MOVING
MOuntain Valorisation through INterconnectedness and Green growth

Slovak Carpathian Mountains

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 **Slovak Carpathian Mountains 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 Slovak Carpathian Mountains 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: Slovak Carpathian Mountains

Mountain Reference Landscape: Southern Romanian Carpathian Mountains MRL (Piatra Craiului National Park) **-** Slovak Carpathian Mountains MRL

Value Chain: Bio-honey

Land-use system: Forests and grasslands

Reference variable: Diversity of pollen- and nectar – producing plants and honeydew from trees.

[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

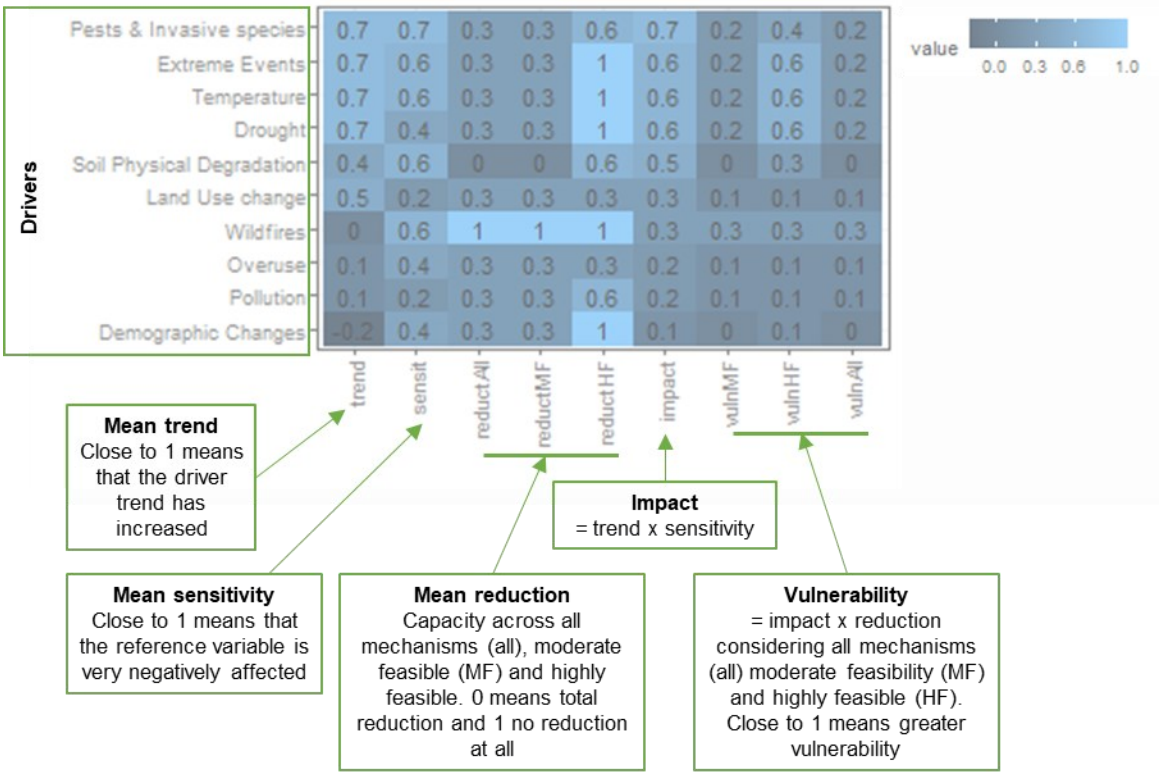

Figure 1. Vulnerability Matrix for the Slovak Carpathian Mountains MRL (below) and how to read it (above). Source: MOVING H2020

The drivers with the greatest impact, which are Extreme events, temperature increase and fluctuation and drought, are the climatic drivers, for which there is no or a low potential to reduce the impact of the drivers, which could be worrying for this value chain. For the rest of the drivers, with average impact values, a greater capacity for adaptation is perceived.

1.1. List of adaptative mechanisms suggested by consulted stakeholders

- Promoting sustainable practices in mountain farming and forestry
- Motivation of people - to work in agriculture and subsidies for small farms
- Adjustment of agrotechnical procedures in meadow and pasture management
- Support for research in beekeeping, e.g., drugs suitable for bio-production of honey, biotechnical methods, resistance to pests (hornets)
- Unification of conditions for organic production in agriculture within (Central) Europe
- Environmental education of children and youth
- Regulation of bear population in the mountains
- Improve better understanding between farmers and beekeepers

2. Spatial Vulnerability Matrix and Map

Vulnerability drivers:

- Land use changes
- Drought
- Temperature fluctuations

Spatial explicit factors:

- Land cover types
- Distance to infrastructures

Table 1. Spatial Vulnerability Index for forest and grasslands in the Slovak Carpathian Mountains MRL.

