MOVING
MOuntain Valorisation through INterconnectedness and Green growth

Northern Apennines

Vulnerability matrixes and vulnerability map

2024

MOVING receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 862739. The content of this document does not reflect the official opinion of the European Union. Responsibility for the information and views expressed therein lies entirely with the author(s).

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 **Northern Apennines 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 Northern Apennines. Understanding that areas within the Northern Apennines 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: Northern Apennines

Mountain Reference Landscape: Northen Apennines MRL

Value Chain: Chestnut flour

Land-use system: High intensity planted forest (agroforestry)

Reference variable: Chestnuts tree varieties that influence the high quality of the chestnut flour but also the annual production (quantity) of chestnuts.

[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

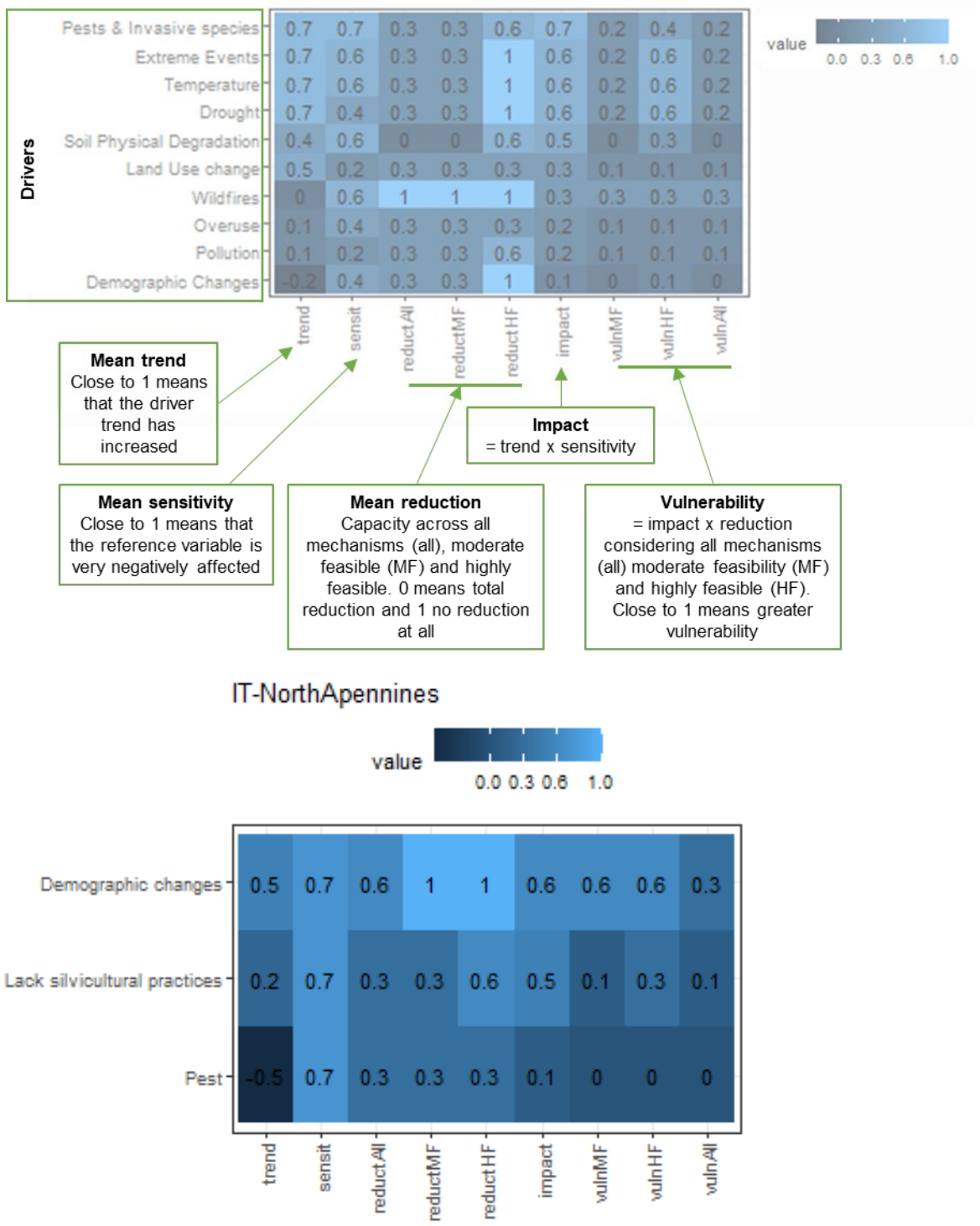

Figure 1. Vulnerability Matrix for Northen Apennines MRL (below) and how to read it (above).
Source: MOVING H2020

