

Endbericht zur Studie

CLIP-OST

Climate Proofing – Ostregion

Check der Planungssysteme im Burgenland, in Niederösterreich und
in Wien zur besseren Bewältigung der Klimawandelfolgen

Auftrag im Rahmen der Planungsgemeinschaft Ost



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Executive Summary

Due to **climate change** meteorological phenomena can occur with **changed frequency and intensity**. **Extreme events** in particular can have a strong impact on settlement areas, transport infrastructure, energy supply and other sectors.

The aim of the project "**Climate Proofing - Eastern Region, Check of Planning Systems in Burgenland, Lower Austria and Vienna for Better Coping with Climate Change Impacts**" (CLIP-OST) was to identify approaches for climate proofing as well as starting points for improving the framework conditions for climate change adaptation in the field of spatial planning and development in the PGO region (Planning Association East / Planungsgemeinschaft Ost).

Climate change in the PGO region

The eastern region is one of the **regions with the least rainfall** in Austria. The climatological water balance (evaporation compared to total precipitation) is negative in large parts of the eastern region, which leads to periods of **drought and subsequently drought stress for the vegetation**. At the same time, however, the mountainous regions up to the "Wienerwald" are particularly affected by **small-scale heavy rainfall events**, due to the increased likelihood of thunderstorms in these regions. These areas are also comparatively more affected by **large-scale precipitation events** lasting several days, which can lead to **landslides and flooding**. The eastern region and especially the lowlands are among the **warmest regions in Austria** as well. **High temperatures** occur especially in summer due to its continental location, **compared to the rest of Austria**. This change in temperature signals is also visible in a continuous increase in heat days and tropical nights in recent decades.

In the future further **change in the climate signals** are expected and an **increase in extreme events** can be assumed. In recent decades there has already been a **significant warming**, which will continue according to the relevant projections. Longer-lasting **heat waves** will increase and new **heat records** are expected, which will massively increase the heat load for people and infrastructures. Sealed surfaces in particular, which heat up strongly in the sun, can further increase this heat stress in settlement areas. The predicted temperature increases will also increase evapotranspiration and thus intensify the **problems imposed by droughts** in parts of the eastern region.

However, a warmer atmosphere can also absorb more water vapour and thus more precipitation water will be available for **thunderstorms** in the future. In addition, thunderstorms will be more likely due to the **increasing lability of the atmosphere**. Both processes together, i.e. an increase in precipitation intensity due to the rise in temperature and an increase in the frequency of severe thunderstorms, will lead to a strong **increase in damage-causing heavy precipitation**.

Due to its **location in a transition area of different climatic influences** and the spatial proximity of different climatic zones, it can generally be assumed that **climate change in the PGO**

area will also be very inhomogeneous and that there will be significant **local differences in the extent to which people are affected**.

"Climate Proofing" framework

For the **implementation of climate change adaptation, a theoretical framework concept** was developed that comprises the individual steps of "climate proofing". This **process** allows for the **identification of significant challenges** (impact analysis) as well as the identification and implementation of **solutions** for spatial planning and, if relevant, also for national or cross-regional planning (implementation and feedback).

Key areas of action for adaptation to climate change

There are four areas of action in spatial planning and land use planning that allow for precautionary consideration of potential climate change impacts through spatial planning. Thus, increased risks for people and buildings as well as other infrastructure can be substantially reduced:

- 1. Preventive preservation of land and / or anticipatory consideration of its future use**
- 2. Unsealing or avoiding of further sealing and enhancing the infiltration capacity of the soil**
- 3. Increased use of green and blue infrastructure and nature-based measures**
- 4. Technical measures and protection of property**

Spatial planning can contribute significantly to the prevention or mitigation of adverse effects due to the consequences of climate change, both through **spatial research and planning decisions**. Both **actively structuring land**, such as preserving open green spaces or **depicting adaptation-relevant areas**, as well as **identifying new risks** that arise through the implementation of a plan / program are significant in this regard. While some aspects, such as the risk of flooding, have been considered for decades, the consequences of **heat and drought** in particular, have only been considered in planning processes for a few years now, and planners and decision-makers have been trying to find longer-term measures to reduce negative consequences.

