MOVING
MOuntain Valorisation through INterconnectedness and Green growth

Swiss Alps

Vulnerability Matrix & Index

2024

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What will you find?

The MOVING (MOuntain Valorisation through INterconnectedness and Green growth) project stands at the forefront of climate resilience, aiming to fortify the sustainability of mountain areas against climate change. A key outcome of the project is the creation of tools that show susceptibility and vulnerability, ready to be used by both experts and the general audience[1].

This document synthesises crucial information for the **Swiss Alps Region**, particularly focusing on the Participatory Vulnerability Matrix and the Spatial Vulnerability aAtrix.

Using a participatory approach, the Vulnerability Matrix allows to downscale relevant information to the local level, offering a detailed view of how drivers of change impact this territory. Understanding that areas within the Swiss Alps Region are not equally vulnerable to identical threats, the Spatial Vulnerability Matrix emerges as a critical tool. It showcases the varied susceptibility across the region, paving the way for more effective, targeted adaptation strategies.

Mountain Reference Region: Swiss Alps

Mountain Reference Landscape: Swiss Alps MRL

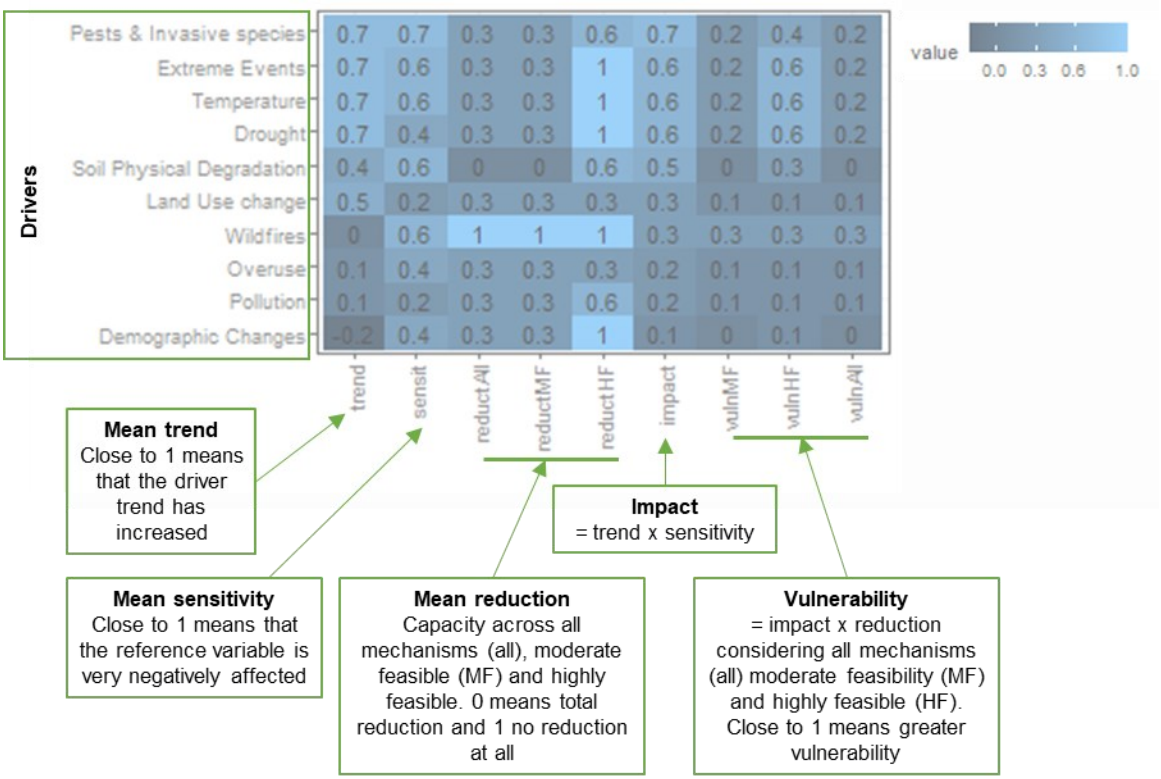
Value Chain: Grisons Mountain cereals

Land-use system: Extensive cropland

Reference variable: "Cereal yields" in kg/ha

[1] Extended outputs are accessible through the following documents: 'Land Use Systems and Land Cover Map in 23 Reference Regions' and 'Land use system vulnerability matrixes and vulnerability maps for the 23 reference regions'

