

HOW MUCH IS A FOREST WORTH?

Healthy forests offer very useful services to the territory against natural hazards, promote the increase of plant and animal biodiversity and contribute to the beauty of the landscape. Quantifying these benefits from an economic point of view is our task: we provide tools for policy makers and technicians for proper risk management, especially in mountain areas.

The future of mountain areas is uncertain, as the current climate crisis is increasing the intensity and frequency of extreme weather events and the resulting natural hazards in these fragile areas. These conditions are compounded by the changing socio-economic needs, with a strong polarization that sees on the one hand an increase in the tourist attendance of some areas and, on the other hand, the progressive depopulation of inland areas and the consequent abandonment of many agro-forestry activities and land management. In both cases the future and stability of these territories are at stake (Howard and Sterner 2017; UNISDR 2015).

Therefore, there is a need to provide solutions capable of guaranteeing the resistance and resilience of mountain areas. Resistance is the ability of a system to withstand a pressure or disturbance generated by an external factor, while resilience is the ability of a system to return to the state prior to the disturbance.

Historically, the solutions adopted to prevent or mitigate the effects of natural hazards (such as avalanches, rockfalls and surface landslides) have been of two types: engineering works, such as rockfall nets, snow fences and weirs, i.e. works with excellent resistance, but little or no capacity to adapt to changes in natural hazards; and protective forests which, if properly managed, are capable of offering both good levels of resistance and resilience, as well as providing a number of other benefits such as the beauty of the landscape, CO₂ storage and increased plant and animal biodiversity.

In order to provide these services, the forest must be managed with silvicultural interventions, such as thinning, shelterwood cutting, reforestation and selective cutting.

In this context, the GreenRisk4Alps project is part of the framework of the European INTERREG Alpine Space projects. Aimed at evaluating the protection service provided by forests in order to help policy makers to quantify the benefits provided by forests, the project seeks to respond to the demand for safety expressed by the inhabitants of mountain areas, with efficient solutions that compare costs and benefits of engineering works, together with those obtained from the management of protection forests.

Our research, which includes several case studies, tries to provide tools and models able to support decision-makers and technicians during the choice processes in risk

management and, at the same time, to raise the awareness of civil society towards these aspects.

Specifically, I deal with forest economics and have contributed to the development of ASFORESEE, an economic model to evaluate the protection service offered by the forest against rockfall.