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MOVING
MOUNTAIN VALORISATION THROUGH INTERCONNECTEDNESS AND GREEN GROWTH

D7.2 Policy Audit and Policy Design Toolkit

'Quick start' Policy Design Toolkit

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Acronyms

CAF	Conceptual and Analytical Framework
CAP	Common Agricultural Policy
CLLD	Community Led Local Development
CEF	Connecting Europe Facility
CF	Cohesion Fund
CSO	Civil Society Organisation
D	Deliverable
DIY	Do It yourself
EAFRD	European Agricultural Fund for Rural Development
EMFF	European Maritime and Fisheries Fund
ERDF	European Regional Development Fund
ESF	European Social Fund
ESF+	European Social Fund Plus
EU	European Union
H2020	Horizon 2020
ITI	Integrated Territorial Investment
JTF	Just Transition Fund
LAU	Local Administrative Unit
MAP	Multi-Actor Platform
MVC	Mountain Value Chain
NGEU	Next Generation EU
NGO	Non-Governmental Organisation
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
PPD	Public-Private Dialogue
RRF	Recovery and Resilience Facility
S3	Smart Specialisation Strategies
SES	Socio-Ecological System
SSP	Science Society Policy
TFEU	Treaty on the Functioning of the European Union

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This Toolkit stands as a testament to your dedication to building sustainable and resilient mountain communities across Europe and beyond.

This Toolkit is aligned with the principles of the Better Regulation as outlined in the EU Better Regulation Guidelines, particularly with regard to Territorial Impact Assessment and Rural Proofing as specified in Tool #34 “Territorial Impacts” of the “Better Regulation” toolbox 2023.

Executive summary

The ‘Quick Start’ Policy Design Toolkit is a **practical guide** designed to help mountain stakeholders **craft contextualised demands for effective policy formulation**. Often, policies and strategies fail to address the unique challenges faced by mountain areas or are not adapted to the needs and expectations of local stakeholders, reducing their impact and effectiveness. This Toolkit simplifies and compiles **proven participatory methods** used across 23 mountain regions to ensure that policies are relevant, contribute to building trust, and foster collaboration.

By using this Toolkit, mountain stakeholders and policymakers can:

- **Understand and articulate the issues facing their mountain communities.**
- **Gather evidence through data for effective policy demands.**
- **Define clear objectives and explore various policy options.**
- **Follow a step-by-step process, from identifying problems to designing strategic policy options.**
- **Apply practical techniques for gathering insights and developing strategies at any stage of policy formulation.**

The Toolkit **targets a diverse range of mountain stakeholders**, including policymakers, communities, businesses, and rural development agents. It emphasises the benefits **of co-producing policies through science-society-policy (SSP) interfaces**, which are particularly valuable in today's evolving policy landscape. Currently, aligning policies and budgets with stakeholder expectations and willingness to act is essential. It is also the right time to promote its use, both to develop effective territorial development plans for mountain areas during the current EU programming period and to influence the post-2027 negotiations that are about to begin.

The Toolkit includes tools and methods that help tailor mountain policies, engage stakeholders in policy-making, and promote policy adoption. It is grounded in **participatory methods** for identifying territorial assets that contribute to the resilience and sustainability of mountain areas, such as mountain value chains (MVC). It presents the various conceptual, methodological, and practical approaches developed by MOVING and provides techniques, examples, and tips for collecting, condensing, and interpreting evidence to perform the interconnected tasks of policy formulation and implementation within the existing policy mix. The Toolkit includes a Conceptual and Analytical Framework -CAF- (based on the MOVING CAF), which helps stakeholders **understand the complex interactions** between social and ecological elements in mountain systems, identifying how these interactions lead to outcomes that either support or threaten sustainability and resilience. Additionally, it offers methods for conducting vulnerability analyses of mountain assets and creative exercises for forecasting and planning feasible policy mixes to achieve future visions for mountain areas.

Depending on users’ needs and objectives, the Toolkit can be used in its entirety -for instance, to develop territorial strategies- or selectively, as appropriate. The concepts and language have been adapted to facilitate its use by different stakeholders and audiences.

Overall, the MOVING Policy Toolkit aims to **empower mountain communities** by providing them with the tools to create conducive policy environments tailored to their unique needs, ensuring more resilient and sustainable mountain areas.

The Toolkit has been designed for mountain areas, and the methods and examples are linked to MVCs. However, it could be used with a **broader approach to consider the different assets** existing in mountain areas. Furthermore, its use is not exclusive to mountain areas but can be a useful tool for other rural areas facing similar problems.

The present document is **interlinked with the Policy Roadmap**, a MOVING project outcome that includes the results of a policy audit on mountain policies. The Roadmap offers policy recommendations to strengthen local governance of mountain product value chains, along with short- to long-term strategies to enhance the sustainability and resilience of these regions. The Toolkit can be considered a compass to navigate the Roadmap.

Key Takeaways

- DIY: the Toolkit provides a simple, practical guide to help create tailored demands for effective policy formulation in mountain areas.
- Reach further: engaging all mountain stakeholders in a collaborative and participatory way can help achieve more.
- Stay grounded: the Toolkit focuses on the unique aspects of mountain assets (like mountain value chains) to help connect and strengthen different parts of mountain regions and is based on stakeholders needs and expectations.
- Broaden your vision: external experts, initiatives or examples can open new options to solve problems.
- Raise your voice: provide context-specific information on your policy needs and expectations.
- Know and use the policies: policymaking can be influenced by evidence, collective action and making need explicit. Use all the tools in the toolkit to give visibility and voice to your mountain area and to explore the many policy options available.

1. Introduction

The MOVING 'Quick Start' Policy Design Toolkit (MOVING Toolkit, or Toolkit) is conceived to offer mountain stakeholders an accessible and practical guide for crafting tailored demands for effective policy formulation in mountain areas. It has got four main objectives:

- **Promoting an adaptive and reflective approach to future policy-making**. Through the establishment of Science-Society-Policy (SSP) interfaces and drawing inspiration from policies and policy mixes for mountain areas.
- **Providing clear guidelines** to identify the policy demands needed to support sustainable and resilient development in European mountain regions.
- **Presenting various methods and systems to gather, organise, and understand** different types of important information for creating contextualised demands for policy formulation.
- **Empowering local mountain actors** to make explicit their policy demands and aligning/making use of the policy mix.

The MOVING Toolkit aims to empower mountain stakeholders, helping them engage in decision-making processes to create conducive policy environments that address mountain challenges and meet the needs of their inhabitants. Additionally, it can foster building relationships, boosting cooperation, and sharing knowledge, support the creation of internal and external networks, improve agency and bargaining power, and help identify potential innovations for mountain areas.

Often, policies and strategies do not consider the specific needs of mountain areas nor their expectations or possibilities to make changes. This Toolkit can amplify the voices of mountain stakeholders and push for better alignment of policies with their needs and demands. Involving different stakeholders in SSP interfaces helps understand the challenges and find policy opportunities that suit local needs. It can also be used to generate evidence to counter the common excuse of lacking appropriate data for decision-making.

This Toolkit can be very timely for planning and developing policies and strategies for mountain areas in the short and medium term. For the current 2021-2027 EU programming period, the Toolkit can aid in the creation of effective territorial development plans for mountain areas. Given the delays in launching new programmes and the introduction of the Recovery and Resilience Facility (Next Generation EU), many national and regional programmes are still in the process of determining their funding allocations. Looking beyond 2027, and with negotiations for the new policy scenario about to start, the Toolkit can serve as a valuable resource. Future policies are expected to be shaped by the experiences and lessons learned from the current programming period, including those from the Next Generation EU programme. This will necessitate more detailed analyses of mountain areas to develop new national and regional programmes tailored specifically to these regions.

This Toolkit is one of the results of the H2020 MOVING (MOuntain Valorisation through INterconnectedness and Green growth) project, coordinated by University of Córdoba and concluded in August 2024. The project brought together a multi-actor, interdisciplinary

consortium of 23 partners[1]. These partners included research centres, industry representatives, rural developers, and innovation agents from across Europe, Serbia, North Macedonia, and Turkey, reflecting the diverse characteristics of mountain areas.

The MOVING project explored how mountain value chains can balance socio-economic development with the conservation of natural resources in mountain areas. By examining 23 different mountain value chains across 16 countries, mainly in the agri-food sector, the project demonstrated their role in enhancing the sustainability and resilience of mountain regions. MOVING aimed to build capacities and develop policy frameworks across Europe to support and strengthen these value chains, thereby promoting the long-term sustainability and resilience of mountain communities.

The project engaged approximately 1,000 stakeholders through participatory processes at different levels, drawing on the collective intelligence of individuals from 23 mountainous regions in 11 EU Member States, three EU candidate countries (North Macedonia, Serbia, and Turkey), as well as Scotland and Switzerland.

This Toolkit is based on a selection and simplification of the comprehensive participatory processes followed in the 23 MOVING mountain regions. The present document is interlinked with the Policy Roadmap, another MOVING project output that includes the results of a policy audit on mountain policies as well as recommendations for a new generation of public policies and strategies for such areas. The Policy Roadmap aims to promote stronger local governance of mountain product value chains, provide short-to medium-term policy guidance, and offer long-term policy recommendations to enhance the sustainability and resilience of mountain areas (see Figure 1).

[1] MOVING project partners can be found here: https://www.moving-h2020.eu/partners/

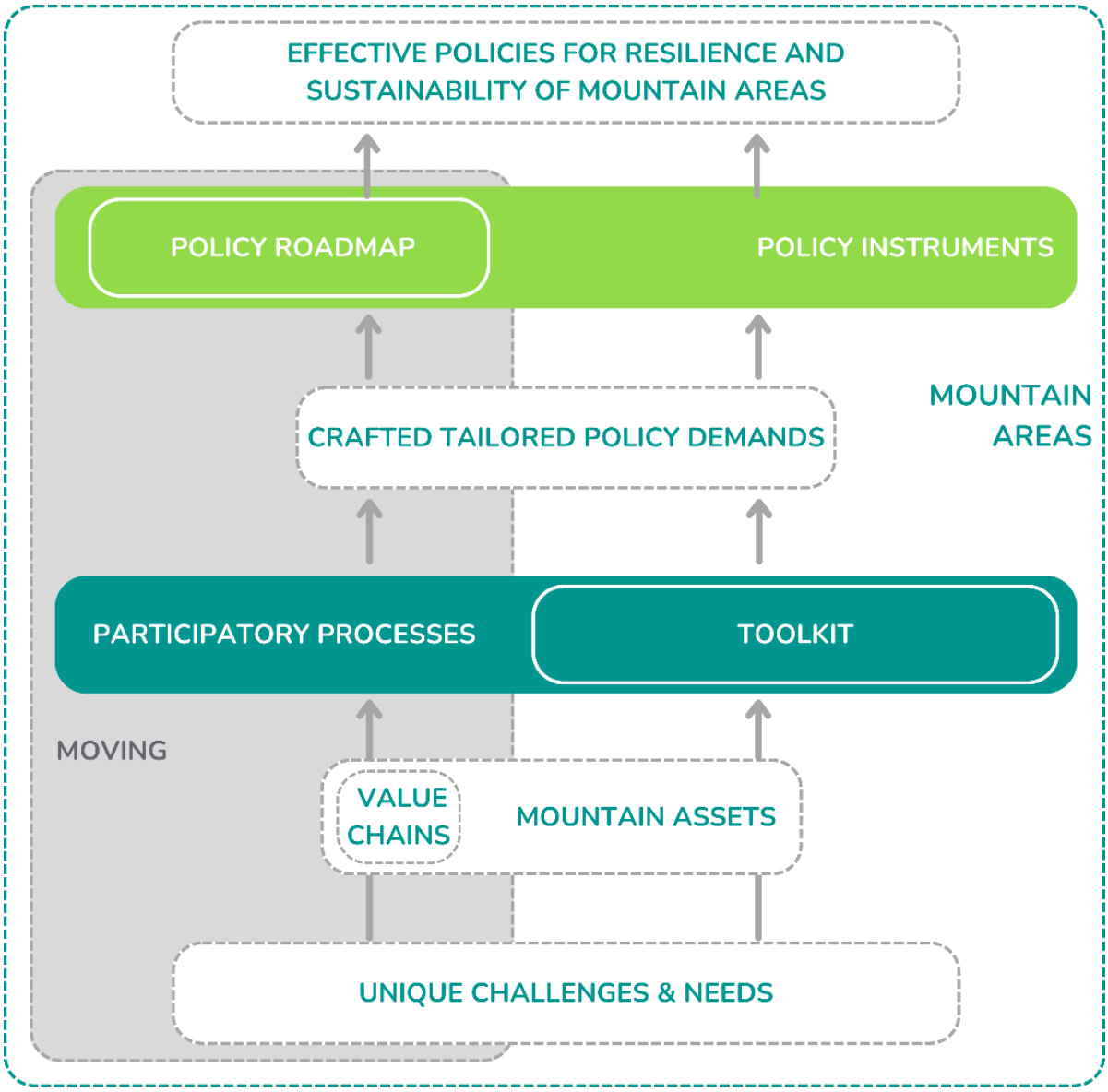


Figure 1 Relationship between the MOVING Policy Toolkit and the Policy Roadmap

While the Roadmap can serve as an inspiration for policy design in different mountain areas, the Toolkit can be seen as a "compass" to navigate the Roadmap and to create policy demands for your mountain area.

