

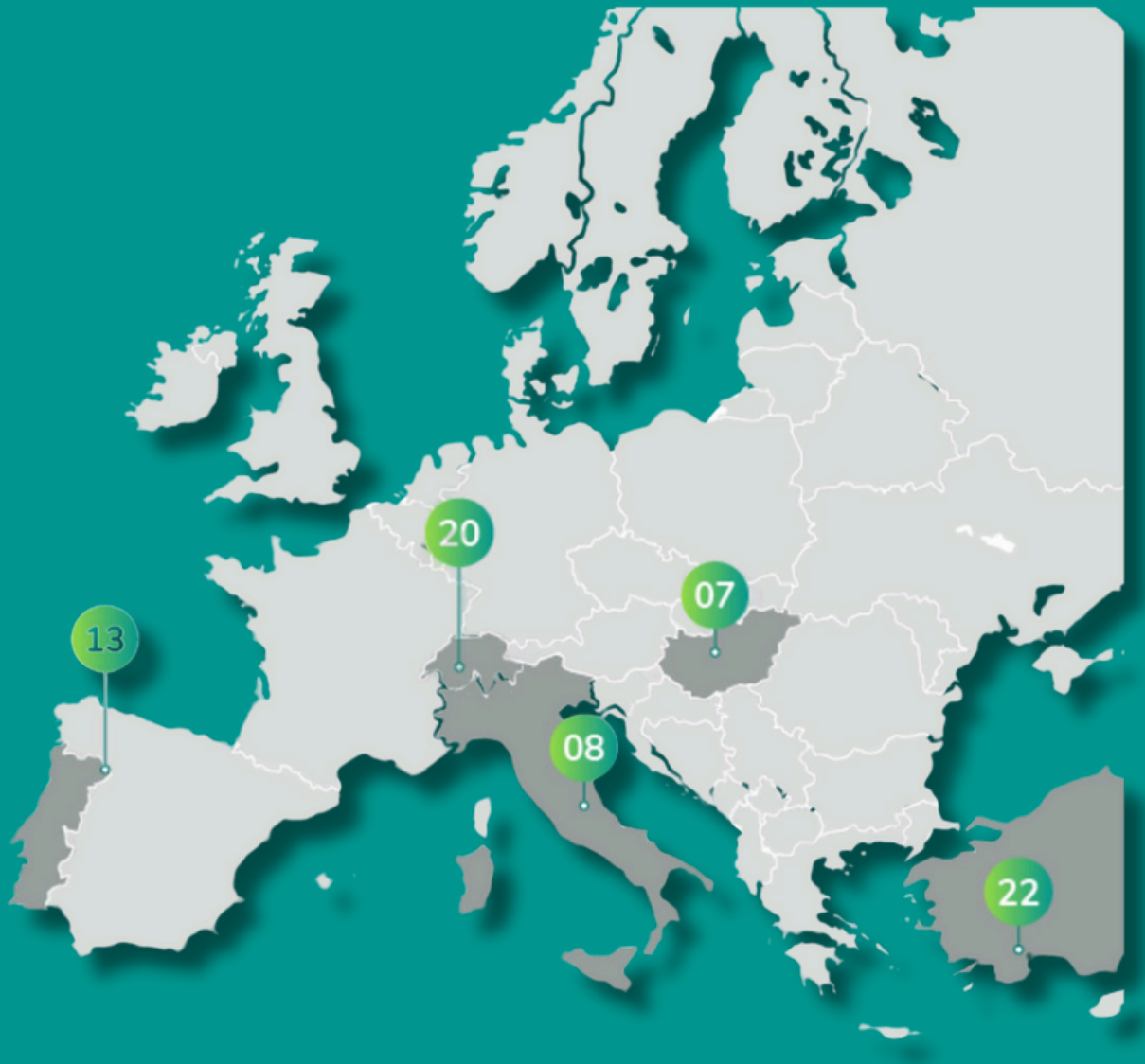


MOVING
MOUNTAIN VALORISATION THROUGH
INTERCONNECTEDNESS AND GREEN GROWTH

Policy Brief

CLUSTER I

Innovation and Infrastructures



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Policy Brief Cluster “I”: Innovation and Infrastructures

MOVING is a 4-years Horizon 2020 funded project whose main objective is to build capacities and codevelop relevant policy frameworks across Europe for the establishment of new or upgraded/upscaled value chains that contribute to the resilience and sustainability of mountain areas, using a bottom-up participatory process that engages value chain actors, stakeholders, and policymakers. The project is developed in 23 European mountain regions. Some additional objectives are:

- Establish a European-wide Community of Practice (CoP) on Mountain Value Chains, including actors from the Agricultural Knowledge and Innovation System (AKIS), value chain and policymaking stakeholders and society.
- Develop a conceptual and analytical framework based on the understanding of mountains as Social-Ecological Systems, describing and interpreting the diversity of mountain value chains, and assessing their contribution to the sustainability and resilience of mountain areas and population.
- Provide visual tools to raise awareness of the Agricultural Knowledge and Innovation System (AKIS), value chains actors, civil society, and policymakers on the diversity of land use and production systems of mountain areas, the threats they face, the bio-physical assets they can mobilise, their sustainability, and their resilience to climate change.
- Study the configurations, strategies, dynamics, and value distribution of different value chains in the main European mountainous areas to assess their contribution to sustainability and resilience.
- Develop in-depth, participatory, critical benchmarking of clusters of mountain value chains to identify enablers and blocking factors affecting the sustainability and resilience.
- Carry out foresight exercises to capture and anticipate the long-term trends affecting mountain areas, co-constructing shared visions and strategies for a balanced mix of public and private goods.
- Elaborate an evidence-based and performance-focused policy roadmap and policy design toolkit for the next generation of policy interventions to enhance the connectivity, sustainability, and resilience of mountain regions.

During the project development, an in-depth analysis of a value chain in each mountain area was conducted to determine its contribution to sustainability and resilience. Subsequently, the 23 value chains were categorised into five distinct clusters for cross-comparison and benchmarking. Each cluster aimed at addressing a specific challenge: Social and Demographic aspects (S), Innovation and infrastructures (I), Governance, Territoriality and cooperation (G), Nature and ecosystem services (N), and Value and quality products (V). To facilitate the analysis, seven common objectives were established (see Fig. 1), and various participatory activities were carried out. These included a cluster workshop involving stakeholders from all value chains within the cluster and a questionnaire answered by experts from each value chain. This Policy Brief serves as a synthesis overview of the results obtained in Cluster S (Social and Demographic aspects).



Figure 1. The 7 common objectives of MOVING

1. Synthesis of Cluster I in mountain areas of Europe

Innovation and infrastructure play a crucial role in supporting sustainable and resilient value chains in mountain areas. The remoteness and difficult terrain within these areas often result in high infrastructure costs, low investment interest and centralisation of services. At the same time, the rate of innovation in mountain communities tends to be lower than in urban areas due to various factors, such as an ageing population and the dominance of the primary sector. Furthermore, the availability and quality of infrastructure play an important role in the performance, innovation capacity and modernisation of value chains in these regions. In addition to infrastructure, other factors create an environment for innovation, such as creative and critical thinking, a sense for technology and forward-thinking processes. Innovation, infrastructure and other innovation-enabling factors discussed in Cluster I are linked to the following MOVING objectives: (1) Human Capital, (2) Cooperation, (5) Adaptive Capacity, (6) Ecological resilience, and (7) Attractiveness & wellbeing.

The analysis of the results in Cluster I revealed three overarching themes that are critical to infrastructure and innovation: Capital, Education, and Connectivity. Capital encompasses both financial resources and human resources, highlighting the importance of financial support for start-ups and businesses, economic stability, and a skilled workforce. Education plays a key role in fostering knowledge sharing, continuous learning, and innovative thinking. The rich historical and traditional knowledge found in mountain areas is a good resource for developing suitable strategies and approaches. Fostering a forward-looking community means empowering young people to embrace change and innovation. Connectivity, the third theme, highlights the need for robust digital infrastructure, efficient transport networks, and well-equipped social facilities in remote mountain areas. The creation of an attractive living environment and professionally adapted infrastructure is crucial to retaining and attracting a skilled workforce.

In the next chapters, the identified challenges according to the cluster as well as policy recommendations as part of the solution are described. In the end, the MOVING objectives are linked to the policy recommendations.

The five mountain regions and value chains that have been considered in Cluster I are:

N°	Mountain	Value Chain	Country
07	Transdanubian Mountains	Agroecological Knowledge	Hungary
08	Central Apennines	Alto-Molise dairy	Italy
13	Maciço Noroeste	Douro wine	Portugal
20	Swiss Alps	Mountain grain	Switzerland
22	Beydaglari	Greenhouse tomato	Turkey