1. Participatory Vulnerability Matrix



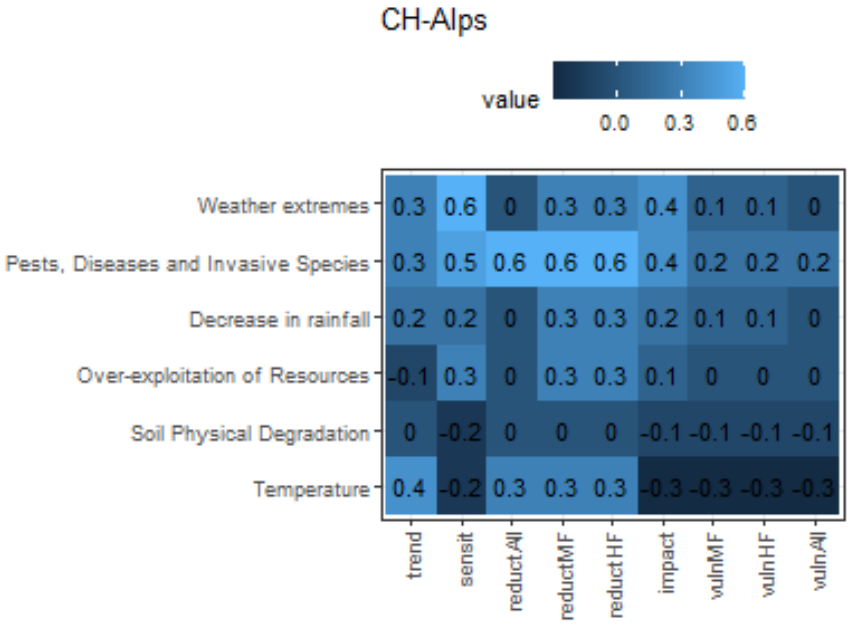


Figure 1. Vulnerability Matrix for the Swiss Alps MRL (below) and how to read it (above). Source: MOVING H2020

Two drivers stand out with a medium impact, weather extremes and "weeds" (Pests, diseases, and invasive species). Two drivers with a positive impact also stand out. Temperature, because an increase in temperature in the mountains will improve crop productivity, and physical soil degradation, because good management of cereals can improve the soil. In general, adaptive capacity mechanisms have a medium to full impact reduction potential, with high feasibility, except in the case of weeds, where the reduction capacity is low.

1.1. List of adaptative mechanisms suggested by consulted stakeholders

- Local adaptability - Selection of adapted mountain cereal seeds and local research/testing
- Advanced soil practices - Further sensibilisation on soil preservation and intercropping, goes together with climate mitigation strategies
- Strengthening of downstream parts of the value chain to guarantee price and purchases
- Water capacity - New water storage solutions for summer

2. Spatial Vulnerability Index

Vulnerability drivers:

- Precipitation
- Extreme weather events
- Temperature

Spatial explicit factors:

- Elevation
- Summer precipitation

Table 1. Spatial Vulnerability Index for Extensive cropland in the Swiss Alps MRL.

Spatial Vulnerability Index			Spatial Explicit Factor 1		
			Elevation (m)		
			[0-900]	*]900-1200]*	*]1200-max]*
Spatial Explicit Factor 2	*Precipitation in summer (mid-June to mid-September)*	*Too much*	**3**	**3**	**5**
		Optimal amount	**1**	**2**	**3**
		Too little	**5**	**4**	**3**

Vulnerability levels: 1 – very low, 2 – low, 3 – medium, 4- high, 5 – very high.
Source: MOVING H2020