

## Abstract

### Lecture notes: “Ecological aspects of urbanization in mountain areas”

This booklet (lecture notes) serves as a guiding document for all those lecturers aiming at teaching the learning module “Ecological aspects of urbanization in mountain areas” at their respective institution. It has been elaborated under the framework of the SUNRAISE project by the team at Paris Lodron University of Salzburg (Austria) and constitutes a supportive tool for the implementation of the module at other partner universities. In it, the contents of the different units of the module are exposed, including theoretical concepts and practical cases, together with suggested assignments, evaluation methods and additional literature. Among the suggested assignments, in-class/ online discussions, group work and individual tasks are included. Different colours are used in order to clearly visualise each of the contents’ category.

The learning module “Ecological aspects of urbanization in mountain areas” is a 3-ECTS course targeted at providing an introduction to students to the important topic of urbanisation in mountain areas, and related socio-ecological issues and sustainability strategies. The module provides in-depth knowledge on mountain areas, including ecological processes and anthropogenic impacts. It provides students coming from various backgrounds with a basic understanding of urbanisation processes, their strains on socio-ecological systems, and the role of nature-based solutions as a strategy to address current environmental issues. A critical perspective is offered on the solutions already implemented and possible alternative paths are critically analysed. Urban mountain environments are assessed from a biophysical and social perspective.

The booklet is divided into 3 parts reflecting the 3 key thematic areas of the module. In part 1 (S1), contents and assignments are proposed for the introduction to students to urbanisation processes, their impacts on socio-ecological systems and some of the possible solutions available. A special focus is put on the eco-city concept and alternative sustainability transition pathways (Units 1 and 2). Theories and concepts are further developed in part 2 (S2) through the exploration of the role of urban nature for urban sustainability. The concept of urban nature is further assessed with the example of nature-based solutions for a sustainable rainwater management (Units 3 and 4). These contents and the respective suggested evaluation tasks/ additional learning materials lead to an outline of the complex bio-physical reality of mountain environments and the issue of urbanisation in mountain areas. This is presented in part 3 (S3), where the evolution and impacts of urban settlements in mountain environments are additionally critically assessed, as well as the challenges and risks that these settlements face, and possible sustainability pathways. The theoretical contents are illustrated with extensive examples especially but not exclusively focused on experiences in the Alps, the Himalaya, the Caucasus and the Altai, and the Rocky Mountains (Units 5 to 8).

The authors of this booklet hope that it can constitute a useful tool for all those willing to learn/ teach on the important topic of ecological aspects of urbanisation in mountain areas. It is also



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hoped that it will promote the training of professionals aware of and able to deal with this important topic in practice.



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