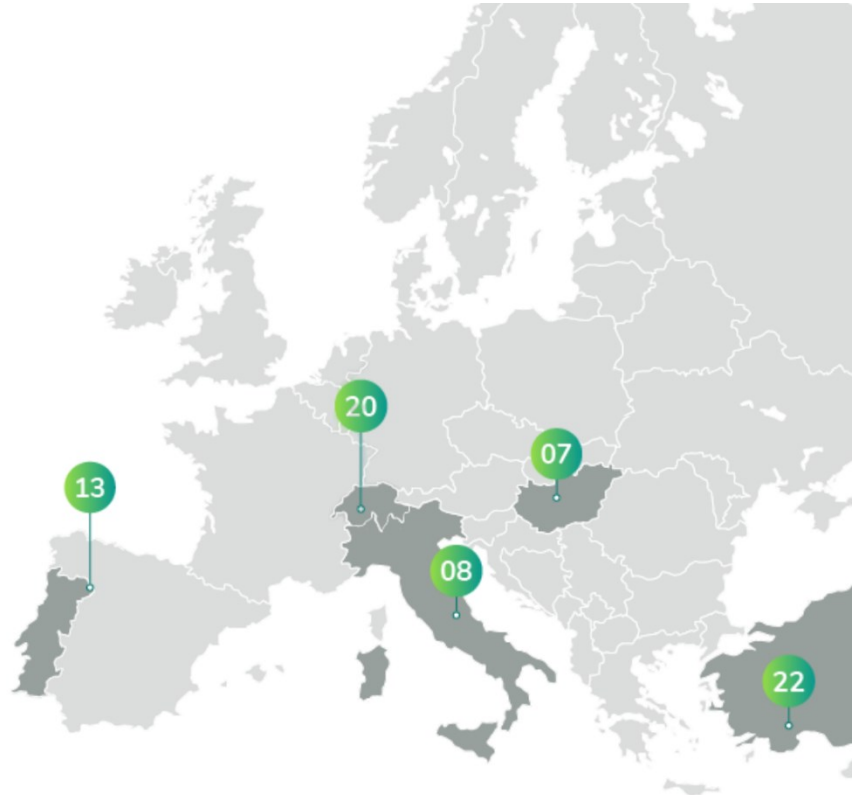


Figure 2. Reference region that are part of the Innovation and Infrastructure cluster: Transdanubian Mountains (07), Central Apennines (08), Maciço Noroeste (13), Swiss Alps (20) and Beydaglari (22) regions. Source: MOVING 2020.

2. Challenges for innovation and infrastructure

Several innovation and infrastructure challenges have been identified based on the previously mentioned key themes. The following chapter describes the main challenges in three categories: Knowledge and skills, financial resources, and Infrastructure. The challenges described are not an exhaustive list, but represent the main challenges identified in the analysis. These challenges can ultimately be the barriers for innovation and therefore need to be addressed to support innovation as a whole.

2.1. Knowledge and skills needed for innovative VCs

The remoteness and low population density of mountain areas make it difficult to have adequate education, trainings, and advisory services and ultimately leads to a lack of a skilled workforce.

Limited mountain-specific training and advice for farmers

One challenge often mentioned was that education and training for farmers was not designed for the specific conditions in mountain areas. Farmers in mountain areas face specific challenges: Mountain agriculture is characterised by extensive farming practices on a relatively small scale, making it suitable for organic production. These requirements are challenging in a world where agriculture is becoming larger and more intensive. Using small-scale technologies, including

digital literacy, may require specific skills or training. Mountain farmers also face difficult weather conditions with harsher winters and shorter growing seasons, and geographical and topological challenges with remote areas or steep slopes. These aspects require adapted training opportunities and advisory services for mountain farmers, which is often lacking in the discussed VCs.

Scarcity of skilled labor

The main challenge in terms of human capital is the scarcity of skilled labour in mountain areas, especially in sectors of production and processing stages that require specialized knowledge. On the one hand, this is linked to the lack of specialized training in the area, as mentioned in the previous chapter. On the other hand, living conditions in mountain areas are often less attractive, e.g. in terms of services and (professional) opportunities, leading to an out-migration of potentially skilled workers. As a result, many mountain communities are experiencing an ageing population, leading to a decline in the labour force and a lack of fresh perspectives and knowledge that could drive innovation. In the VC Alto Molise, for example, many young people who are starting families move to urban areas because of the long distances to hospitals and schools.

2.2. Financial resources

The main financial challenges are related to resource constraints as mountain regions often face resource limitation due to the low population density and limited economic activities. This severely restricts the availability of financial capital to invest in innovative projects and technologies. In addition, infrastructure costs are often higher due to the terrain and remoteness, diverting funds away from innovation and making innovative projects more costly. High production costs in mountain regions further put their products at a competitive disadvantage to intensive lowland alternatives, increasing the economic pressure on producers and processors. This pressure can discourage people from trying out new ideas, thereby hampering innovation.

In parallel, creating an attractive living environment is essential to retain and attract skilled labour. It is therefore also important to ensure a professional and locally adapted infrastructure, such as processing or storage facilities.

Overcoming these challenges requires strategic interventions, such as targeted investments, skills development programs, and policies to foster innovation in mountain value chains.

2.3. Infrastructure

The main barriers to connectivity between people in mountain areas and those in urban areas are related to various infrastructure deficits: digital, physical and social. Digital infrastructure in mountain areas is often poor resulting in poor connectivity and communication. Furthermore, lack of or poor internet access is a major barrier to the use of innovative technologies. Unequal access to the Internet contributes to the digital divide. Access can also be hampered by a lack of digital literacy. This gap can hinder participation in the digital economy and access to online education and business opportunities. Mountain areas also often lack well-developed transport networks, making it difficult for people to commute and access essential services. Remoteness can lead to geographical isolation, limiting access to markets, educational resources, and health facilities.