Implementation of climate change adaptation at all planning levels

The implementation of adaptation to climate change is a **longitudinal and cross-sectional matter**. In particular, measures to secure land must be implemented consistently on the **different planning levels** and with **various planning instruments**. This concerns the **formulation of objectives, spatial research** or the actual development and establishment of **measures**.

In the course of the project, the decisive measures for adapting to climate change were identified and described and the implementation options presented on the basis of the current legal framework in the three federal states of the PGO area.

Implementation options for climate change adaptation in the PGO region

The **existing framework conditions, instruments and planning processes** in the PGO region and in the three federal states of Vienna, Lower Austria and Burgenland already **enable** extensive implementation of the **necessary adaptation measures**. The **framework conditions for the implementation** of the central measures for adapting to climate change **have been improved** in principle through extensive **adjustments to the spatial planning laws** of the countries of the PGO area in recent years. The definition of objectives in spatial planning law has been supplemented and thus the **public interest of adaptation to climate change has been more explicitly embedded**. Particularly in the area of natural hazard management in relation to pluvial and fluvial floods or landslides, the specifications were elaborated more precisely and expanded. Other aspects, such as the increasing threat posed by heat and drought due to climate change and corresponding objectives, requirements for basic research or appropriate measures, are less established in comparison.

Approaches to further improve climate change adaptation in the PGO area

The **effects of climate change** depend not only on the extent of the climate change, but also very much on the **location of a region**. In this respect, it is important to deal with the **current land use and influencing factors of a region** in the course of in-depth, regional impact analyses in order to assess the specific vulnerability.

For the **planning area of the PGO**, in-depth analyses are still necessary, in particular when it comes to taking into account other relevant spatial – sometimes also **transnational** – developments (e.g. settlement expansion in the urban area, large-scale use of alternative energies). This requires **space-specific projections, simulations and impact forecasts** in order to further develop suitable instruments and measures for the specific planning context.

At the level of supra-regional spatial planning, interrelationships with **heat and drought in particular can be recorded as central climate change impacts** in the planning area of the PGO. Due to the long-term planning periods, strategic developments can have a significant influence on the affectedness and resilience to climate change impacts. The instrument of regional spatial planning or development programs as well as **coordination with other specialist areas** – such as water and forestry – especially in basic research and the development of planning alternatives, is central here.

At the local spatial planning level all instruments such as **local development concepts, land use plans and zoning plans** can support adaptation to climate change at their level. They also serve the concrete implementation of the regionally defined objectives and measures, e.g. for heat reduction or floods. An **improvement in spatial research** or fundamental research at

the local level is also necessary. A **mandatory employment** with the topic of climate change adaptation (impact, goals, statements, measures) is recommended.

Cross-state consideration and recommendations for action for the PGO

The PGO area consists of **three independent regional authorities, which severely limits the immediate implementation** options. A large part of the recommended measures can therefore only be implemented in the individual federal states. However, the PGO can contribute significantly to the necessary climate change adaptation by elaborating **common spatial planning goals, the technical and temporal coordination of spatially effective planning**, as well as in the field of **basic research**. The following measures or initiatives are possible to further improve the basis for climate change adaptation in the PGO area:

1. **PGO platform climate change adaptation for cross-federal state coordination and harmonization**

In terms of the **use of existing structures and forms of cooperation**, the PGO offers the ideal framework for coordinating the adaptation on a supra-regional level across federal states and sectors, developing a **common database and common goals, strategies and measures**.

2. **PGO framework and strategy for adaptation to climate change**

For the **required and necessary coordination of goals, strategies and measures** for adaptation to climate change across federal states, the creation of a joint “PGO framework and strategy concept for adaptation to climate change” is recommended.

3. **PGO climate atlas – cross-federal state analysis of the impact**

In order to enable the analysis of the impact of different planning areas more efficiently in the future, the creation of a common database and the implementation of **vulnerability and risk analyzes, taking future developments into account**, is recommended.

4. **Cross-federal state regional concepts for climate change adaptation**

On the basis of a differentiated and comparative assessment of the vulnerability or the risk, strategies and concepts across federal states should be developed for **municipalities and regions with similar challenges or need for adaptation** in relation to climate change. The **Urban-Region*** (Stadtregion*) in particular is ideal for a cross-state analysis.