In this case study, only the vulnerability of the system has been assessed taking into account only three drivers, considered to be the most important. The two main drivers are linked to each other, as it is the same social dynamics that cause both depopulation and the loss of knowledge and practices. The perception of adaptive capacity is quite negative, with little or no capacity to reduce impacts, and few mechanisms with high feasibility. In the case of pests, the trend in recent years has already been positive and there is a potential to reduce the average impact, which makes expectations better.

1.1 List of adaptative mechanisms suggested by consulted stakeholders

- Maintenance of different varieties of chestnut trees with the creation of local forest nursery
- Introduce irrigation practices in specific periods of the year - water storage
- Graft and reproduce local monumental chestnut trees
- Transfer of local and traditional knowledge
- Monitoring of pests
- Implement "Forest Community" and foster new management practices to reduce abandonment.

2. Vulnerability Map

Vulnerability drivers:

- Lack of silviculture practices
- Pests
- Demographic Changes

Spatial explicit factors:

- Elevation and Exposition
- Distance to main roads or village

Table 1. Spatial Vulnerability Index for high intensity plant forest (agroforestry) in the Northern Apennines MRL

Spatial Vulnerability Index			Spatial Explicit Factor 1		
			Elevation (m) and Exposition		
			[0-600] South exposition	*[0-600] North exposition*	*]600-max]*
Spatial Explicit Factor 2	*Distance from main roads or village (m)*	*[0-100]*	**4**	**2**	**1**
		]100-max]	**5**	**3**	**4**

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

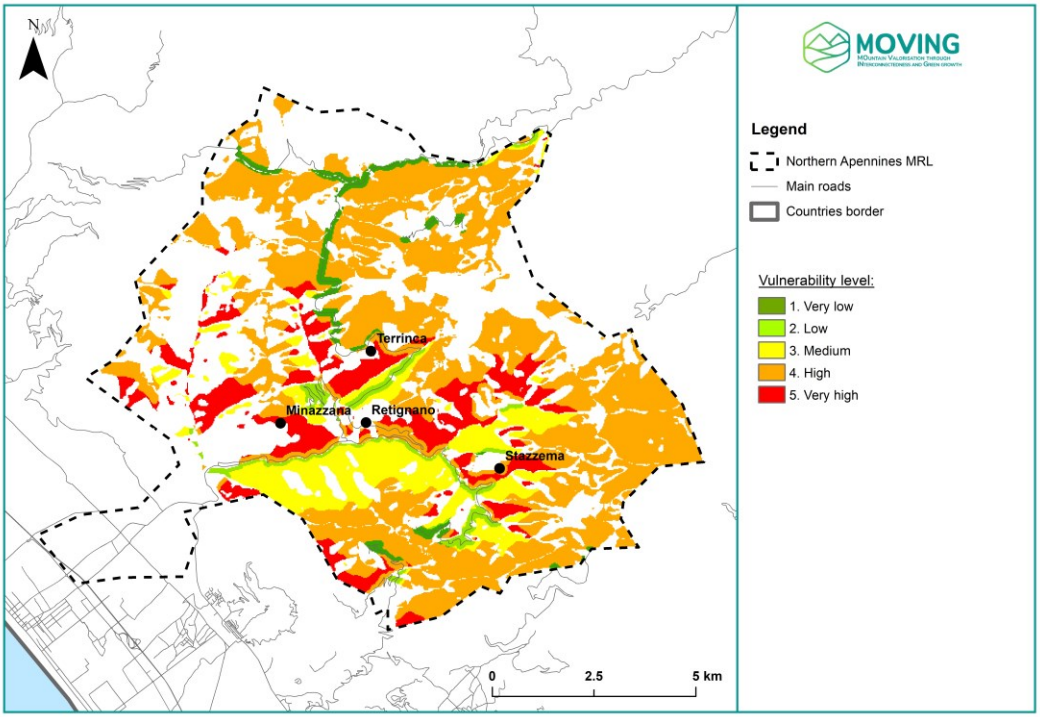

Figure 2. Vulnerability Map of high intensity plant forest (agroforestry) in the Northen Apennines MRL. Source: MOVING H2020