



Vulnerability and adaptation to water scarcity in the European Alps

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The European Environment Agency (EEA) has recently undertaken a project addressing vulnerability and adaptation to water availability in the European Alps. Mountains are indeed one of the most vulnerable regions to climate change in Europe (EEA 2008, IPCC 2007). The Alps, in particular, can be presented as the 'water towers' of Europe (the amount of water delivered by the Alps allocates 40% of EU consumption) where changes in water availability affect all socio-economical sectors. This therefore makes adaptation actions a regional topic with an outstanding European dimension.

The specific objectives of the study were to highlight the importance of the Alps in their function as 'water towers' for Europe and analyse the vulnerability of the Alpine Region with regard to impacts of climate change (but also to global change as a whole) focussing on water availability. Given the EU and regional policy background with regard to adaptation and water issues, the study assessed the possible needs, constraints and opportunities for adaptation to the adverse impacts for various sectors pending on water resources. Findings of this activity expanded the knowledge base, fed into the preparation of European Commission's 2009 White Paper and the Alpine Convention 2009 Report on the State of the Alps, and complemented other recent studies (e.g. OECD 2007, European Parliament Committee on Agriculture & Rural Development 2008).

The method used for the study relied on the one hand on findings from recent key publications on climate change impacts (EEA 2008, IPCC 2007) and EU research projects (e.g. ClimChAlp, ProClim); on the other side it was based on selected case studies chosen within the four climatic regions of the eight Alpine countries for which an extensive series of interviews with local and regional stakeholders and decision makers has been undertaken. The interviewees had been directly involved in designing and implementing water availability-related adaptation measures relating to the respective case studies.

The analysis of the case studies highlighted key drivers of adaptation measures, the multi-level governance surrounding this type of policy actions, success factors and barriers (e.g. lack of knowledge, governance shortcomings, coordination issues, spatial and temporal distribution, and competition for resources) that prevent more extensive adaptation actions. Examples of good practices were given as well as further adaptation needs in view of future climate change. Since the study relied mainly on stakeholders' interviews, the major focus lies on building local/regional adaptive capacity that effectively supports adaptation as a social and institutional process. It also provided a synthesis of key vulnerabilities and adaptation options across Europe/Alpine river catchments and recommendations on how to transfer experiences and knowledge in practical implementation of adaptation measures, in particular to other mountain regions (e.g. Carpathian). In this context the study supports regional and local administrations in making informed decisions to better develop and implement adaptation strategies.

This EEA study was conducted by the European Topic Centre on Air and Climate Change (UBA Germany, UBA Austria, Potsdam Institute for Climate Impact Research) in cooperation with the Permanent Secretariat of the Alpine Convention (Innsbruck), the European Academy (Bolzano) and the Environment Protection Agency of Slovenia. The study will be published in the first half of 2009 as an EEA Technical Report and will be actively disseminated to stakeholders and decision-makers in the Alpine region through best suited events in collaboration with the Alpine Convention.