The Policy Roadmap is articulated around eight policy building blocks, which are constituent elements of a favourable policy framework (see Figure 2). The first building block, "Better Territorial Governance, Regulation and Public Services," is essential for successfully implementing all other steps. Next, "Growing Skills, Knowledge, and Innovation" and "Fostering Collaboration and Networking" focus on the social aspects. "Balancing Ecology and Society" and "Preparing and Adapting for Change" address the interactions between social and environmental aspects and emphasise how they can contribute to resilience. Finally, "Sustaining the Use of Local Assets" and "Ensuring Mountain Livelihoods" incorporate economic, environmental, and social considerations for sustainability.

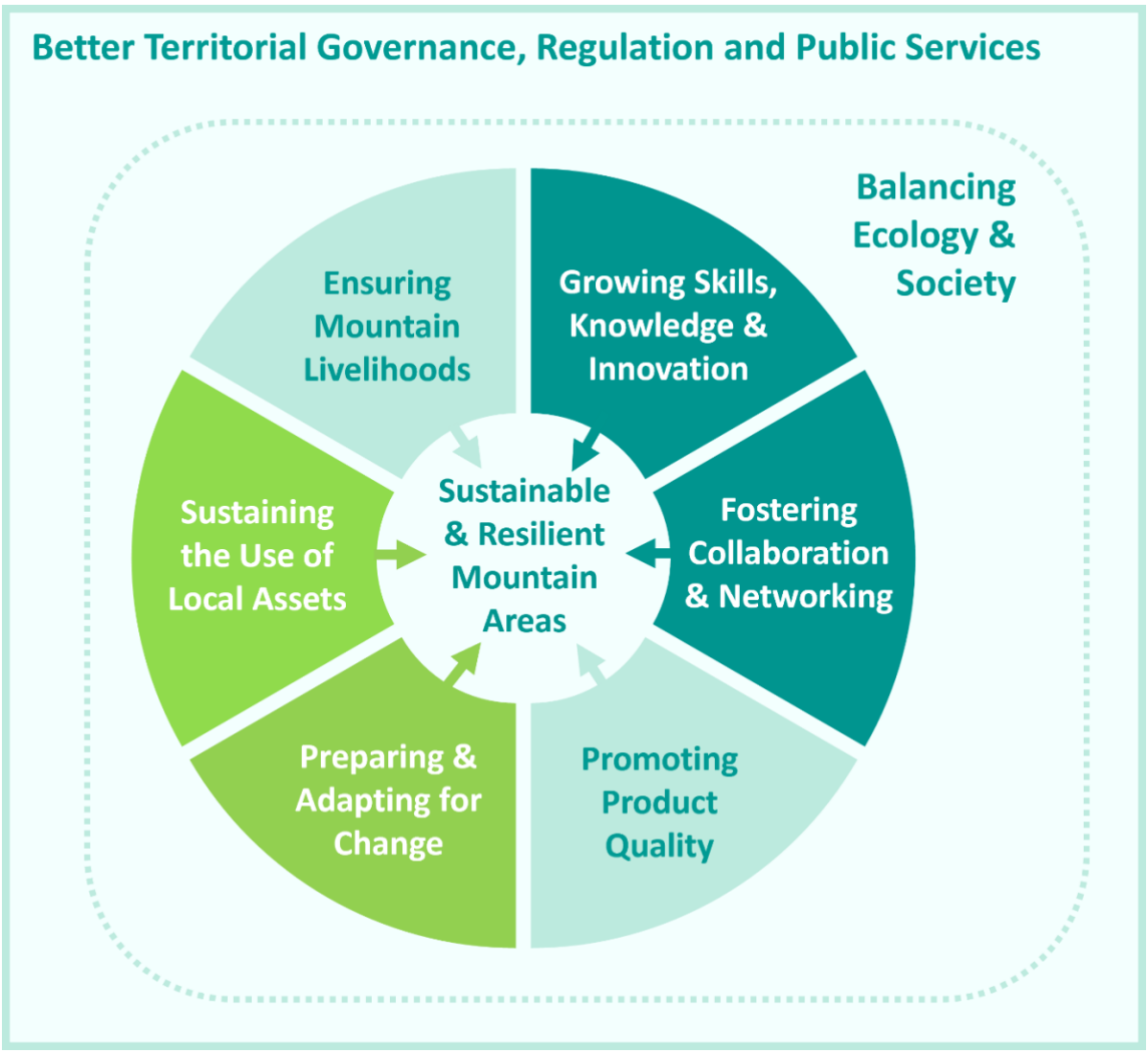


Figure 2 Eight building blocks of MOVING Policy Roadmap

1.1. Target groups

The MOVING Toolkit targets a diverse range of stakeholders involved in mountain policy formulation, from policy-makers to beneficiaries (see Table 1). Policy-makers at all levels can use this Toolkit to help formulate tailored demands for policy formulation for mountain areas. Mountain communities and businesses can find inspiration to better understand their needs and trigger policy-making processes. Rural development and innovation agents, as well as the general public, can learn how to get involved. International organisations can help spread the Toolkit to mountain communities.

Table 1 Target groups of the Toolkit and their role in policy formulation

Target group	Description	Role in policy formulation
EU, national, regional and local public authorities	Government bodies at various levels responsible for policy formulation and funding	Policy-makers
Mountain communities, producers, businesses and Civil Society Organisations (CSO)	Residents, agricultural and forestry associations, businesses and industries -such as cooperatives, and tourism operators-, and CSOs including NGOs engaged in sustainable development and conservation efforts	Beneficiaries
Rural development and innovation advisors	Public organisations focused on rural development and innovation	Implementers and advisors
Researchers	Academic, research organisations, particularly those focused on rural development, mountain business, rural innovation and environmental science	Knowledge providers
International organisations	EU networks and other European and international organisations -like Euromontana, the European multi-stakeholder network for sustainable development and quality of life in the mountains- promoting sustainable development in mountain areas	Supporters and coordinators across borders
General public	Non-mountain citizens who may benefit from or contribute to policy initiatives	Beneficiaries and potential advocates

1.2. Designing policies for mountain areas in a policy-changing environment

Mountain areas are recognised as regions of particular concern in the EU, as stated in Article 174 TFEU. However, there are no specific policies designed to address the unique challenges these regions face. Policymakers should not underestimate the fragility and the challenges faced by them, nor that social and territorial cohesion is not possible without considering the specificities of over one-third of European territory and 16% of inhabitants living in mountain areas. These areas' biodiversity and ecological richness, their provision of ecosystem services and the essential private and public goods they deliver underscore their critical importance.

Mountain areas are rural, but not only.

Mountain areas are agriculture-based economy areas, but not only.

Various treaties, policies, and provisions in the current EU programming period 2021-2027 support mountain areas. These include the European Agricultural Fund for Rural Development

(EAFRD), Pillar 1 of the Common Agricultural Policy (CAP), and the Common Provisions Regulation, which covers funds like the European Regional Development Fund (ERDF), Cohesion Fund (CF), European Social Fund (ESF), and European Maritime and Fisheries Fund (EMFF). However, these tools are often scattered and uncoordinated, sometimes even working against each other. The idea of a specific "Mountain EU policy" is still vague because mountain areas are not directly addressed in the CAP Strategic Plans or Partnership Agreements of EU member states, and there is no unique definition of mountain areas accepted by all Member States[2].

> In order to promote its overall harmonious development, the Union shall develop and pursue its actions leading to the strengthening of its economic, social and territorial cohesion.
>
> In particular, the Union shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions.
>
> Among the regions concerned, particular attention shall be paid to rural areas, areas affected by industrial transition, and regions which suffer from severe and permanent natural or demographic handicaps such as the northernmost regions with very low population density and island, cross-border and **mountain regions.**
>
> *Article 174 of the Treaty on the Functioning of the European Union*

This lack of a clear, unified EU policy for mountain areas is both a challenge and an opportunity. While the different tools offer flexibility and a certain room for manoeuvre, there is a risk that mountain areas might be overlooked compared to other priorities. However, as we look towards the post-2027 EU programming period, there are opportunities to improve mountain policies[3].

The MOVING partner AEIDL has suggested some strategic policy options for the future of EU mountain policies, some of which, are also featured in the MOVING Policy Roadmap. These suggestions include reintroducing some elements from previous periods, like using the Common Strategic Framework to better coordinate various EU funds. They also suggest specific changes to the CAP, such as reinstating the designation of mountain areas[4] and always analysing the needs of mountain areas in the CAP National Strategic Plans, not just "where relevant" as is currently stated in Article 108(d) of Regulation (EU) 2021/2115. Using

[2] More detailed information about European policies influencing mountain areas can be found in "Annex: European Mountain Area Policies" of the MOVING Policy Roadmap.
[3] For a summary of the post-2027 reform context see Pazos-Vidal, S (2024) Last Chance Saloon for Cohesion Policy. AEIDL Policy Brief. https://www.aeidl.eu/wp-content/uploads/2024/07/Pazos-Vidal-2024-Cohesion-Policy-post-2027-AEIDL-Policy-Brief.pdf
[4] This was done during 2014-2020 programming period under Article 32 of Regulation (EU) No 1305/2013).

a needs-based approach along with a geographical approach can improve how policies target mountain areas and support policymakers in the drafting of acceptable policies. For instance, this could improve acceptance of the result-based approach currently proposed in the CAP for agri-environmental schemes. Another option is to adapt the rural proofing concept[5] specifically for mountain areas.

Effective policies for mountain areas require actions at all levels, as well as adaptive and reflexive policy frameworks.

1.3. Co-producing policies in an SSP interface

Science-society-policy (SSP) interfaces are platforms that bring together scientists, policy-makers, and stakeholders to better understand and address complex issues, including policy challenges. Their success depends on three factors: **credibility** (producing high-quality knowledge), **relevance** (addressing important policy issues), and **legitimacy** (being socially acceptable). These factors are influenced by how the interface is structured and how well it communicates both internally and externally.

Drawing from the experience in working with SSP interfaces (identified as Multi-Actor Platforms -MAP- in MOVING as shown in Figure 3) and the insights in our Policy Roadmap, we will highlight how place-based governance and policy-making approaches can significantly impact mountain communities.

[5] More information about rural proofing can be found here: https://rural-vision.europa.eu/action-plan/cross-cutting/rural-proofing_en

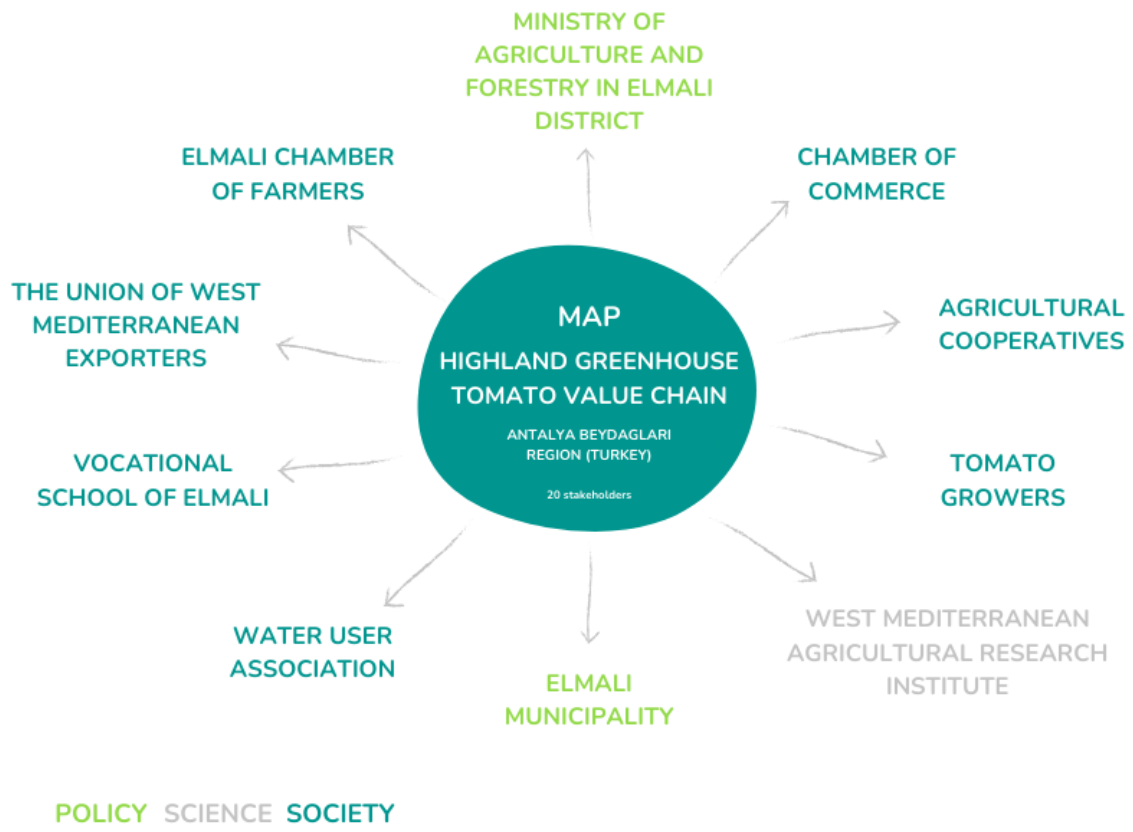


Figure 3 Example of SSP interface, the Turkish MOVING MAP

1.4. Benefits of co-producing policies in an SSP interface

Co-producing policies in an SSP interface offer numerous benefits that are essential for the resilience and sustainability of mountain areas. Besides grounding actions on the needs and expectations of local stakeholders, benefits include enhancing relevance, empowering actors, improving trust, increasing collaboration and facilitating capacity building and community building through collective action. The MOVING partners reflected on how the actions undertaken during the past four years have influenced these aspects during the final project consortium meeting. The main ideas from this discussion are summarised in Table 2. This topic is closely related to the *Policy Roadmap Building Block 1: Better territorial governance, regulation and public services,* as shown in the same table.