Spatial Vulnerability Index			Spatial Explicit Factor 1				
			Land cover types (CORINE land cover 2018 – level 3)				
			231, 242, 321	*312, 313*	*311, 324*	*112, 211, 243*	*121*
Spatial Explicit Factor 2	*Distance from the infrastructure (km)*	*[0-1.5]*	**2**	**3**	**4**	**4**	**5**
		]1.5-3]	**1**	**2**	**3**	**4**	**5**
		]3-max]	**1**	**2**	**3**	**3**	**5**

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

(CORINE land cover 2018 – level 3 classes in order of appearance in the table: 231 – Pastures, 242 – Complex cultivation patterns, 321 – Natural grasslands, 312 – Coniferous forest, 313 – Mixed forest, 311 – Broad leaved-forest, 324 – Transitional woodland-shrub, 112 – Discontinuous urban fabric, 211 – Non-

irrigated arable land, 243 – Land principally occupied by agriculture, with significant areas of natural vegetation, 121 – Industrial and commercial units)

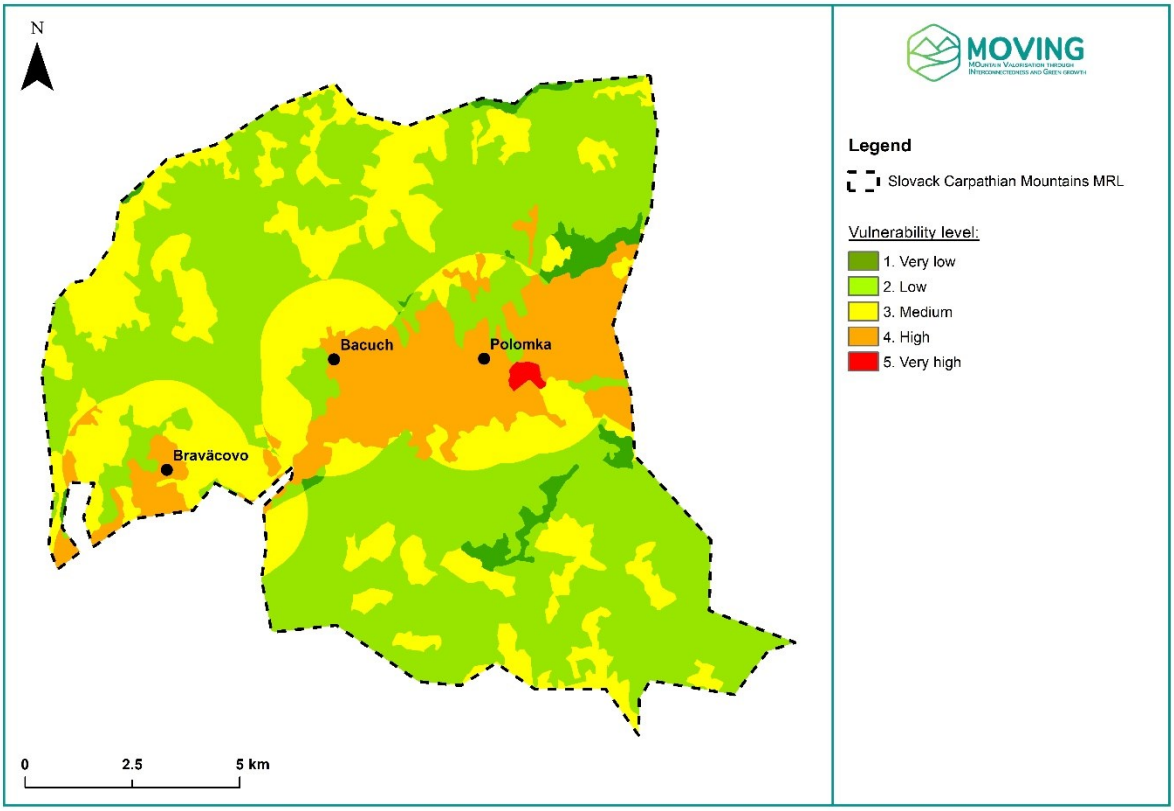

Figure 2. Vulnerability Map for forest and grasslands in the Slovak Carpathian Mountains MRL. Source: MOVING H2020