D1.1. MountResilience Conceptual Model for Climate Resilient Transformation

MOUNT RESILIENCE

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Executive summary

The MountResilience Project supports 10 European Mountain Regions to increase their capacity to adapt to the impacts of climate change and to transition towards climate-resilient societies and ecosystems. To support a systemic approach to climate change adaptation, the MountResilience Conceptual Framework provides the theoretical frame for developing transformative climate change adaptation initiatives using Nature-Based Solutions. The aim of the conceptual model is to guide further work in WP 1 which also comprises the support structure to the regions, namely the regional baseline analysis (T1.2), regional strategies (T1.3), monitoring and evaluation of adaptation activities (T1.4) and impact analysis (T1.5). By extension, it should thus support the regional partners in working towards systemic and deeply transformative climate change adaptation.

In the first section, we lay the foundation for climate resilient transformation by drawing on *Socio-Technical-Ecological Systems (STES)* approaches, the *Three Spheres of Transformation*, as well as characterizations of *Transformative Adaptation*. STES approaches conceptualize regions as complex systems comprised of social, technical, and ecological dimensions which all play a role in the susceptibility or resilience to climate impacts. These dimensions are co-constituting with feedback loops between them. Thus, changing one element (e.g. through an innovation in MountResilience) will inevitably affect aspects of the other two dimensions. In MountResilience, the STES concept serves as a base for analyzing the regional systems and to evaluate how to embed the innovations developed throughout the project within the social, ecological, and technological dimension.

The *Three Spheres of Transformation* provide a theory of deliberate social transformation towards sustainability outlining how to elicit transformative outcomes most effectively through localized action and innovation. Out of the three spheres, the practical sphere encompasses the specific interventions that contribute to the desired outcome (of transformative adaptation), such as those conducted in MountResilience. The political sphere provides the regulatory and institutional frame for the practical sphere. One of the objectives of MountResilience is to increase adaptive capacity in the regions, which is also located in the political sphere. The third, the personal sphere consists of the personal values, worldviews, and beliefs of individuals. For transformative adaptation, it is necessary to engage with stakeholders on all three spheres or levels. Without the accompanying changes within the regulatory framework and personal beliefs, a technological or social innovation might not be able to unfold its transformative potential to change the system.

Transformative Adaptation in the context of MountResilience refers to systemic regional changes that address the root causes of climate risk and vulnerability. At the same time, it ensures the resilience and functionality of systems, mitigates current and future climate risks, addresses immediate human needs, and prevents exacerbation of socio-economic inequalities. Different conceptualizations of transformative adaptation all have in common that they include both, ecological and social dimensions, and emphasize social equity.

The MountResilience Demonstrator activities will build on Nature-based Solutions (NbS). These are activities to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits. Stakeholder engagement is a key aspect in designing and implementing NbS.

Adaptive capacity, one of the key objectives of the project, describes a wide spectrum of locally available competences, skills and assets that can be deemed relevant for properly addressing systemic issues to adjust to and prevent potential damages stemming from climate change.

Ecosystem services can be described as the tangible and intangible benefits that ecosystems provide to humans, including essential goods such as food, freshwater, and timber, as well as recreation or spiritual meaning. In addition, they also comprise goods and services key to guarantee people's health, safety, and potentially bare survival and reproduction of ecosystems, including humans living within them.

To support regions' activities and to stay aligned with their mission and objectives, a monitoring process, based on developmental evaluation and complex system approaches will be developed. The monitoring framework builds on the concepts introduced in this conceptual framework and will include aspects of the social, ecological, and technological dimensions of the regional system.