Table 2. Benefits of co-producing policies in an SSP interface and their connection with the MOVING Policy Building Block 1.

Benefits of co-producing policies in an SSP interface		**Policy Roadmap Building Block 1: *Better territorial governance, regulation and public services***
Enhanced relevance and acceptability	**Tailoring policies to the specific needs and contexts** of mountain communities increases their relevance and acceptability among stakeholders.	Place-based governance and policy-making reflect the specific scales of governance encountered in mountain areas, ensuring policies are relevant and acceptable.
Improved trust and collaboration	**Engaging stakeholders** in the policy-making process fosters trust and strengthens relationships among scientists, policy-makers, and local communities and contributes to the buy-in and implementation of the policies.	Engaging mountain citizens in governance increases their sense of identity and facilitates ownership.
Increased innovation and resilience	**Incorporating diverse perspectives and local knowledge** can lead to innovative solutions and enhance the resilience of mountain areas to climate change.	Capitalising on existing engagement structures, mechanisms, and channels and including new knowledge and ideas leads to innovative policies aligned with mountain needs.
Capacity building and empowerment	**Participation in policy co-production empowers local actors** and builds their capacities, leading to more sustainable and long-term policy outcomes.	Facilitating ownership among mountain citizens increases their capacity to engage with and implement policies and boost community building and collective action.

By integrating these benefits into the policy formulation process, stakeholders can develop more effective and sustainable policies that are better aligned with the unique needs and contexts of mountain communities.

1.5. DO's and DON'Ts of co-producing policies in an SSP interface

The following recommendations derive from the experiences of the MOVING project partners and their work with the Multi-Actor Platforms (MAPs) established in 23 European regions[6], which serve as SSP interfaces. These DO's and DON'Ts aim to build credibility, boost legitimacy, ensure relevance, strengthen SSP interface infrastructure and enhance communication to ensure successful policy co-production (see Table 3). In essence, to deploy successful SSP interfaces for policy formulation.

[6] Description of MOVING Multi-Actor Platforms (MAPs) in 23 mountain regions https://www.moving-h2020.eu/reference-regions/

Table 3. DO's and DON'Ts of co-producing policies in an SSP interface.

	DO's	DON'Ts
Credibility (producing high-quality knowledge)	A transparent flow of new and existing knowledge within the group should be ensured. Local actors' knowledge and information from past projects should be included and valued. Evidence and practical examples should be shared. Local and national platforms and strategies should be referenced.	Do not use external data exclusively; mix it with local knowledge. Do not allow certain individuals or groups to impose a point of view. Avoid letting some individuals or groups hoard data. Do not extract data without sharing findings and solutions.
Relevance (addressing important policy issues)	The most relevant issues and challenges specific to mountain communities and assets should be prioritised. Clear goals and achievable targets should be set. Outcomes should be adapted based on feedback and local changes.	Do not ignore the needs of beneficiaries. Avoid imposing top-down policies from other regions. Do not rely on short-term policy-maker engagement and single restitution events.
Legitimacy (being socially acceptable)	The benefits of policy-formulating initiatives should be communicated. Outputs should be adapted to local governance and competence structures. Credit should be given to local stakeholders by making their knowledge visible and allowing them to present their contributions.	Avoid imposing policies without broad consultation or testing. Do not present only at policy or scientific meetings.
SSP Interface structure	Relevant stakeholder groups, beyond the 'usual suspects', should be created and on-job training for facilitators should be provided. Meeting timelines should be aligned with seasonal work, side events for inclusivity should be organised. Trust, collaboration, and personal relationships among stakeholders should be fostered.	Avoid overloading participants with responsibilities; clarify roles early. Do not reproduce hierarchies that hinder new governance forms. Ensure facilitation and inclusive policy-making processes are not forgotten.
Communi-cation	Clear and simple language should be prioritised, supported by images and videos. Multiple channels, such as internet, emails, in-person visits, and public journals should be used. Continuous engagement should be maintained. Outputs should be translated into local languages and terminology should be adapted for different audiences.	Avoid technical terms and academic jargon. Do not assume top-down communication approaches will work effectively.

1.6. Articulating elements for policy formulation in mountain areas

The MOVING Toolkit proposes **articulating policy formulation around mountain assets, such as mountain value chains,** to help **connect and strengthen different elements of mountain regions**. This promotes a holistic as well as grounded approach by leveraging local resources and fostering stakeholder engagement in the search for real solutions. By using existing elements from the territory, this method ensures policies comprehensively address economic, social, and environmental challenges.

In the MOVING project, we focused on **mountain value chains**, which refer to the various people and activities involved in producing, processing, and distributing products and services that come from mountain regions. These value chains use local resources like natural, human, social, and cultural assets to create value. They can range from small, culturally significant local operations to large, profitable businesses with wide distribution. **Robust mountain value chains** contribute to enhancing the resilience and sustainability of mountain communities.

MOVING results have confirmed our hypothesis that '*Mountain value chains can create value while enhancing the sustainability and resilience of mountain areas*". MVCs provide essential public and private goods and services that are crucial for the vitality and attractiveness of these areas, thanks to the generation of livelihood opportunities. They connect the mountain areas with other areas and the lowlands, creating networks, attracting attention to the producing areas, and creating assemblages and synergies with other value chains and territories. Land and resource management provides ecosystem services and preserves the high value of these areas for future generations. In short, value chains enhance the human and financial capital of these territories, offering education and training opportunities, but also opportunities for innovation and multi-level governance.

2. DIY: Creating your own policy demands to unlock the power of your mountain area

The MOVING Toolkit focuses on the **policy formulation phase** of the policy cycle (Howlett & Ramesh, 1995), where policy-makers look at and evaluate different policy options to address identified problems (Croci et al., 2022). While mountain stakeholders often know **which issues need policy action, turning these into tailored demands for effective policies can be challenging**. By following the steps of policy formulation, mountain stakeholders can craft better demands by providing evidence through data, understanding the different dimensions of the problems, defining objectives and identifying the policy options.

According to Turnpenny et al. (2015) the steps of policy formulation include:

- **Problem characterisation**, establishing the existence of a problem through data.
- **Problem evaluation**, different dimensions of the problem are evaluated to identify causes and their extent, as well as potential policy solutions.
- **Setting objectives**, considering appropriate responses and timescales.
- **Option assessment,** developing and evaluating multiple policy alternatives.
- **Policy design**, selecting the preferred option and planning implementation.

Before you start...

Engage: co-producing policies based on place-based governance can significantly impact mountain communities.

Define clear goals: establish clear and achievable targets within a specific timeframe, this will help you manage participants expectations.

Collaborate: begin with your local environment and expand to higher levels if necessary.

This toolkit is designed to support the formulation of effective policy demands through a structured and adaptable approach. It enables users to navigate the policy formulation process through two complementary entry points: **policy formulation phases** and **proposed methods**. This dual approach ensures comprehensive coverage of essential steps and practical techniques tailored to the unique needs of mountain communities.

Users can choose to start from the **policy formulation phases**, following a step-by-step process from identifying and understanding the problem to designing the policy or policy demand. Alternatively, they can begin with the **methods**, applying specific techniques to gather insights and develop strategies at any stage of the policy formulation. This flexibility allows for a tailored approach, ensuring that policies are both grounded in local realities and strategically aligned with broader objectives.

This section offers various participative methods tailored for different stages of policy formulation in SSP interfaces. These methods have been selected and simplified from the comprehensive participatory processes used in MOVING. They include techniques for gathering and using policy-relevant knowledge to support the policy formulation tasks, as shown in Table 4. Each method is illustrated with practical examples and links and can be used independently.

Table 4. Steps of the policy formulation cycle and their connection with the participatory methods used in MOVING.

Method	**Step of policy formulation**				
	Problem characterisation	Problem evaluation	Objectives	Option assessment	Policy design
Stakeholder mapping	■	■			
SSP interface	■	■	■	■	■
Mountain assets	■	■			
Key elements (CAF)	■	■			
Vulnerability analysis		■	■		
Foresight and scenarios			■	■	
Transition pathways				■	
Strategic options					■

2.1. Stakeholder mapping for policy formulation

STAKEHOLDER MAPPING

OBJECTIVE

To identify stakeholders with a role in mountain policy formulation as well as the connections among them.

USEFUL FOR

PROBLEM CHARACTERISATION | PROBLEM EVALUATION | OBJECTIVES | OPTION ASSESSMENT | POLICY DESIGN

DESCRIPTION

The leading group wishing to address mountain issues needing policy action should start by listing all relevant stakeholders that should be involved in policy formulation (see Table 1). Policy-makers, implementers, advisors, knowledge providers, supporters, advocates, and beneficiaries should be included. It is important to also consider external profiles like researchers from institutions abroad, international advisors, and stakeholders from other mountain regions facing similar issue. For instance, other EU-funded mountain projects such as H2020 project MATILDE (https://matilde-migration.eu/) -focusing on the impact of migration on the local development of rural and mountain regions- or MARGISTAR -COST Action (https://margistar.eu/) aimed at furthering inclusive, competitive, and green mountainous regions- can provide support and knowledge exchange.

You can use the template provided in Annex 4.1 to identify who to involve at each stage of the policy formulation process.

Additionally, understand the potential connections between stakeholders, such as conflicts, alliances, and influences, to create better engagement and mitigation strategies.

PRACTICAL TIPS

- Search for previous projects or initiatives in your area to capitalise on existing networks and platforms. If none, you can find inspiration in areas with similar issues elsewhere.

RESOURCES, FURTHER READINGS

- Annex 4.1 Template for stakeholder mapping.
- Public-Private Dialogue (PPD) Stakeholder Mapping Toolkit. A practical guide for stakeholder analysis in PPD using the Net-Map method. World Bank Group (https://documents1.worldbank.org/curated/en/842721467995900796/pdf/106395-WP-PUBLIC-PPD-Stakeholder-Mapping-Toolkit-2016.pdf).

2.2. Establishing and maintaining the SSP interface

SSP INTERFACE

OBJECTIVE

To set up a structured collaborative platform and timeline for policy formulation.

USEFUL FOR

PROBLEM CHARACTERISATION | PROBLEM EVALUATION | OBJECTIVES | OPTION ASSESSMENT | POLICY DESIGN

DESCRIPTION

As a reminder, *Science-Society Policy (SSP) interfaces bring together scientists, policy-makers, and stakeholders to better understand complex policy issues*.

To establish a new SSP interface, the leading group may need to start by inviting various stakeholders to discuss their perspectives about the issues at hand and related territorial assets, such as value chains.

It is important to ensure diverse representation from the three main groups (researchers, policy-makers and mountain society including businesses, organisations and citizens), even though not all stakeholders might be involved throughout the entire policy formulation process (see example in Figure 4).

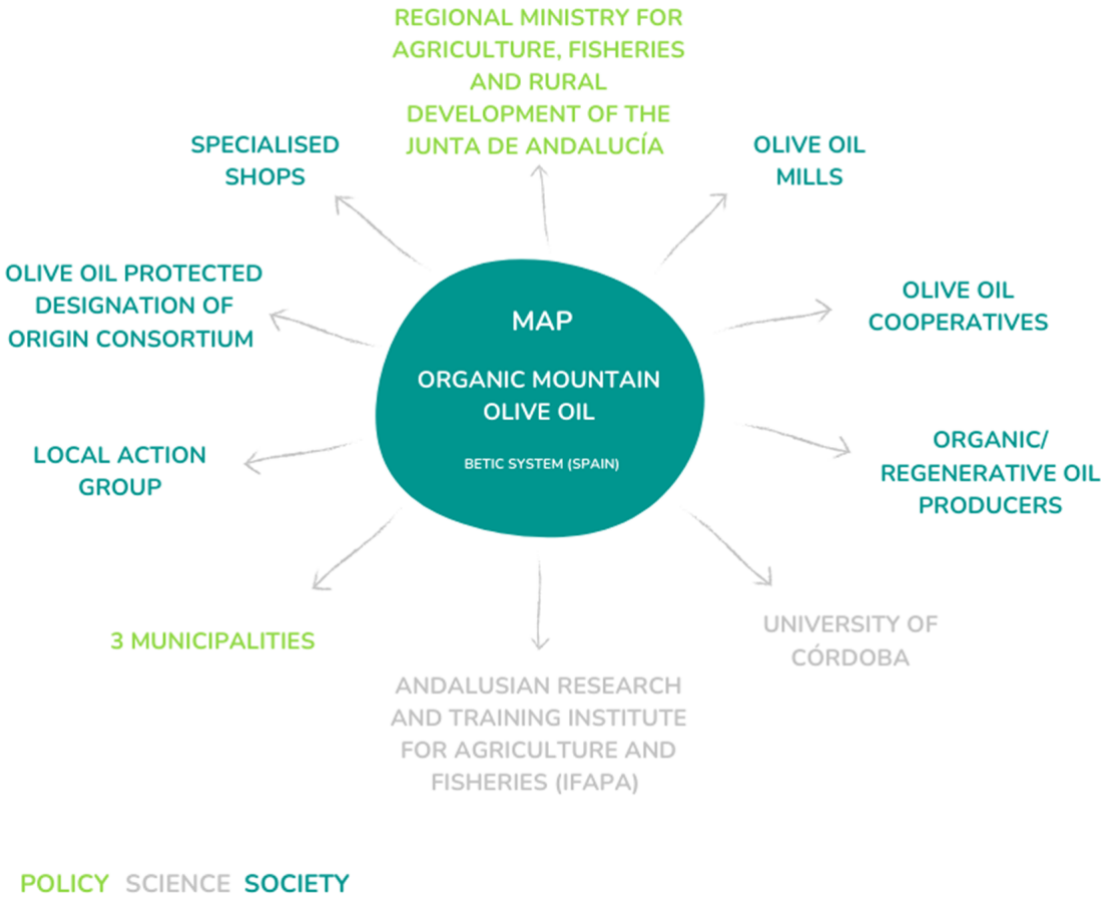


Figure 4 Example of SSP interface, the MOVING MAP in Betic System

Initially, involve stakeholders from specific areas to cover a wide range of local interests and expertise around the issues needing policy action, and then gradually invite stakeholders from neighbouring areas to broaden the SSP interface scope and impact.

