MOVING
MOuntain Valorisation through INterconnectedness and Green growth

Spanish Pyrenees

Vulnerability matrixes and vulnerability map

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 **Spanish Pyrenees Region**, particularly focusing on the Participatory Vulnerability Matrix and the Spatial Vulnerability Map.

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 Spanish Pyrenees Region are not equally vulnerable to identical threats, the Spatial Vulnerability Map 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: Spanish Pyrenees

Mountain Reference Landscape: Spanish Pyrenees MRL

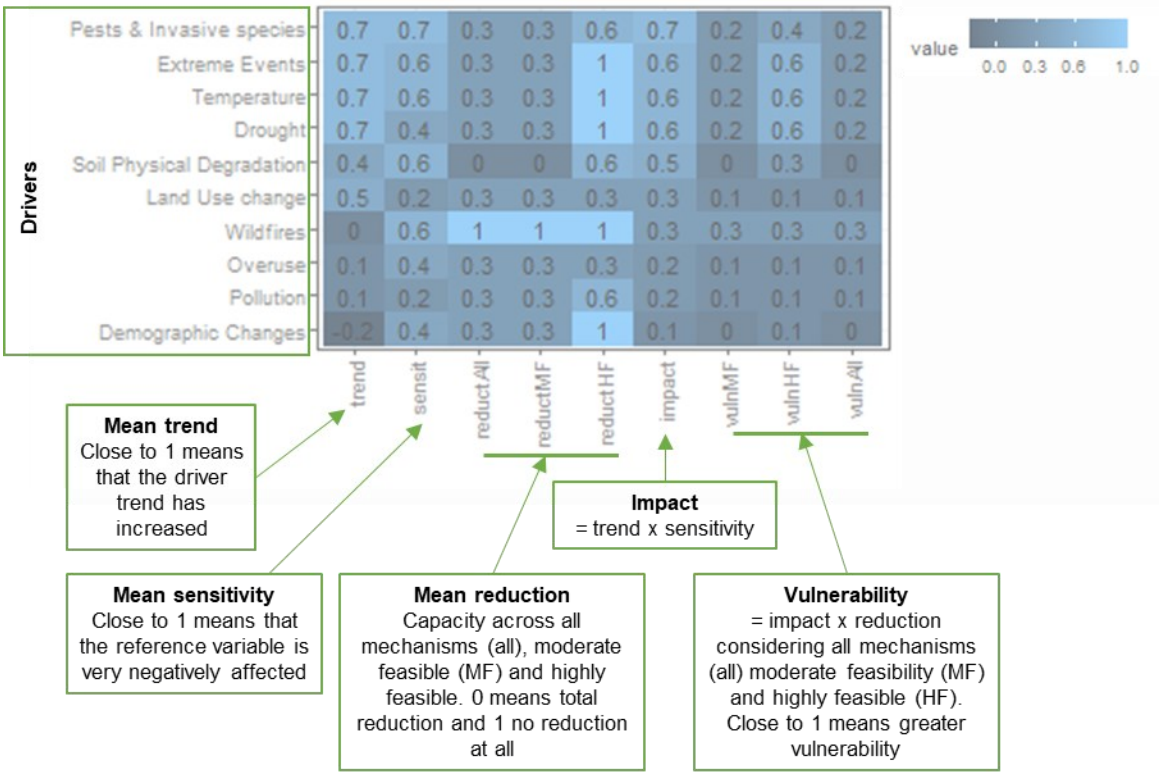
Value Chain: Mountain Wine Value Chain (Spanish Vignerons from pre-Pyrenean mountains)

Land-use system: Vineyard

Reference variable: The vineyard productivity and grape quality

[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



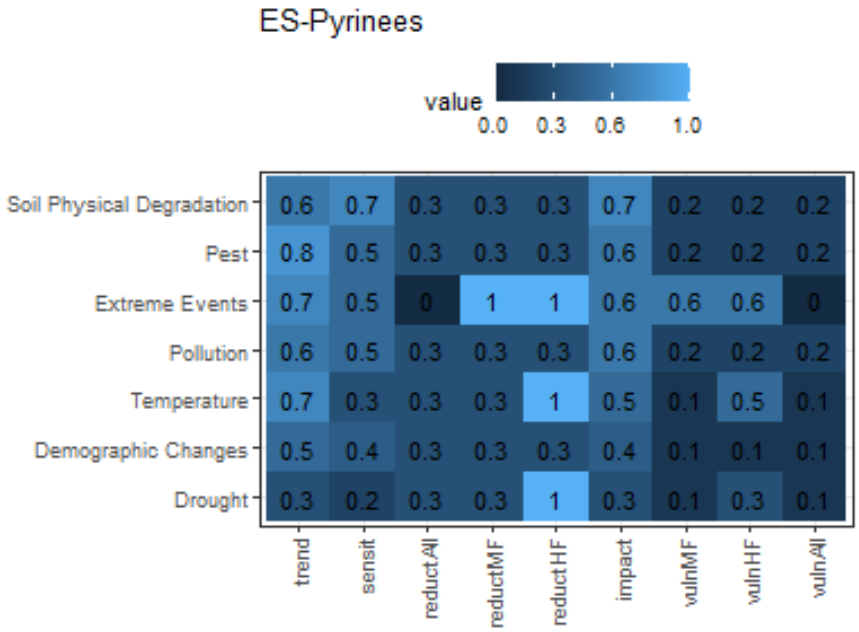


Figure 1. Vulnerability Matrix for the Spanish Pyrenees MRL (below) and how to read it (above). Source: MOVING H2020

