MOVING
MOuntain Valorisation through INterconnectedness and Green growth

# Eastern Alps

## 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 **Eastern Alps 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 Eastern Alps 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:** Eastern Alps

**Mountain Reference Landscape:** Eastern Alps MRL

**Value Chain:** Trento PDO Wine – Mountain viticulture in Alto Trentino

**Land-use system:** Vineyards

**Reference variable:** 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

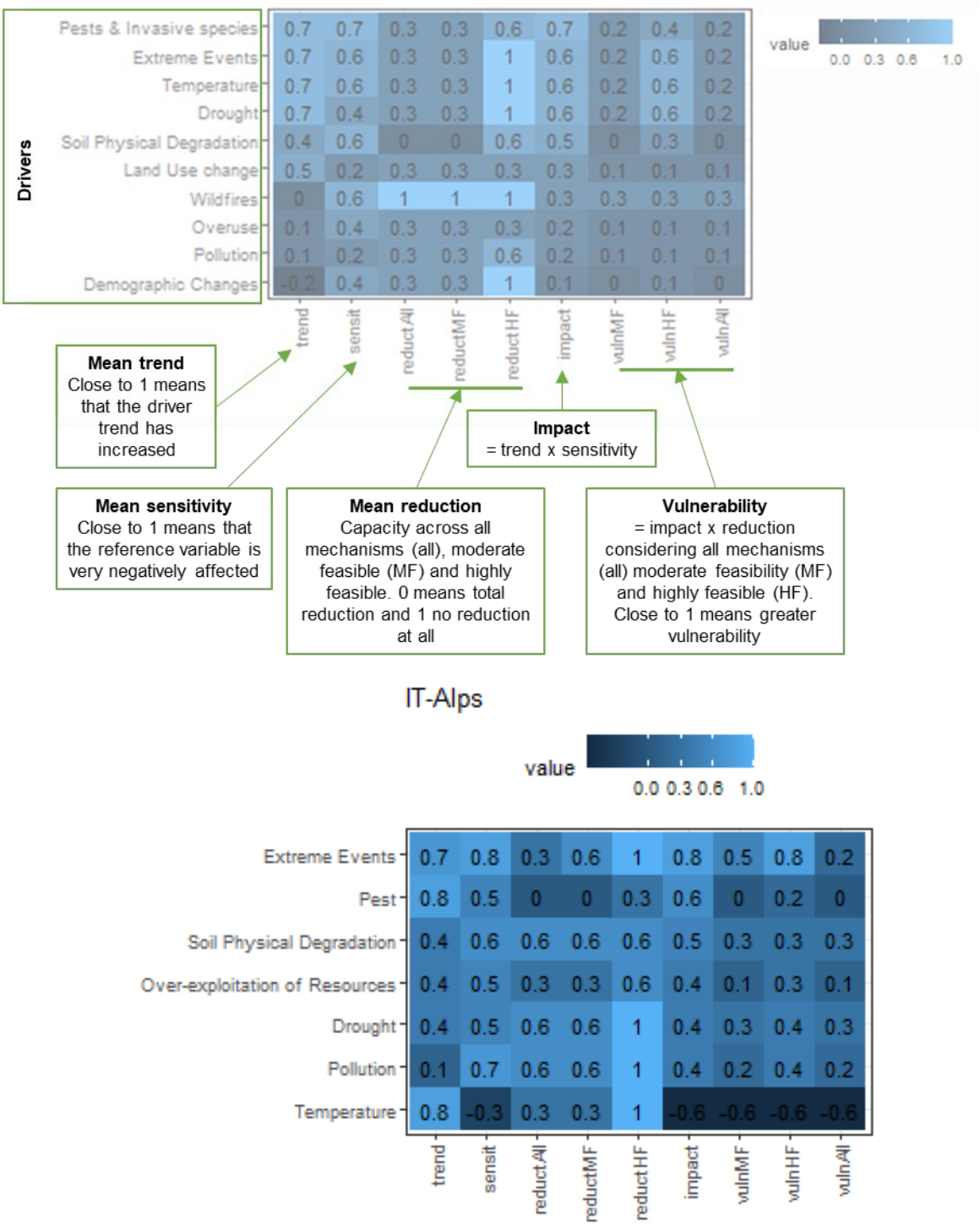


Figure 1. Vulnerability Matrix for Eastern Alps MRL (below) and how to read it (above). Source: MOVING H2020

Extreme events, in particular spring frosts and heavy rainfall, is the factor that has the greatest impact on vineyard productivity and grape quality. In fact, heavy rainfall also causes soil erosion and compaction (soil physical degradation). Adaptive mechanisms for these drivers have a medium/low viability and impact reduction capacity. Similar is the case for drought and pollution, although with a lower impact value. Other factors, such as pests and over-exploitation of resources, are perceived as more controllable. In contrast, the positive impact that temperature can have on high mountain viticulture stands out.