Maintain regular participation and engagement of stakeholders throughout the policy formulation process to include their contributions and perspectives. Define the timeframe and objectives of the SSP interface, along with the rules for participation, communication, and decision-making (see section 1.5).

The SSP interface should allow for changes in participants while maintaining a core group of diverse stakeholders, avoiding participation fatigue.

PRACTICAL TIPS

- This co-creation process should embrace four principles: 1) flexible programming; 2) co-construction; 3) multi-level interactions; 4) impartiality and transparency.
- During interviews and participatory work, make sure to guarantee the fulfilment of existing ethics guidelines with all participants.

RESOURCES, FURTHER READINGS

- In MOVING, 23 SSP interfaces were created in different mountain areas, known as Multi-Actor Platforms -MAP- (https://www.moving-h2020.eu/reference-regions/).
- The H2020 SHERPA project produced an "Online Stakeholder Engagement Support" tool (https://rural-interfaces.eu/resources-and-tools/stakeholder-engagement-tools/ and https://rural-interfaces.eu/wp-content/uploads/2020/04/SHERPA_D2-3_OSES.pdf).
- To keep track of your engagement activities and to improve them, you can use the "Monitoring and Evaluation tool" created by MOVING (https://zenodo.org/records/13142980).

2.3. Selecting the mountain assets

MOUNTAIN ASSETS

OBJECTIVE

To identify the mountain assets having influence in the issues needing policy attention.

USEFUL FOR

- **PROBLEM CHARACTERISATION**
- **PROBLEM EVALUATION**
- OBJECTIVES
- OPTION ASSESSMENT
- POLICY DESIGN

DESCRIPTION

Participatory work with stakeholders (in SSP interfaces) helps identify key territorial assets that reflect local economic activities, social fabric, infrastructures, facilities, etc. Understanding these assets is crucial for grasping the specific situation of a mountain area.

In the MOVING project, value chains were used for this purpose, highlighting their role in promoting sustainability and resilience in mountain regions by supporting livelihoods, retaining population, enhancing wellbeing, and preserving natural resources.

The lead group should engage in discussions and immersive experiences with mountain stakeholders to explore which assets contribute to socioeconomic activities such as (livestock) farming, craft production, tourism, or niche sectors like astronomical tourism or bee keeping, and identify challenges needing policy attention. For example, in the MOVING project region of Sierra Morena, the PDO Los Pedroches Iberico ham value chain (Jamón Ibérico) was selected for its sustainability contributions and regional importance.

Once mountain assets have been identified, conduct participatory activities to gather perceptions of their challenges and strengths in the selected area, understanding the vision of participants in the SSP platform. From this, proposals for addressing the identified challenges can be shared (see example in Figure 5).

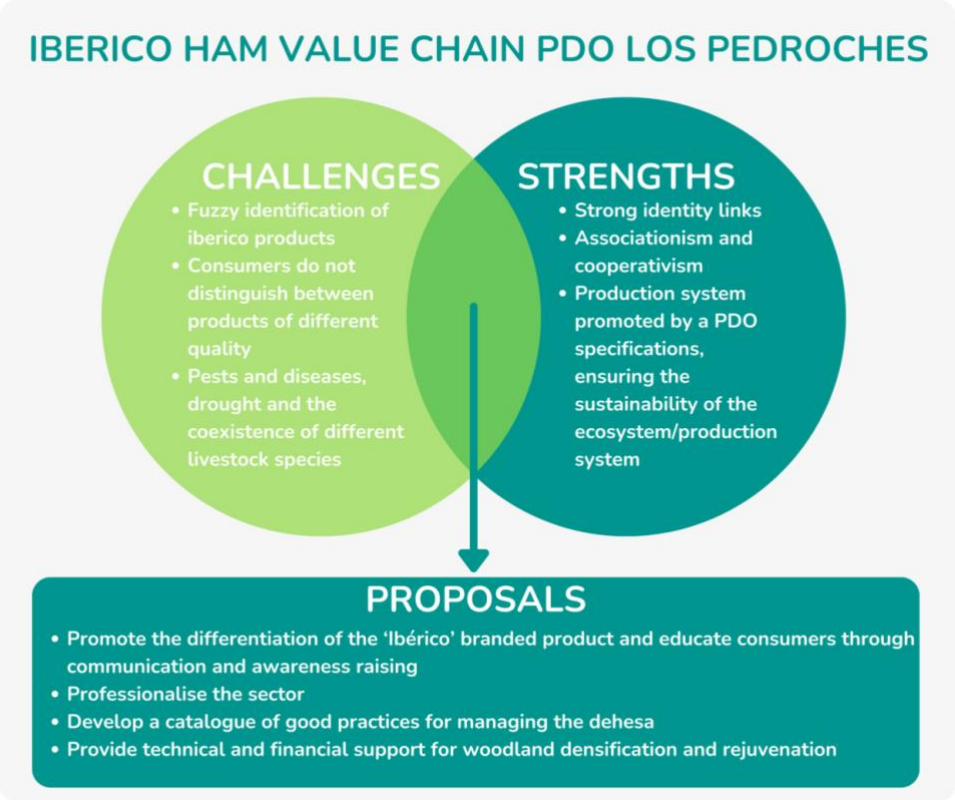


Figure 5 Example of some of the challenges, strengths and proposals for the Iberian ham value chain PDO Los Pedroches

To identify complementary mountain assets, it should be recognised that they are interconnected and create synergies, complementarities, and conflicts. Extend research to identify additional interacting mountain assets, as seen in Sierra Morena where both PDO and non-PDO Iberico ham chains were studied for their significant regional impact.

PRACTICAL TIPS

- Do a comprehensive inventory and diagnosis of the different mountain assets, including the different types of capital: economic, social, environmental, cultural, built (e.g., infrastructures and facilities), relational, etc.
- Identify enabling and blocking factors to tackle challenges and reinforce strengths.

RESOURCES, FURTHER READINGS

- Find inspiration in the inventory of mountain value chains (Deliverable 4.1, https://zenodo.org/records/10550492) showing 472 value chains from all European mountain regions in EU Member States and associated countries.

2.4. Identifying the key elements of your system (Conceptual and Analytical Framework - CAF)

KEY ELEMENTS (CAF)

OBJECTIVE

To identify the social and ecological elements of a mountain system and show how social practices shape the interactions between them, leading to outcomes that either support or threaten sustainability and resilience. The external political and socioeconomic context also significantly affects these systems, as highlighted by MOVING Policy Roadmap.

USEFUL FOR

- **PROBLEM CHARACTERISATION**
- **PROBLEM EVALUATION**
- OBJECTIVES
- OPTION ASSESSMENT
- POLICY DESIGN

DESCRIPTION

Mountains are complex systems that combine natural environments and human activities and can be analysed as Socio-Ecological Systems (SES) following Elinor Ostrom's SES framework (Elinor Ostrom, 1990).

To understand these systems, the MOVING project developed a Conceptual and Analytical Framework (CAF), integrating the SES framework with a value chain analysis framework. This integration helps identify the social practices developed by the stakeholders within the value chain. The MOVING CAF permits to understand how actors and their governance systems influence the natural resources -supporting the value chains- through different social practices, and how these interactions produce outcomes. Each SES is further influenced by external political and socioeconomic trends (see Figure 6). Furthermore, value chains connect products in one SES with other SES through processing, distribution, or consumption stages.

The CAF can support the SSP interface by helping to better understand how interactions between different social and ecological assets affect outcomes and highlight issues needing policy action. The CAF does not need to be applied in its entirety but can be used as a visual, flexible, and straightforward tool to understand the complexities of mountain SES and the reasons behind issues that need policy action.

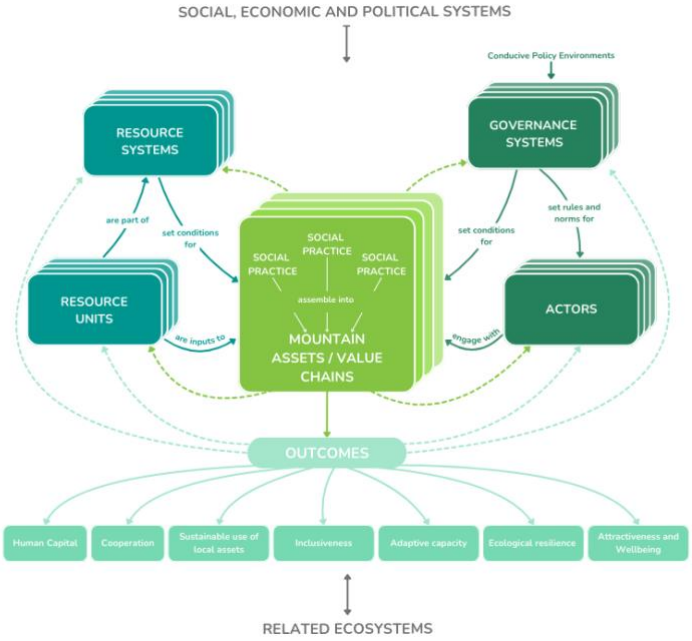


Figure 6 MOVING Conceptual and Analytical Framework (CAF) (Moretti et al., 2023)

A table with analytical questions available in Annex 4.2 can support to fill in the social and ecological elements of your own mountain system. A simplified version of the CAF applied to the MOVING Sjenica lamb PDO value chain in Dinaric Alps (Serbia) is presented in Figure 7.

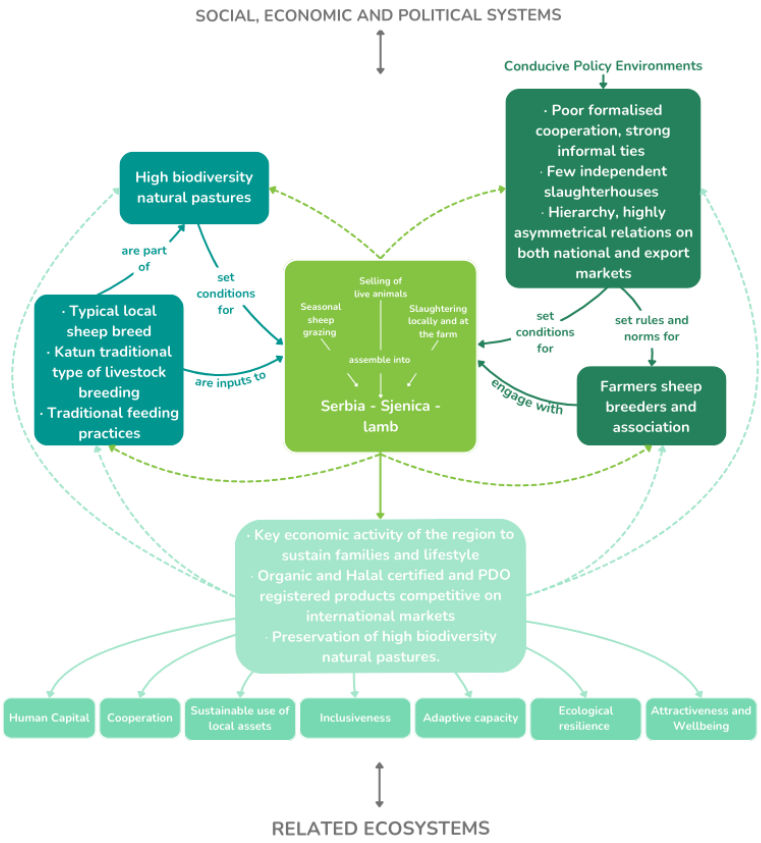


Figure 7 CAF applied to Sjenica lamb PDO (Serbia)

PRACTICAL TIPS

- Use the stakeholder mapping (see section 2.1) to identify the actors influencing the outcomes.
- Promote an open discussion with different types of stakeholders to understand their different perceptions of the problems, the challenges, the blocking and the enabling factors for change.

