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Water and tourism in mountains: the case of artificial snow in countries of the alpine arc.

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Mountains and in particular the Alps, constitute a space where water problems have until recently been a less acute issue than elsewhere. Until now, the allocation of water resources have made it possible to support different uses and to supply downstream areas, but the increase in water requests, the expected effects of climate change and the appearance of new uses put into question the availability of the water resources in mountain areas.

The aims of this research project are to analyse the impacts of the production of artificial snow on the water resources at various spatial scales. This multiscale approach seems to be the most useful method for tackling the question of integrated water management in mountains and for integrating the logics of upstream-downstream relations. In particular, it should take into account the dependency of the downstream piedmont regions on variability of water quality and quantity originating from the upstream regions. The initial approach is of qualitative nature taking into account the chain of interactions and feedback between the uses and the environment. Depending on the availability of the data, the second step will be a quantitative analysis. The various impacts of the artificial snow will be evaluated according to different physical environments e.g. high and medium mountains. The study is thus focussed on the question of whether and how the use of water for the production of artificial snow can form part of a model of integrated and sustainable management of water resources, respecting as far as possible the environment and the various types of economical uses.

The aim is to precisely define the conditions of installation and use of automatic

snowing-making systems related to the present and future availability of water resources, environmental impacts, climate change perspectives, economic profitability, etc. In other words, the conditions under which this use is justified will be defined as well as the schedule necessary to simultaneously respect the multiple uses of water and its impacts on the natural environment. This project should enable an innovative method intended to bring help to local decision makers.

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