimates could also be facilitated by the planned linking of Pathways2Resilience outputs with the county's strategic management tools.

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