RESOURCES, FURTHER READINGS

- More detailed information is provided in the MOVING Conceptual Analytical Framework (Deliverable 2.3, https://zenodo.org/records/12698113) which has also been peer-reviewed and published (Moretti et al., 2023).

2.5. Analyse vulnerability

VULNERABILITY ANALYSIS

OBJECTIVE

To understand the vulnerability of the land uses and natural resources to different drivers of change and the adaptive mechanisms that can be implemented to reduce the impact of the drivers and create sustainable strategies. Natural resources are key for mountain assets and most problems that need policy attention have direct or indirect relations with them.

USEFUL FOR

PROBLEM CHARACTERISATION | **PROBLEM EVALUATION** | **OBJECTIVES** | OPTION ASSESSMENT | POLICY DESIGN

DESCRIPTION

After identifying the natural resources and land-use system that support the mountain asset(s) using the CAF (see section 2.4), the next step is to assess the system vulnerability, determining the drivers that contribute to it. The proposed vulnerability analysis is complex and requires spatial analysis, databases and technical skills. SSP interfaces are particularly useful in this phase as they leverage collective intelligence and diverse knowledge sources.

The vulnerability analysis consists of three main parts: (1) to create spatial vulnerability maps; (2) to build a vulnerability matrix and (3) to agree on adaptation mechanisms against vulnerability and evaluate its feasibility (see Figure 8).

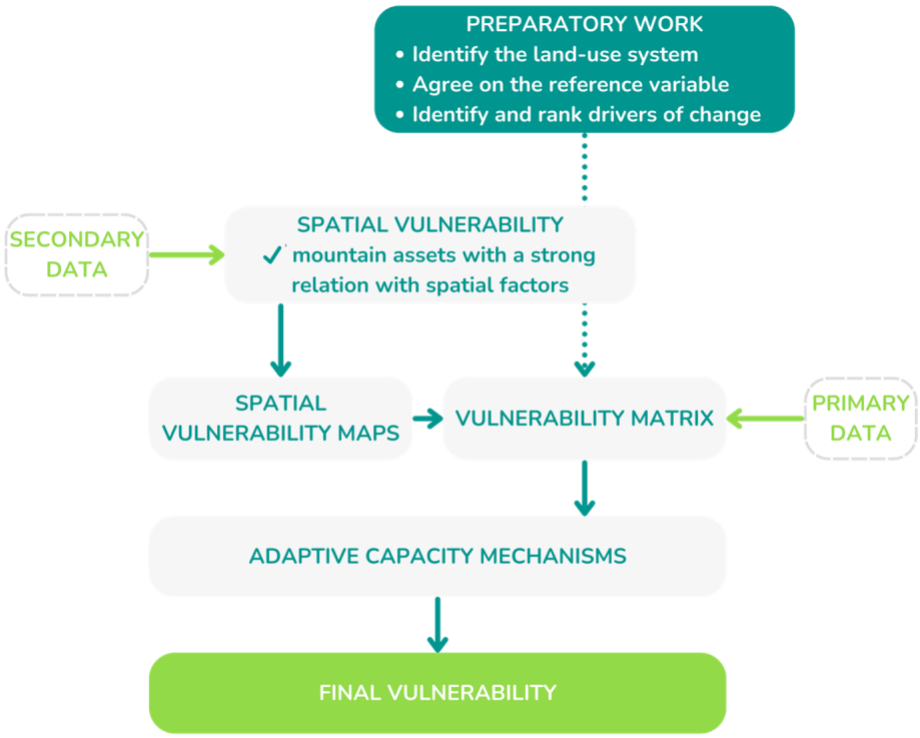


Figure 8 Vulnerability analysis

Land use system refers to the agriculture, forestry or agro-silvo-pastoral systems that provides the key resources to the mountain assets, such as value chains. For example, in the sheep meat value chain, the *key resource* is the pastures from "extensive open rangeland". Then, it is necessary to identify a *reference variable* that is the one which has got the greatest impact on the sustainability of the key resource, in this example, it is the productivity/quality of the pastures. Reference variables are influenced by the *drivers of change*, which are any natural or human-induced factor that directly or indirectly causes a positive or negative impact in the system (see Figure 9). The vulnerability analysis of the land use system is based on this variable, identifying how the drivers of change affect the quality or quantity of the resource.

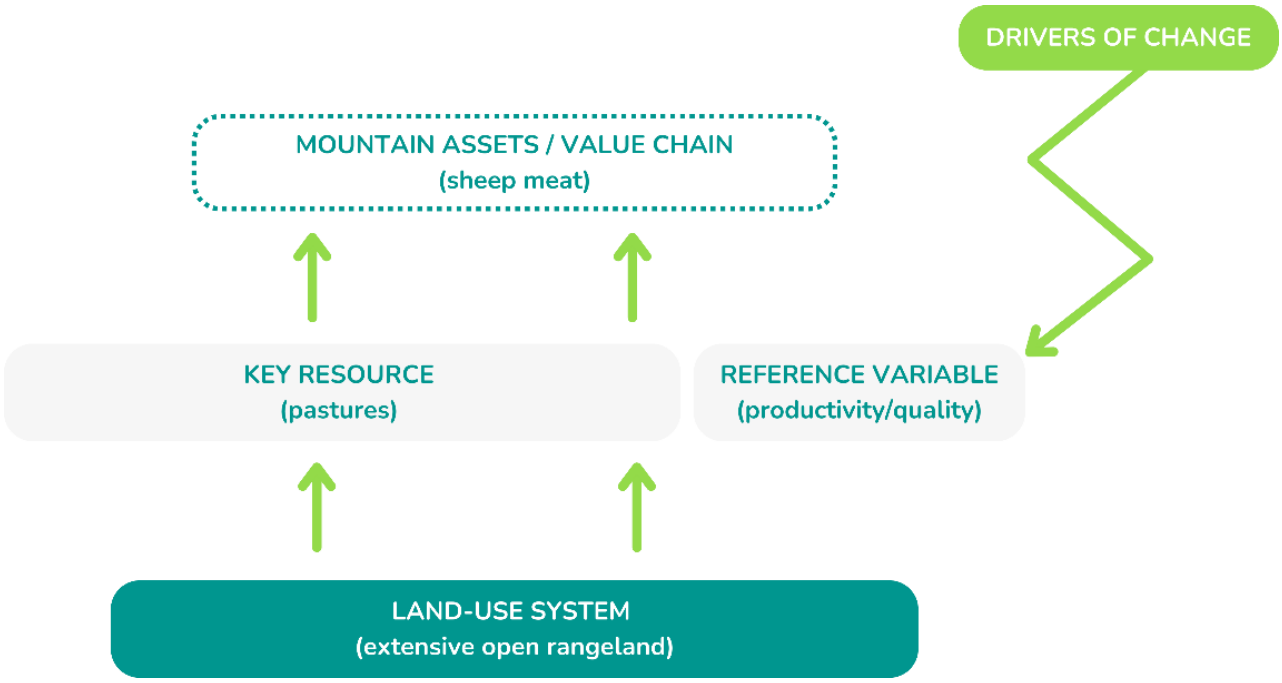


Figure 9 Representation of land-use system, key resource, reference variable and drivers of change of sheep meat value chain

Preparatory work

There are some preparatory tasks that need to be carried out with a balanced selection of stakeholders through participatory activities such as interviews, questionnaires or workshops with members of the SSP:

- Identify the land-use system.
- Agree on the reference variable of the mountain assets/value chain as well as their attributes (productivity, quality, etc.).
- Identify drivers of change having the greatest impact on the land use system and the reference variable. In MOVING, we started from a proposed list extracted from the literature (see Annex 4.3) and then gave the opportunity to the SSP stakeholders to add new drivers or refine the existing ones according to their perception of the problem or the needs to be addressed.
- Rank drivers of change based on how they currently affect the reference variable as shown next and concentrate the work on the most relevant ones.

Ranking options for drivers of change
Does not affect
Not relevant
Slightly relevant
Moderate relevant
Very important
Extremely important

Spatial vulnerability maps

A series of maps based on cartographic data and secondary sources related to the selected mountain asset/value chain, drivers of change and geographic area can be produced. Maps of land use systems, precipitation levels, and land cover can facilitate the discussions. The objective is to identify the spatial distribution of the vulnerability to the drivers of change selected, so that information on adaptation mechanisms can be more targeted.

The first step to build the spatial vulnerability maps, once the reference variables and drivers of change are defined and ranked, is to build a spatial vulnerability table.

To do it, stakeholders should select two *spatial factors* which variation in the land use system can influence vulnerability. Some examples are slope, elevation, distance to a specific land cover class, distance to roads or other infrastructures, distance to urban centres, size of forest patches (or of patches of other land covers) and tree cover density.

Once agreed, stakeholders define classes or intervals that create thresholds of change in the effects of the drivers.

> **Cordilheira Central (Portugal) example**
>
> PDO Serra da Estrela Cheese value chain, relies on the milk produced by two autochthonous sheep breeds that feed on a land-use system of **permanent pastures** at highlands and lowlands.
>
> Local actors highlighted that the key resource (permanent pastures) is highly vulnerable to **land abandonment** and **wildfires** (reference variables) due to demographic changes and a decrease in grazing intensity. Their narratives indicated as spatial factors both **elevation** and **distance to forest and shrubland**.
>
> **Two classes** were defined for **elevation** (≤ 1000 meters and > 1000 meters) and **three classes** for **distance to forests and shrubland** (≤ 250 m, 250 – 750 m and > 750 m), that influence the availability and quality of mountain grasslands.

Now a spatial vulnerability table can be built, where the possible combinations of classes of the two spatial factors are on one side of the table.

For each combination of classes of the spatial factors, a level of vulnerability is assigned: from very low vulnerability (1) to very high (5). This will result in a table displaying the spatial vulnerability (see example for Cordilheira Central in Figure 10).

Spatial vulnerability table		SPATIAL FACTOR 1 Distance to forests and shrubland		
		CLASS 1 <250m	CLASS 2 250-750m	CLASS 3 >750 m
SPATIAL FACTOR 2 Elevation	CLASS 1 <1000m	4	3	1
	CLASS 2 ≥1000m	5	4	2

↑ At higher elevations and closer to forests and shrublands vulnerability of permanent pastures to wildfire and land abandonment is higher.

← At lower elevations and higher distances from forests and shrublands vulnerability of permanent pastures to wildfire and land abandonment is lower

Figure 10 Spatial vulnerability table for Cordilheira Central

Note: For some mountain assets/value chains, the relation with the spatial factors is not so strong and producing land use vulnerability maps might not be informative, therefore, skip to Vulnerability matrix subsection below.

From the table displaying spatial vulnerability and using map algebra, a map showing the spatial vulnerability of the selected area can be produced. The vulnerability map combines a geographical representation of each spatial factor with its classes, the limits of the land use system selected, and the spatial vulnerability as identified on the table (see examples for Cordilheira Central in Figure 11, Figure 12, Figure 13 and Figure 14). Consider that finding appropriate datasets that accurately represent the items chosen might be challenging. Scientists in the SSP should support in these tasks.

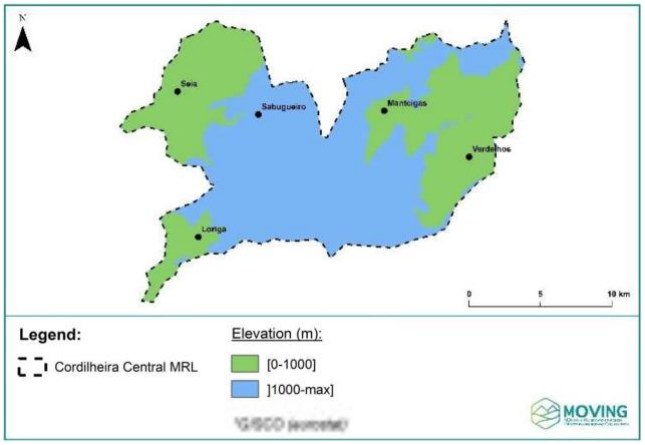


Figure 11 Elevation map for Cordilheira Central

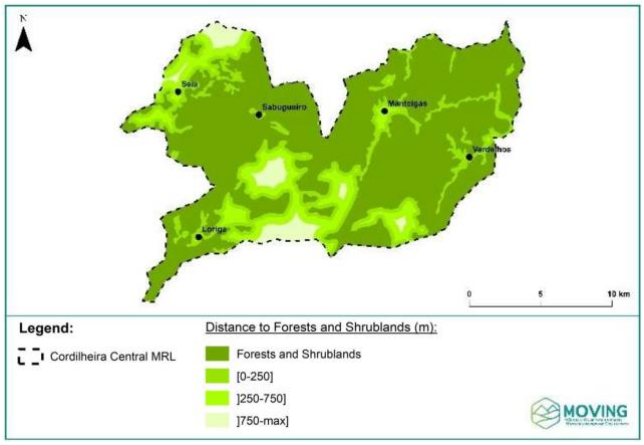


Figure 12 Distance to forest and shrubland map for Cordilheira Central

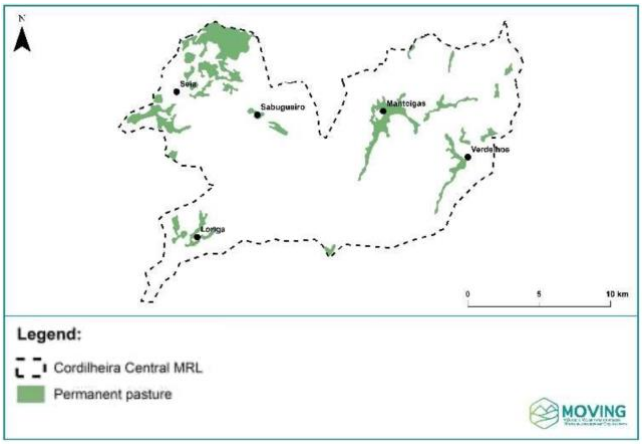


Figure 13 Permanent pastures area map for Cordilheira Central

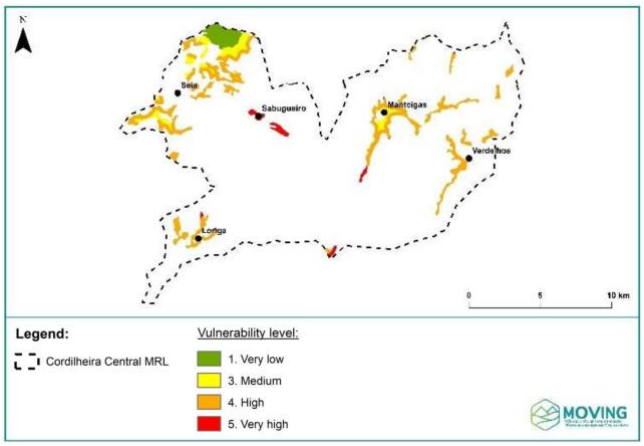


Figure 14 Vulnerability map for Cordilheira Central

Understanding that areas within the same territory are not equally vulnerable to identical threats, the spatial vulnerability map emerges as a critical tool. This visual display is more easily understood by different stakeholders and can showcase territorial variations on the probability of each land use system of being affected by a disturbance, paving the way for more effective, targeted adaptation strategies and more effective policymaking. This is particularly valuable when resources are limited.