## 1.1 List of adaptative mechanisms suggested by consulted stakeholders

- Respect for vocationalist in te choice of vine varieties
- Longer rest period before replanting vineyards
- Maintain territorial biodiversity (crop variety combined with the presence of wild areas)
- Farms multifunctionality (combination of viticulture with animal husbandry) that is directly linked to family farming
- Sectional sub-irrigation with moisture sensors for precision irrigation
- Wrap-around nets
- Decision Support System based on simulation models for the selection of new areas for high altitude viticulture

# 2. Vulnerability Map

**Vulnerability drivers:**

- Temperature

**Spatial explicit factors:**

- Elevation
- Slope

Table 1. Spatial Vulnerability Index for the vineyards system in the Eastern Alps MRL

| **Spatial Vulnerability Index** | | | Spatial Explicit Factor 1 | | |
|---|---|---|---|---|---|
| | | | *Elevation (m)* | | |
| | | | *[0-400]* | *]400-700]* | *]700-max]* |
| Spatial Explicit Factor 2 | *Slope (%)* | *[0-10]* | **5** | **3** | **2** |
| | | *]10-max]* | **4** | **2** | **1** |

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

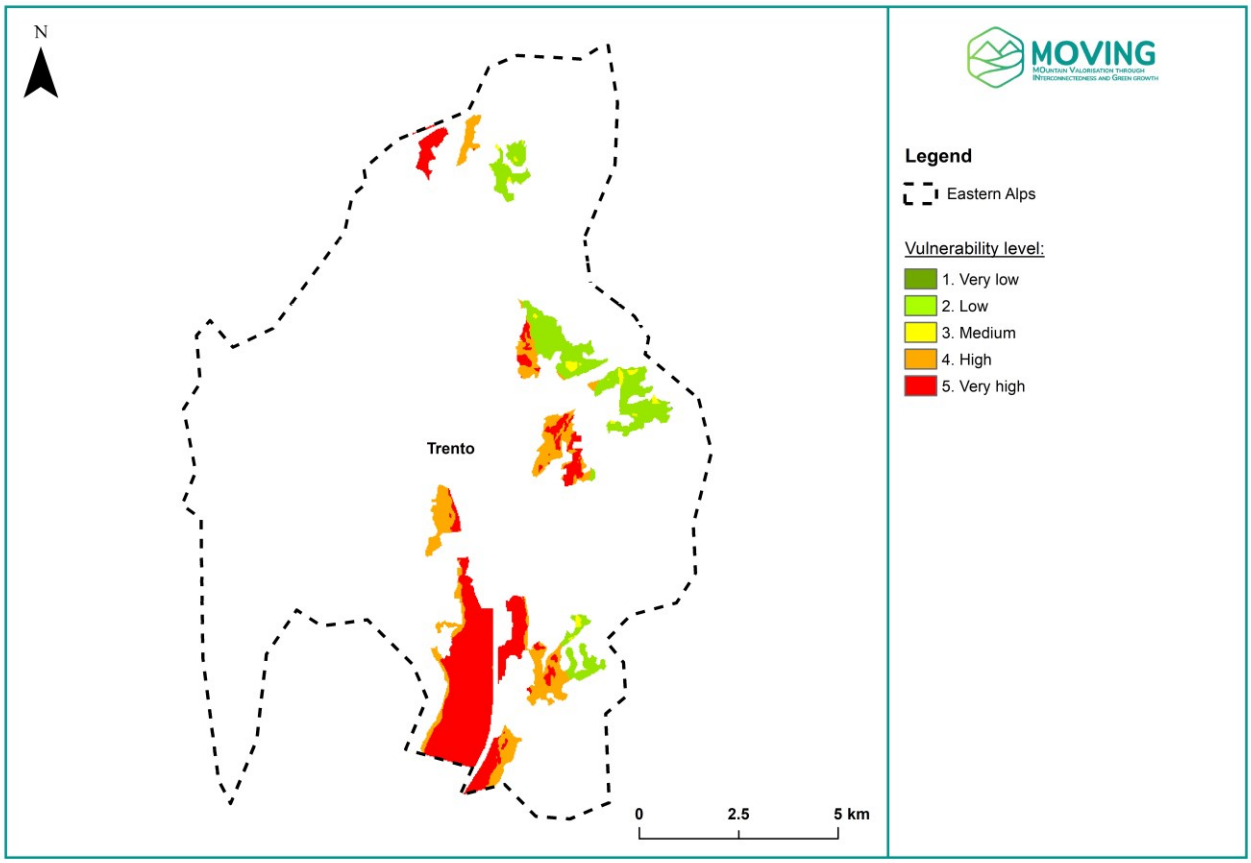


Figure 2. Vulnerability Map of the vineyards in the Eastern Alps MRL. Source: MOVING H2020