The drivers of change with the greatest impact are physical land degradation and pollution due to poor management, pests, climatic drivers (extreme events, temperature and drought), and demographic changes. Perhaps this last driver is underestimated, as some of the participants lived outside the MRL. Less adaptive capacity is observed for climatic drivers, for which the feasibility of adaptation mechanisms is lower. In contrast, for the other drivers, high feasibility and medium impact reduction potential of the adaptation mechanisms is observed. This difference in feasibility means that vulnerability changes depending on the feasibility scenario.

1.1. List of adaptative mechanisms suggested by consulted stakeholders

- Introducing vine varieties producing grapes with high value but long ripening period
- Valorisation of autochthonous varieties (Parraleta, Vidadillo)
- Implementation of protective nets in large and concentrated vineyards
- Promoting organic viticulture
- Implementation of fencing and use of repellents
- Advantage small farmers committed to the land
- Encourage young entrepreneurs

2. Spatial Vulnerability Index and Map

Vulnerability drivers:

- Extreme weather events
- Temperature

Spatial explicit factors:

- Slope
- Elevation

Table 1. Spatial Vulnerability Index for Vineyards in the Spanish Pyrenees MRL.

Spatial Vulnerability Index			Spatial Explicit Factor 1		
			Elevation (m)		
			[0-500]	*]50-800]*	*]800-max]*
Spatial Explicit Factor 2	*Slope (%)*	*[0-10]*	**4**	**2**	**1**
		]10-max]	**5**	**3**	**2**

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

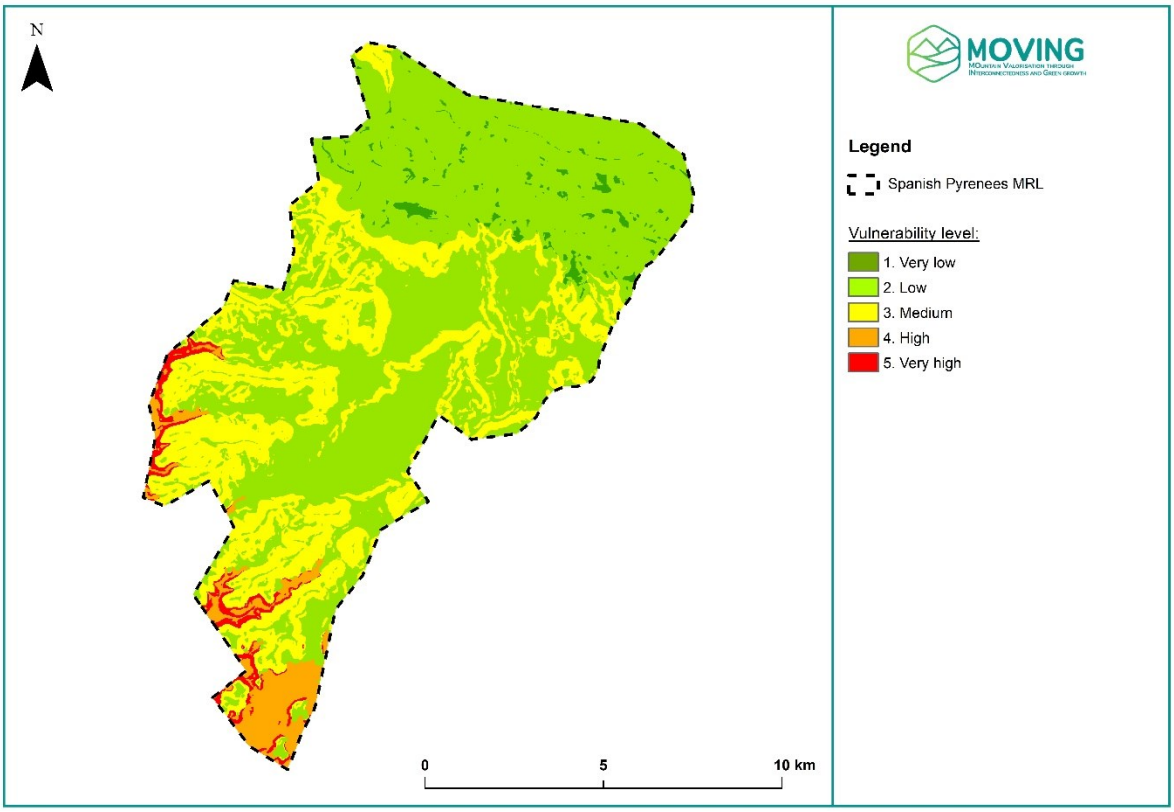


Figure 2. Vulnerability Map for vineyards in the Spanish Pyrenees MRL. Source: MOVING H2020