> The spatial vulnerability analysis presented by the University of Evora team at the MOVING Final Conference revealed two key findings: (1) climate change impacts will have more severe consequences in Mediterranean mountain regions but may increase productivity in the Alps; (2) contrary to existing literature, land-use and land cover changes are not the primary drivers of change. Instead, factors such as distance from roads and cities, internet quality, and other variables are identified by stakeholders as key drivers of change in mountain areas.

Vulnerability matrix

The vulnerability matrix is a method that allows to collectively reflect and value the different components of vulnerability. For the most significant drivers of change (those ranked very important or extremely important -see subsection Preparatory work in section 2.5 above-), stakeholders assess their perceptions of the trends over the past 20 years.

Perception of past trend	
It has declined sharply in the last 20 years	↓↓
It has declined slightly in the last 20 years	↓
Constant in the last 20 years	=
It has increased slightly in the last 20 years	↑
It has increased sharply in the last 20 years	↑↑

These perceived trends can be used as plausible scenarios for the future (targeting 20 years ahead), assuming no changes in management practices, policy, and legislation. Alternatively, SSP interface members who can project such drivers (e.g., researchers) can provide future scenarios based on data.

Future sensitivity for each driver of change should also be agreed upon. Sensitivity refers to the actual or potential degree to which a system is modified or affected by perturbations (Adger, 2006). In our case by the drivers of change. Sensitivity can range from very high to very low and it can affect positively or negatively the reference variable.

Sensitivity categories	
High positive effect on the reference variable	↑↑↑+
Medium positive effect on the reference variable	↑↑+
Low positive effect on the reference variable	↑+
Does not affect the reference variable	=
Low negative effect the reference variable	↓-
Medium negative effect on the reference variable	↓↓-
High negative effect on the reference variable	↓↓↓-

The impact of changes in the drivers affecting the reference variable depends on trend and sensitivity.

Trend	Sensitivity	Rationality
Increase (↑)	Negative effect (-)	Both trend and sensitivity increase vulnerability
Increase (↑)	Positive effect (+)	Both trend and sensitivity reduce vulnerability
Decrease (↓)	Negative effect (-)	Both components counteract

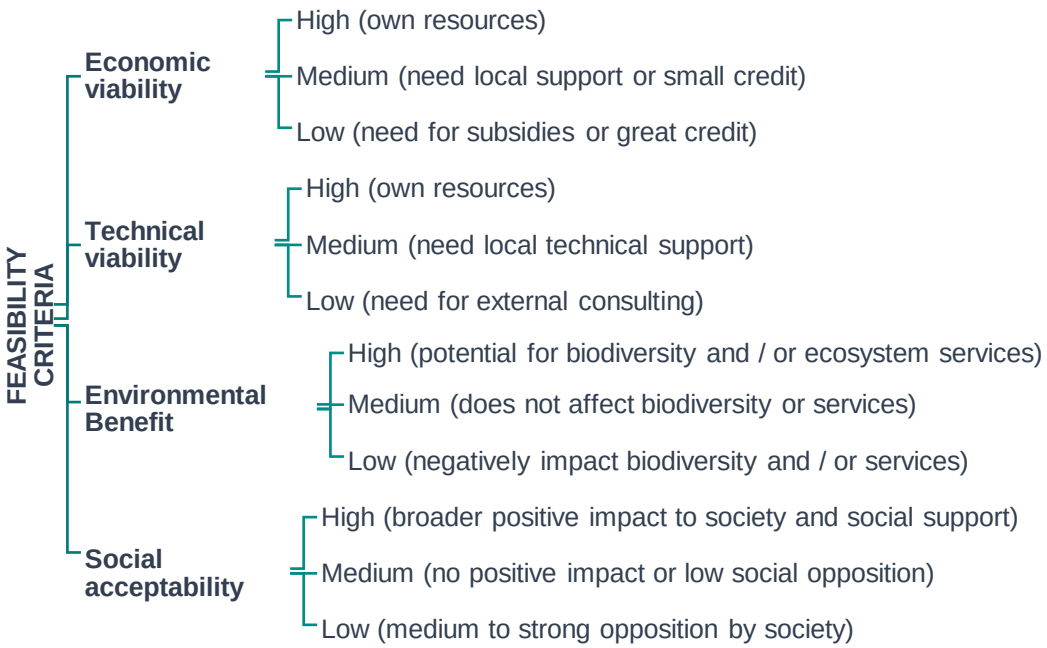
Adaptative capacity mechanisms

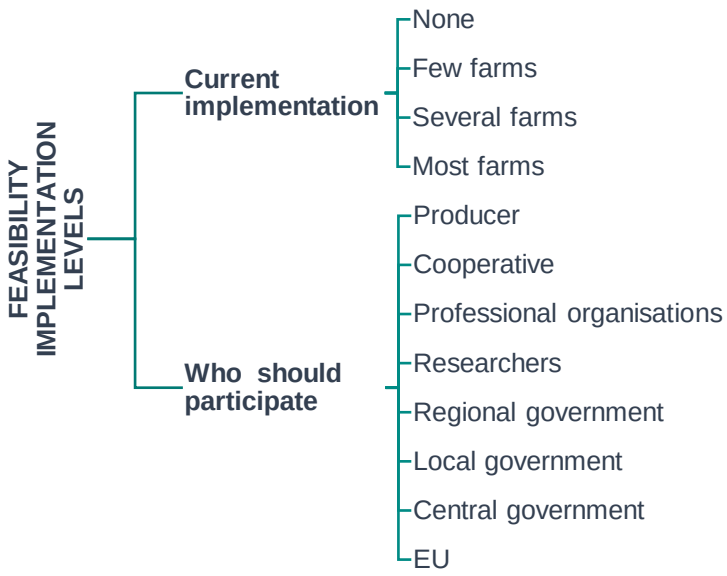
The final step in vulnerability analysis involves developing, assessing, and prioritising the adaptive capacity mechanisms that stakeholders identify to reduce or mitigate the impact of drivers of change.

Adaptive capacity refers to the ability of a system to adapt to environmental hazards or socio-economic and policy changes, expanding the range of variability it can handle (Adger, 2006). *Adaptive Capacity Mechanisms* are human-mediated actions aimed at improving adaptive capacity by adapting to or mitigating the negative effects of drivers of change. These actions can include management practices, norms, recommendations, strategies, plans, programs, and policies.

Proposing mechanisms should involve all stakeholders in the SSP interface, but **evaluating their feasibility requires expert assessment**.

Feasibility is assessed based on several criteria (economic, technical, environmental, and social) and considers two implementation levels: how widespread the mechanism is currently, and which stakeholder groups are required for its implementation.





Experts assess, for each adaptive capacity mechanism, the feasibility and the reduction potential of the impact per driver on the reference variable in 20 years' time and contrast results with other SSP stakeholders.

The impact reduction can be assessed using four levels: Does not affect, Slight reduction, Moderate reduction, Complete reduction. This reduction mechanism per driver is applied according to three scenarios based on feasibility estimations: All, considering all mechanisms; Moderate feasibility, considering only mechanisms with average impact reduction; and High feasibility, considering mechanisms with high impact reduction.

The final vulnerability considers all components of vulnerability (see Figure 15) and can be assessed quantitatively. In the MOVING project, this was done quantitatively following a comprehensive and complex analysis (as presented in Deliverable 3.2), obtaining a final score for each of the regions. The latter stages can be more complicated to be developed, but the reflection on the vulnerability and the identification of adaptive mechanisms is a very useful exercise to identify the policy needs and demands.

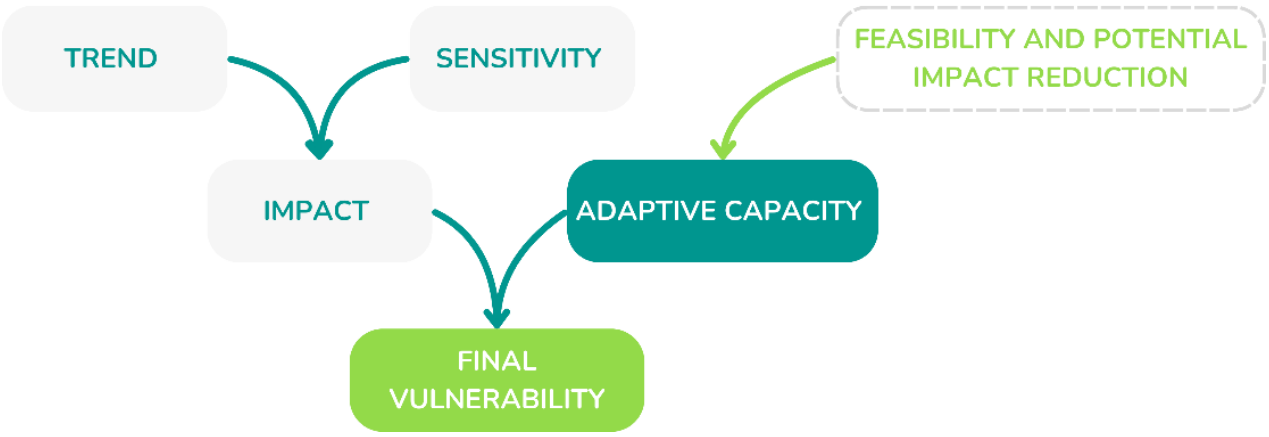


Figure 15 Components of vulnerability

PRACTICAL TIPS

- For a proper territorial analysis of the information, the areas of analysis were related to administrative units of the territory, either at Municipality or Local Administrative Units (LAUs) level, always considering the spatial continuity and representation of the landscape and land use units linked to the mountain assets or value chains.
- Spatial information and indicators produced are sometimes difficult to understand and interpret, highlighting the importance of an adequate knowledge transfer and communication adapted to the variability of the stakeholders (as proposed in section 1.5).

RESOURCES, FURTHER READINGS

- More details of the methodology can be found in Land use system vulnerability matrixes and vulnerability maps for the 23 reference regions (MOVING Deliverable 3.2 https://zenodo.org/records/10692402).
- The European Environment Agency provides data about environment, climate and sustainability https://www.eea.europa.eu/en/datahub.

2.6. Foresight exercises and co-creating scenarios

FORESIGHT AND SCENARIOS

OBJECTIVE

To understand the possible evolution of the mountain system, help anticipate future problems and develop shared strategies that conduct to the desired scenario for better sustainability and resilience in mountain areas by identifying necessary policy changes and actions.

USEFUL FOR

PROBLEM CHARACTERISATION | PROBLEM EVALUATION | **OBJECTIVES** | **OPTION ASSESSMENT** | POLICY DESIGN

DESCRIPTION

Foresight exercises help to envision the potential evolution of mountain systems due to the various drivers of change and aid in making decisions or formulating policies ‘to shape the desired future’.

Effective foresight exercises require engaging a balanced selection of stakeholders from the SSP interface. Involving between 8 and 12 people with different background and representing different sectors ensures that scenarios are rooted in the realities and aspirations of those directly affected.

MOVING adopted a long-term perspective, looking ahead to 2050, because significant drivers of change are linked to climate forecasts such as those in the Intergovernmental Panel on Climate Change reports. However, anticipating the evolution of drivers over such a long period can be challenging, and foresight analyses typically focus on 10-15 years.

Foresight exercises involve exploring potential changes in the system, anticipating decisions and policies to tackle negative impacts, and shaping the future with policy and individual decisions using the collective intelligence in a structured and systematic way.