Geographic constraints can limit social interactions, potentially leading to a lack of community cohesion and reduced opportunities for knowledge sharing.

Addressing these connectivity challenges requires a comprehensive approach that includes investment in infrastructure, digital inclusion initiatives, and community-based solutions tailored to the specific characteristics of mountain areas.

3. Policy recommendations

3.1. Education, training and advisory services for innovation

Knowledge sharing through education, training and advisory services play a key role in continuous learning and out-of-the-box thinking, which is essential for innovation. Training opportunities, especially for skills needed in the area, are important to retain young people and to keep value in the area. Thus, education and training are essential to strengthen mountain areas. This recommendation advocates an integrated strategy combining targeted skills development, digital education initiatives and the (re-)use of traditional knowledge.

For farmers in mountain areas, we propose tailored training and advisory services, focusing on the use of mountain-adapted technologies, extensive production methods, and modern applications of traditional farming practices. Addressing the training needs of skilled workers, including millers and cheesemakers, will contribute to building a future-oriented, digitally literate workforce embracing sustainability and innovation.

Mountain areas possess a wealth of historical and traditional knowledge that can serve a dual purpose: addressing production challenges unique to mountain areas and employing storytelling to attract tourism or effectively market mountain products. Communicating knowledge about local mountain products might help to raise awareness of mountain realities among urban residents and potential consumers of mountain products. Raising consumer and societal awareness is essential to promote a shared responsibility for preserving and promoting mountain products. We therefore recommend the incorporation of mountain areas as subjects within national-level general education to enhance societal awareness.

3.2. Financial support for innovation and infrastructure

This recommendation addresses financial support to both individual actors and collaborative groups, such as start-ups, to encourage pilot projects to explore innovative, mountain-specific practices. In addition, direct financial support for the introduction of machinery and technologies adapted to mountain conditions, aims to increase attractiveness and resilience. Adequate financial support in the form of subsidies for ecological landscape management and ecosystem services is recommended to improve ecological resilience. Furthermore, fostering cooperation through financial support for platforms and events will promote knowledge sharing among mountain communities.

Finally, ensuring access to funding mechanisms and credit facilities for farmers and other stakeholders will enable essential investment in infrastructure development.

3.3. Improvement of infrastructure and access to services

Good infrastructures are key for connectivity and knowledge sharing and at the same time greatly influence the living conditions and well-being of mountain communities. To ensure and improve connectivity and knowledge sharing, we recommend investing in digital infrastructure, transport infrastructure and social infrastructure. Digital infrastructure, as access to the internet promotes connectivity over long distances and in particular, digital processes, such as e-commerce or the use of digital technology. Within digital infrastructure, small-scale technologies adapted for mountain areas need to be supported, accessible, and affordable for mountain communities. Transport infrastructure, for example roads or railways, is essential to overcome geographical challenges and facilitate efficient value chain movements as well as enabling tourism. Social infrastructure, like schools or community centres, must be ensured to enable networking events and other collaboration opportunities.

Emphasis on cultural and recreational development, along with community engagement, will ensure that community members are actively involved in shaping their future. Improving access to essential services, such as healthcare and education, through strategic infrastructure investment is recommended. At the same time, social facilities such as bars, sports clubs, and community associations, are essential to promote community interaction, recreation and wellbeing. Improvements in these aspects would enhance living conditions, consequently retaining people as key contributors to mountain regions and fostering resilient and innovative communities.

Expected impact on Cluster I objectives

The above-mentioned recommendations are in line with the objectives linked of Cluster I.

The recommendations related to education are mainly aimed at the objective of human capital in the mountain areas. Human capital could be improved by training opportunities that are adapted to the reality of mountain areas. These opportunities could also increase the attractiveness of a mountain community. As part of the recommendation for specific farmer training, ecological farming practices can be taught and have a significant impact on ecological resilience.

Financial support would have a positive impact on adaptive capacity by increasing flexibility and encouraging innovation. It could also have positive effects on cooperation and synergies, especially if funds are targeted at networking measures. Also, the financial support for ecological landscape management and ecosystem services further impacts ecological resilience.

Improving the digital and social infrastructure would primarily contribute to the objective of attractiveness and wellbeing, by improving the working and living conditions in the area. Such measures would also improve, cooperation and synergies. Furthermore, it could increase the adaptive capacity. Improving living conditions and access to services would directly influence the attractiveness and wellbeing of a mountain region. Indirectly, it could further enhance human capital and adaptive capacity.

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More information at www.moving-h2020.eu