

# **Climate change adaptation: transformation of governance structures? Assessing the adaptive capacity of spatial planning in Alpine countries**

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## **Alpine cities and regions in climate change adaptation**

Climate change exposure, economic and societal vulnerabilities as well as the capacities to adapt to climate change can differ significantly between different regions. Whereas climate mitigation has to be conducted and coordinated on a global level, climate adaptation has to be dealt with on the local and regional level. Climate adaptation refers to anticipatory or reactive “adjustments to reduce vulnerability or enhance resilience in response to observed or expected changes in climate and associated extreme weather events” (IPCC 2007, 720). These “adjustments” are processes, practices, interactions and decisions in which regional economies and societies adapt to climate change impacts. The European Alps, which are the geographical focus of analysis, are already today exposed to climate change impacts due to global warming, especially retreat of glaciers, increase of alpine hazards, change in biodiversity, low flow conditions. In addition, the Alps show a high local variability of climatic conditions and expected impacts due to climate change.

Further, climate change stimuli are expected to have tremendous impacts on land use in the Alpine space (e.g. in agriculture, tourism, transport and infrastructure) and are therefore strongly referring to spatial development issues. Consequently spatial planning and policy making is currently facing the challenge to enhance adaptation options and to improve the capacities of cities and region to adapt to climate change impacts. In the European Adaptation Strategy the European Commission points out the potential of spatial planning to define cost-effective adaptation measures and their key role for awareness-raising among the public, decision makers and professionals (Commission of the European Communities 2009).

Hence, the study addresses two *research questions*: first, how is climate adaptation governed in spatial planning systems; and second, what are potentials, strengths and weaknesses of spatial planning to improve adaptation to climate change.

## **Assessment of adaptive capacity: methods and results**

In order to assess the adaptive capacity of the spatial planning systems of six Alpine countries (Austria, Germany, Slovenia, Italy, Switzerland and Liechtenstein) the analysis draws on a

participatory evaluation design realized in the research project “Climate Change Adaptation by Spatial Planning” (CLISP).<sup>1</sup> Evaluation criteria and methods have been developed together with national and regional planning authorities, which are involved as active partners in the project. The *evaluation procedure* is following three steps, which focus on different levels of spatial planning:

- A *transnational analysis* of spatial planning system of the Alpine countries gives an overview over the general architecture of the spatial planning system
- a detailed *review of the adaptive capacities of the spatial planning system* in form of a standardized survey covered different aspects of spatial planning and
- an *in-depth evaluation* in ten Model Regions assesses different local adaptation requirements and the implementation of adaptation activities.

The conducted transnational analysis and the review of requirements and capacities of spatial planning to adapt to climate change in the Alps show different starting points for enhancement options. Within the spatial planning system recent changes in the political framework, especially on supra-national and national level, foster climate change adaptation as some countries include climate adaptation explicitly in national climate action plans. In the legal and instrumental framework though the review shows that only very few regulations and instruments directly focus on climate change adaptation or include adaptation as planning objectives. This can be seen as one of the main constraints as most planning experts consider it to be highly relevant for a sufficient implementation that adaptation to climate change impacts is included in the planning objective. Further, cooperation with other sectoral planning authorities and the political willingness on the municipal level are seen as other prerequisites for successful implementation of adaptation measures. This hints at governance mechanisms which are characteristic for climate change adaptation: interplay and coherence of planning activities, flexibility and stability of regulations as well as informational, financial and personal resources. Whereas vertical and horizontal interplay is realized mostly in a coherent way within the analysed planning systems, the extent of flexibility is a crucial aspect for both spatial planning in general as well as for climate change adaptation. While adaptation practises require flexible and rather short term reactions or precautionary adjustment of regulations and implementation, spatial planning does rely on a minimum of stability in order to coordinate economic and social development in a stable way. In the field of resources it becomes quite clear, that especially the informational basis is highly relevant for adaptation activities and spatial planning actors have a diverse demand of knowledge but also perceive a lack of specified knowledge and personnel.

Reflecting the methodological approach, further research should focus on the implementation of planning activities fostering climate change adaptation on a local level and include municipalities in the assessment. Within the evaluation design applied in the CLISP project municipalities have

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<sup>1</sup> CLISP is a European project funded by the Alpine Space Programme under the European Territorial Cooperation 2007-2013, [www.clisp.eu](http://www.clisp.eu).

not yet been involved in the review as active partners. Nevertheless, the results show the high relevance of the political willingness and flexibility of local planning actors for successful climate change adaptation.

### **References**

IPCC. 2007. *Assessment of adaptation practices, options, constraints and capacity. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK: Cambridge University Press.

Commission of the European communities. 2009. *White paper. Adapting to climate change: Towards a European framework for action*. COM/2009/0147. Brussels.

### **Keywords**

Adaptation to climate change, spatial planning, adaptive capacity, adaptive governance, transnational analysis, Alpine space

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