Scenarios, which are descriptions of plausible, possible, and preferable futures, are applied at various scales to address specific issues. When developing scenarios for mountain areas, consider the impacts of climate change on weather patterns and ecosystems, changes in agriculture and forestry, availability and quality of water resources, existing mountain assets (such as MVC), trends in tourism and recreation, economic development opportunities, infrastructure and connectivity needs, population dynamics and community resilience, preservation of cultural heritage, technological advancements, and the overall health and well-being of the community.

The process typically involves the development of a baseline scenario, four exploratory scenarios based on two key long-term drivers of change, and the definition of a preferred scenario.

Baseline scenario

The baseline scenario, also known as a 'reference' or 'benchmark' scenario, depicts a future state where no new policies are implemented, and activities continue as usual (see example below). This predictive scenario uses existing knowledge about the past to derive estimates of future conditions, based on the extrapolation of current trends (Zurek & Henrichs, 2007).

Example of Baseline scenario for Tête de Moine PDO cheese value chain (Swiss Jura)

In 2050, the **ageing agricultural population** and **policies still anchored in the paradigm of modernisation** will lead to a **concentration of structures**. In the Swiss Jura, there are fewer and fewer farms that are producing PDO milk, dropping from the current 238 to 150.

Young people are less and less attracted to dairy cattle farming, because the income is not the same as before and the workload is high: they do not want to spend the whole year in the barn. Thus, retirements are not replaced by new breeders. The farmers who remain buy the land of their neighbours, and the farms are therefore getting bigger and bigger, which requires intensive management, based on mechanisation and major investments that are difficult to pay back in the short term.

This dynamic has an impact on the **landscapes** of wooded pastures, with an increased tendency to dichotomy with forest on one side and forage areas on the other.

The **grassland resource is weakened** due to **climate change**: droughts, higher average temperatures, lower precipitation reduce the amount of grass available in summer. Farmers' incomes are negatively affected.

The **export market is stagnating** or even declining.

A negative spiral is set in motion, leading to **a crisis in the dairy farming sector**.

Exploratory scenarios

The exploratory scenarios are constructed using the baseline scenario as a foundation. These scenarios depict the potential future trajectories of various agricultural and rural sectors in the decided timeline (by the year 2050, in MOVING).

A key variable and 3 to 5 drivers of change should be selected with a long-term perspective in mind. The Preparatory work subsection in section 2.5 can be followed.

Rank the trends of these long-term drivers of change according to their uncertainty and importance, focusing on those with high uncertainty and high impact to explore different future developments. Uncertain forces are those that are not determined or predictable. For instance, demographics are rather predictable, while public opinion is highly uncertain.

Mountain asset / value chain	Tête de Moine PDO cheese value chain	
Reference Variable	Grass availability and quality	
Long-term drivers of change (external / internal)	External: Climate Change	External: Socio-economic context
Category (Social, Technological, Economic, Environmental, Political and Values)	Environmental	Social, Economic
Influenced by…	Droughts, higher average temperatures, lower precipitation	Uncertain trends in consumer behaviour
How it influences the key variables	The amount of grass available in summer is reduced. Farmers' incomes are negatively affected.	Increase of food autonomy
Impact	High	High
Uncertainty	High	High

To construct the exploratory scenarios, choose two of the long-term drivers of change that correspond to the categories "high impact, high uncertainty." These drivers form the axes of the scenarios, creating four quadrants that represent different future narratives. Each axis will have a positive and negative trend, ensuring clear differentiation. These quadrants can then be developed into scenario narratives, reflecting the influence of previously identified events, trends, and drivers of change. Visual aids such as coloured stickers or sticky notes can be used to rank and differentiate trends. For example, green for very uncertain/important, yellow for medium, and red for less uncertain/important. Ensure that the relevance and accuracy of each axis are maintained to reflect realistic and meaningful future scenarios.

		Driver of change 1	
		Negative	**Positive**
Driver of change 2	**Positive**	Scenario 1	Scenario 2
	Negative	Scenario 3	Scenario 4

It is normal practice to name each of the scenarios with a title that reflect the described situation as shown in Figure 16 (e.g., “Mountains with unhappy bees”, “The best (not) thing to do is to leave”, “Gourmet model”, “We are in the same boat”). The next step is to identify the policies, decisions, actions that influence each scenario.

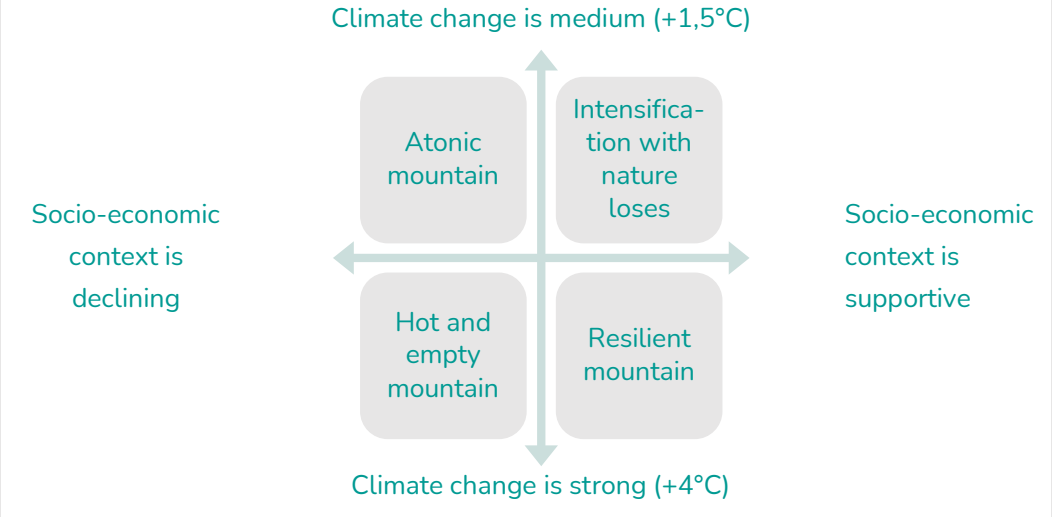


Figure 16 Exploratory scenarios for Tête de Moine PDO cheese value chain

Atonic mountain: moderate climate change and a weak economy cause production challenges, shrinking markets, farm bankruptcies, and declining youth interest in agriculture.

Intensification with nature losses: Moderate climate change leads to more frequent weather issues, rising production costs, and damaged product image, but consumer habits remain unchanged.

Resilient mountain: strong climate change heavily impacts nature and agriculture, leading to critical resource shortages and altered consumer habits, despite socio-economic support.

Hot and empty mountain: strong climate change and economic decline result in farm abandonment, demographic crisis, and reduced demand for PDO products like Tête de Moine.

Final scenario

For effective policy-making, it is essential to consider the most plausible scenario, which reflects future conditions based on current trends and data. In addition to this, incorporating a preferred scenario can be valuable. This preferred scenario represents an ideal or aspirational vision of the future, outlining the outcomes and conditions stakeholders hope to achieve. Combining both scenarios helps ensure that policies are both realistic and aspirational, guiding strategic decisions towards desired long-term goals.

Tête de Moine final scenario "Strong climate change and uncertain socio-economic context"

In a scenario of strong climate change and an uncertain socio-economic context, extreme weather and declining biodiversity put significant pressure on nature, reducing fodder and water availability, and leading to irregular milk production. This instability affects Tête de Moine cheese production and puts farmers' and cheese makers' incomes at risk, diminishing the appeal of farming despite potential benefits from mechanisation. The rise in pests, diseases, and energy prices further complicates the situation. Adapting to market uncertainties will require agile marketing strategies and small adjustments in cheese production processes.

Brainstorm ideas for policy measures to achieve the final scenario and to avoid an evolution of the system to the most negative ones, especially scenario 3. Brainstorm ideas for policy measures to achieve the final scenario and to avoid an evolution of the system to the most negative ones, especially scenario 3. To identify objections and constraints under current political conditions and collecting new ideas openly is a key step to the formulation of the needed policies for sustainability and resilience.

Gather suggested policy adaptations and changes, covering areas like spatial planning, infrastructure, agriculture, rural development, environment, food, and health. Consider regulations, subsidies, incentives, compulsory or voluntary actions, and support for training, entrepreneurship, or research at local, regional, national, or European levels. For changes that can be initiated without public support (like business initiatives, NGO projects, events, or digital platforms), include those ideas as well.

PRACTICAL TIPS

- Ask the different participants to identify past disruptive changes that altered the mountain system (or related systems) and to imagine others that might happen in the future.
- A balanced selection of stakeholders will offer a broad spectrum of drivers of change and contribute to a comprehensive analysis of possible futures.
- Provide some examples that help people to translate to a future scenario with disruptive changes. In general, it is a difficult exercise and people tend to envision non-disruptive changes in the actual trends.

RESOURCES, FURTHER READINGS

- More information is provided in the Guidelines for the foresight exercise (MOVING Deliverable 6.1 https://zenodo.org/records/13142598) and the Foresight synthesis report - Policy brief - Repertoire of strategic options (MOVING Deliverable 6.3 https://zenodo.org/records/11082328).
- Scenario workshop and other engagement methods can be found in the Action Catalogue of the Engage2020 project (http://actioncatalogue.eu/method/7453).

2.7. Transition pathways

TRANSITION PATHWAYS

OBJECTIVE

To identify the options and the necessary decisions at the policy, community and individual levels that can contribute to make reality the desired scenario.

USEFUL FOR PROBLEM CHARACTERISATION | PROBLEM EVALUATION | OBJECTIVES | **OPTION ASSESSMENT** | POLICY DESIGN

DESCRIPTION

Transition Pathways are context-specific and represent a deliberate and systematic approach to driving meaningful change and progress towards a desired future state.

Refine the preferred scenario emerged from the foresight exercise (see section 2.6) and discuss strategic changes and policy options with stakeholders from the SPP interface. Ensure discussions prioritise necessary changes to achieve the scenario by identifying intermediate steps (2 to 5 milestones) from the current situation to the ideal scenario.

For each milestone, identify existing or future policy measures and actions needed from the various stakeholders (see section 2.1). Propose new ideas based on desk-based research of similar situations in other regions or contexts, both within and outside the EU. Participants should be encouraged to suggest innovative solutions or improvements when clear challenges are identified.

This can conclude with a weighting phase to determine critical points in the milestones, and priority needs for policy improvements and new measures. Participants can allocate a limited number of points to the identified needs, with the most points indicating "priority points" to be given greater emphasis (see Figure 17).

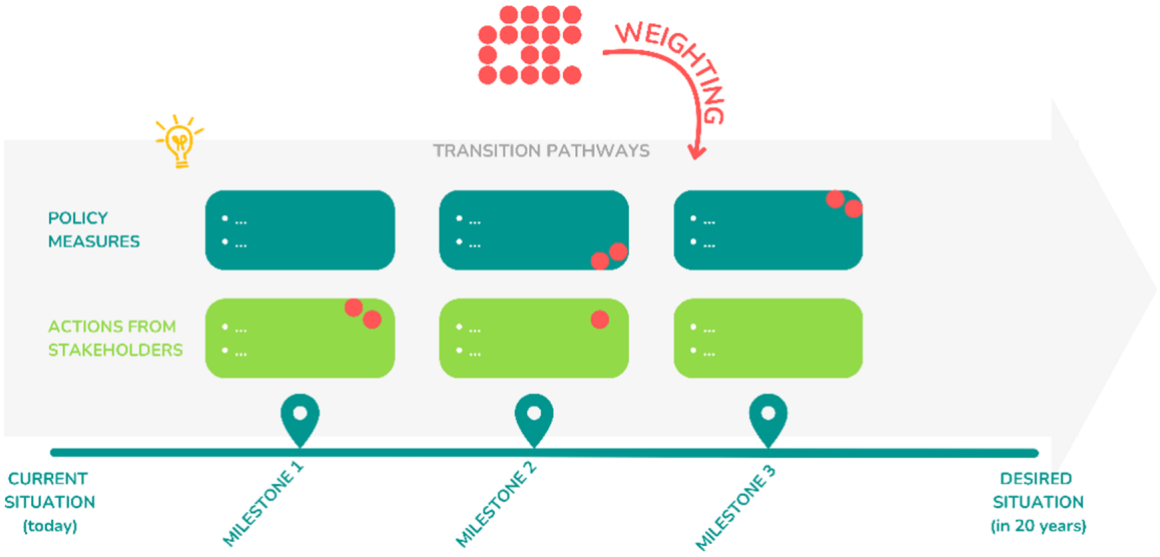


Figure 17 Process to define transition pathways

In the MOVING project, different Pathways, defined as "generalised expressions of the motivations, values and strategies for a better future of the value chain actors and their supportive environment", emerged from the participatory foresight exercises. They can be summarised in the following three:

1. 'Resilient growth through efficient and locally adapted production and the sharing of added value'

2. 'Diversification and innovation, including niche-market products, a knowledge-based economy and services'

3. 'Preservation of environmental services through the valorisation of local (including cultural) resources'.

These pathways are detailed in the MOVING Policy Roadmap. Depending on the Transition Pathways for sustainable development that are relevant or desired in a particular mountain territory, different combinations of the MOVING Policy Roadmap Building Blocks can be selected or proposed.

In the example of Tête de Moine, the Pathway aims to "Enhance confidence and transparency while supporting producers in adapting to emerging challenges".

PRACTICAL TIPS

- Provide examples of how to make reality the transition pathways, using the literature or cases from other areas.

