

## **MOUNTAINCRAFT: Gaming the future of mountain environments to foster climate adaptation initiatives**

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Environmental consequences of climate change (CC) challenge the business-as-usual operations of many mountain-dependent sectors for an expected total cost over 1 billion CHF/year by 2050 for Switzerland. Undertaking actions and developing policies to minimize the adverse consequences and to make the most of the opportunities that arise from CC, i.e. adaptation, has been raised as a national concern. Yet, in Switzerland, as in most countries, implementations of adaptive strategies have been limited.

Engaging in effective adaptation poses a huge challenge for our mental models. Proactive adaptation involves decision making in a changing world with many intertwined ecological and societal stakes, with continuing uncertainties about the severity, magnitudes and manifestations of climate change. There are pressing calls to develop scientific approaches to foster the engagement of decision-makers in adaptation, and guide them within alternative policy and management options.

Designing adaptation actions requires a holistic view of complex socio-ecological systems, which can be embraced through modelling. Yet, if models are at the core of adaptation science, their direct outcomes might be hardly palatable by and transferable to the stakeholders. Improvements of adaptation modelling would be of low impacts on adaptation initiative without the implementation of innovative communication means to make them available to the stakeholders' community. However, serious gaming, especially when supported by digital interfaces, is regarded as an emerging way to bring complex systems and models to a hands-on level.

MOUNTAINCRAFT's objective is to develop serious video-game grounded in scientific models to foster adaptation initiatives for Swiss mountain territories.

The project considers that :

- (i) There is a wealth of data and predictive models on the different typical features of Swiss mountain environment that allows a landscape-wide social-ecological modelling, acting at time and space scales that are relevant for local management (valley scale, <30 years)
- (ii) Such a social-ecological model could be used for testing how different climate and social-economic adaptation scenarios will affect both the environmental and human futures at the local scale (watershed, commune).
- (iii) The digital interface of video games is a media by which those models could be exported out of academia, and handled by a larger public.
- (iv) If rooted in scientific modelling, digital interfaces can allow the gamer to make an empirical but realistic experience of potential futures, while fostering empowerment.