Capacity building to support forest management in protective forests of Slovenia

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ABSTRACT

Protective forests in the Alpine region play a crucial role in mitigating natural hazards such as strong winds, snow avalanches, rockfall and other gravitational mass movements. In Slovenia, forests with an emphasized protective function, which grow on steep terrain and in extreme sites, cover 21% of forest area. Recent extreme weather events, including the 2023 floods and gravitational mass movements, have underscored the growing need for active management of protective forests to increase the resilience of forests and sustainably protect infrastructure and human safety. Additionally, the stability of forests is further affected by the climate change driven compound disturbances, which emphasizes the urgency of capacity-building measures. To address these challenges, the Forest Living Lab (FLL) approach was implemented as a part of the Interreg Alpine Space project Managing protective forest facing cli-

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mate change compound events (MOSAIC). This method integrates scientific research, stakeholder collaboration, adaptive learning, and innovative tools to develop sustainable, evidence-based solutions for forest management. The FLL, located in the Soteska Valley in Slovenia, serves as an exemplary case study due to its complex topography, active erosion and torrential processes and proximity to critical infrastructure such as roads, railway lines, and cycle paths. The area is subject to constant disturbances, such as windthrows and bark-beetle attacks, and is also continuously at risk of rockfall and torrential debris flows. Effective forest management is crucial to minimize these risks while maintaining ecosystem services. Stakeholder involvement is one of the key pillars of the FLL approach. Through workshops and trainings, a participatory process was initiated that brought together various stakeholders, such as forestry experts, forest owners, researchers, nature conservation experts, infrastructure managers and others, to identify key challenges and integrate expertise. A Marteloscope training plot was established within the FLL to train tree selection in protective forests. In this presentation, key findings on improving forest management, and innovative educational approaches aimed at enhancing the resilience of protective forests are presented. Our results highlight the importance of stakeholder collaboration, evidence-based decision making and continuous learning to strengthen the role of protective forests in mitigating natural hazards.

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