RESOURCES, FURTHER READINGS

- A more detailed description of foresight exercised deployed in MOVING project can be found in the Foresight synthesis report - Policy Brief - Repertoire of Strategic Options (Deliverable 6.3 https://zenodo.org/records/11082328).

2.8. Strategic Options for Policy Design

STRATEGIC OPTIONS

OBJECTIVE

To draft a strategic plan considering the comprehensive previous work. This plan will be based on the needs of mountain stakeholders and define their policy demands for the future. It can be based on how the existing policy mix can address the demands and in the new policies needed.

USEFUL FOR

PROBLEM CHARACTERISATION | PROBLEM EVALUATION | OBJECTIVES | OPTION ASSESSMENT | **POLICY DESIGN**

DESCRIPTION

Previous steps in policy formulation help understand the issues and create tailored demands and pathways for solutions. Identifying strategies to achieve the preferred scenario should answer the question, "What does the mountain area need and how can it be realised?". Strategic options involve creating projects that combine various tools, support measures, and funding sources.

Strategic options address one or more **challenges** and involve a **governing organisation** that sets goals and the pathway being funded through identified funding mechanism, often from multiple sources, to implement a **set of interventions**. These options can focus on a specific mountain sector, like beekeeping or chestnut farming, or cover a broad range of activities for the entire population.

At this point, members of the SSP interface should have clarity on:

- Challenges
- Objectives
- Governance
- Interventions (such as land management, education investment, forestry and agriculture support, infrastructure development, business conditions improvement, technology transfer facilitation, capacity and community building or nature protection)
- Funding (public, private, fundraising)
- Policy needs
- Policy mix addressing mountain areas. A table with relevant policies, strategies, tools and other instruments designed to support sustainable development in mountain regions is provided in Annex 4.4. The table offers an overview of policy options, showcasing a mix of mandatory compliance measures and opportunities for tailored local initiatives. They include funding and support mechanisms like the Cohesion Fund, the European Agricultural Fund for Rural Development, and the LEADER programme, which provide financial assistance and encourage innovative local projects. Strategic options like Horizon Europe and the Digital Europe Programme fund research, innovation, and digitalisation projects. Additionally, there are regulatory frameworks, such as the Water Framework Directive and the Nitrates Directive, which set essential environmental standards. By utilising these diverse tools and funding sources, mountain stakeholders can address specific challenges, foster economic growth, and enhance the resilience and sustainability of their communities. Furthermore, if the mix does not address their needs, they can raise their voices and demand new policies or instruments.

Tête de Moine DOP	
STRATEGIC OPTION	Transforming the local agri-food system, towards strong resilience, in order to prepare the region to formulate its needs and act on its own
CHALLENGES	Uncertainty, tension, and resource conflicts. Social and political issues, including a lack of confidence and unequal resource allocation. Insufficient coordination between interrelated policies, which are often defined and implemented in isolation.
OBJECTIVES	• Promote a sustainable global food system. • Encourage climate-friendly, sustainable food consumption. • Foster a vibrant and sustainable rural and agricultural environment. • Achieve a significant transformation of agricultural practices and management of wooded pastures. • Implement a prudent market strategy with a sustainability label. • Support diversification in agriculture and the broader primary sector. • Invest in infrastructure and production tools. • Prioritise investment in research and training.
GOVERNANCE	Act locally rather than waiting for higher governance levels (canton or Swiss confederation) to propose measures and address key trade-offs.
INTERVENTIONS	Organise a collaborative process to initiate projects aimed at enhancing the region's resilience. Two-way communication with stakeholders—farmers, producers, and consumers—will foster transparency and build trust. Labels showing carbon emissions per kilometre will help consumers make informed, responsible choices. Marketing strategies should respect local tastes and traditions, serving as responsible communication rather than propaganda, and should promote local consumption to manage unstable production. A transdisciplinary political framework and a climate plan, supported by adequate funding, are necessary to address these challenges.
FUNDING	Mix of public and private.
POLICY NEEDS	Complexity of national policies, advocating for simplification, cross-sectoral integration, and the creation of a comprehensive food policy. Importance of supporting sustainable practices, infrastructure improvements, and innovation in agriculture, as well as adapting land management, forest, and environmental policies to climate realities. Need for cantonal policies to align with climate goals, particularly in training, innovation, and administrative simplification.

In the MOVING project, mountains regions used different policy mixes to improve their value chains, as shown on the examples below.

MOVING Value Chain	Description	Relevant policy mix
Austrian Alps	Lamb cooperative exploring wool as fertiliser value chain	CAP (LEADER) + Biodiversity strategy + Green Deal + Circular Economy Action Plan
Drome Valley, France	Support local sheep meet recognising its environmental and cultural ecosystem services	Pastoral Territorial Plans + CAP (LEADER) + flock protection measures + national, regional programmes
Eastern Alps, Italy	To maintain the wine quality, displacing production uphill	CAP (Rural Development, II Pillar) + Quality schemes (PDO) + Research and Innovation

PRACTICAL TIPS

- Build on previous work. Use what has already been done, whether your own projects or initiatives from other mountain areas. Learn from past experiences, use existing networks, and expand successful projects to make new ones more impactful.
- Select the policy mix wisely. Once you know your goals, choose the best funding and policy options that fit the needs and context of your mountain area. Carefully select the policies that will help you achieve your targets most effectively.
- Identify the funding options available and use them at your best convenience.
- Raise your voice and build alliances if the policy mix does not align with your area needs

RESOURCES, FURTHER READINGS

- European Commission's Rural toolkit: it aims to facilitate local institutions, businesses, associations and individuals in rural areas to navigate the diverse EU funding and support options, and to take full advantage of them (https://funding.rural-vision.europa.eu/about?lng=en).

3. References

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4. Annex

4.1. Template for stakeholder mapping

TARGET GROUP		PARTICIPATION IN POLICY FORMULATION STEPS				
		Problem characterisation	Problem evaluation	Objectives	Option assessment	Policy design
Policy	Local policy-makers	✓/-	✓/-	✓/-	✓/-	✓/-
	Regional policy-makers	✓/-	✓/-	✓/-	✓/-	✓/-
	National policy-makers	✓/-	✓/-	✓/-	✓/-	✓/-
	EU policy-makers	✓/-	✓/-	✓/-	✓/-	✓/-
Society	Rural development and innovation advisors	✓/-	✓/-	✓/-	✓/-	✓/-
	Mountain communities	✓/-	✓/-	✓/-	✓/-	✓/-
	Mountain producers, businesses and industries	✓/-	✓/-	✓/-	✓/-	✓/-
	Agriculture and forestry associations	✓/-	✓/-	✓/-	✓/-	✓/-
	Civil Society Organisations (including NGOs)	✓/-	✓/-	✓/-	✓/-	✓/-
	International organisations	✓/-	✓/-	✓/-	✓/-	✓/-
	General public	✓/-	✓/-	✓/-	✓/-	✓/-
Science	Researchers	✓/-	✓/-	✓/-	✓/-	✓/-

4.2. Analytical questions to support filling in the CAF

Framework components	Analytical questions
Resource units	What are the natural resources the livelihoods and the mountain assets rely on? Some examples are land, water sources, forests, pastures... What is the temporal/spatial distribution of the resources? What is the economic value of the resources? The answer can be quantitative or qualitative (e.g., high, medium, low).
Resource systems	How do the different resource units interact (creating synergies or competing) in a resource system? Examples: agriculture and livestock can compete for the use of the land, but in other farming systems livestock can contribute to eliminate agriculture residues and fertilize soils. What type of socioeconomic activities derive of the resource systems? What is the productivity of the resources for the different economic activities? The answer can be quantitative or qualitative (e.g., high, medium, low). Which are the human-constructed facilities to use/exploit the resources? What are the main drivers of vulnerability of these systems? Are these systems under- or over-exploited? Are the resource systems sustainably managed? Are these resource systems privately, publicly, or collectively owned?
Actors	Who are the actors involved in the mountain community? Who are the relevant actors? Relevant actors do not mean powerful. Are they internal or external? Do they connect the mountain system with other systems? Which role these actors perform in the mountain development? Are they individuals or collectives? Are actors linked to different mountain assets?
Governance	What are the formal and informal governance rules at the local level? Which policies affect the mountain development? Has the governance system changed? If so, how? What are the power relations within the mountain asset network, especially regarding small players (e.g., small farmers, small companies)? Which conflicts exist among actors? Are conflicts internal or external? Which technological pathways have influenced the mountain development? Does the local governance system support local actors in realising and creating new practices? How is collective action organised?

	What is the predominant approach? Company-based or cooperative/social economy-based?
Social practices	What type of social practices do the actors use to create socioeconomic activities in the mountain community? What is the importance of the relevant practices in the mountain assets? Are there conflicts in the use of resources? What types of connections exist between the actors within the mountain asset network? How flexible and diversified are these connections for primary producers? Who are the main customers and suppliers in the mountain asset network? What are the most important functions, activities, and flows in the mountain asset network? Are there research and innovation opportunities in the territory? How social practices shape or influence sustainability and resilience?
Outcomes	What are the outcomes of the practices? Examples, economic development, livelihood opportunities, environmental conservation/degradation, depopulation… What values (economic, social, cultural, ecological, symbolic) are generated? Examples, skills in the human capital, attractiveness and wellbeing, collective action, incomes, adaptive capacity… Which practices generate the most value?
Socio-economic and political setting	Which policies influence the mountain development? Identify economic, social and environmental policies What are the international and global trends affecting the resources in the territory? Examples, high international demand of some resources Which are the demographic trends? What are the economic incentives for the use of the natural resources in the mountain area?
Related ecosystems	What are the resource units or actors external to the local mountain area that are influenced by the local SES? How the natural resources and the products derived from them interact with other SES? Where are they located in relation to the studied area? How do identified connections link the selected area with other areas? How are values (or dis-values) distributed among the interconnected areas?

4.3. List of drivers of change

Climate change - precipitation	Changes in precipitation regime (rain or snow) with potential impact in the hydrological system (rivers and groundwater), soil and vegetation. In most cases, we expect a reduction of precipitation and therefore an increase in drought in the system.
Climate change - temperature	Increase in mean temperature seasonal or annual. Here we include changes in average, maximum and minimum temperatures.
Climate change – extreme events	Changes in intensity, frequency, or timing for the following components: flooding, heat waves, storms (wind), hail and frost periods.
Climate change – wildfire	Intensity, frequency, or timing of wildfires (forest and soil)
Land-use and land-cover change	Complete changes in land-cover such as conversion from forest to agriculture linked to climate change or other driving forces (policies, market, etc)
	Changes in vegetation cover such as reduction of tree cover or shrub encroachment or change in land cover mosaic (composition and structure).
Soil physical degradation	Soil physical degradation through loss of organic matter of the soil, due to erosion, poor tillage, or excessive compaction.
Over-exploitation of resources	Water extraction (surface or groundwater).
	Overgrazing – Livestock and wildlife density.
Pests, diseases, and invasive species	Changes in intensity and frequency of pest and diseases, either native or invasive.
Pollution	Contamination of soil, water (surface and groundwater), or the air by the discharge of harmful substances.
Demographic changes	Demographic changes such as population decline or immigration in the chosen area might produce changes in management practices and land-use abandonment. This driver could be a cause of land-use and land-cover change.

4.4. Components of the policy mix

POLICIES, STRATEGIES, INSTRUMENTS AVAILABLE				Utility
Policies	Cohesion Policy	Cohesion Fund (CF)		✓/-
		European Regional Development Fund (ERDF)	CLLD	✓/-
			ITI	✓/-
			Interreg	✓/-
		European Social Fund Plus (ESF+)		✓/-
		Just Transition Fund (JTF)		✓/-
	Common Agricultural Policy	European Agricultural Fund for Rural Development (EAFRD) & Pillar I		✓/-
		Pillar II	LEADER	✓/-
	Farming	Quality schemes (PDO, PGI, etc.)		✓/-
		Organic farming		✓/-
	Food Safety Policies	Traceability		✓/-
		Food processing, packaging, labelling		✓/-
	Research and Innovation	Horizon Europe		✓/-
		LIFE		✓/-
	Environment, natural resources and climate	Water Framework Directive	Nitrates Directive	✓/-
			Pesticide Directives	✓/-
			Water Reuse Regulation	✓/-
			Floods Directive	✓/-
		Climate Law		✓/-
		Regulation on Deforestation-free products		✓/-
		Habitats Directive		✓/-
		Birds Directive (Natura 2000)		✓/-
		Ambient Air Quality Directives		✓/-
		Nature Restoration Law		✓/-
	Path to the Digital Decade	Digital Europe Programme		✓/-
		Broadband strategy		✓/-
		Connecting Europe Facility Digital (CEF Digital)		✓/-
	NGEU	Recovery and Resilience Facility (RRF)		✓/-
Instruments	Smart Specialisation Strategies (S3)			✓/-
	Smart Villages			✓/-
Strategies	Green Deal			✓/-
	Farm to Fork			✓/-
	Biodiversity Strategy			✓/-

	Shaping Europe's Digital Future – Digital compass	✓/-
	Action Plan for Circular Economy	✓/-
	Industry and circular economy	✓/-
	Soil Protection Strategy	✓/-
	European Landscape Convention	✓/-
Other	Long-Term Vision for Rural Areas	✓/-
	CAP Network	✓/-
	Tax incentives	✓/-
	EU State Aid Guidelines	✓/-