MOVING
MOUNTAIN VALORISATION THROUGH INTERCONNECTEDNESS AND GREEN GROWTH

D6.3 – FORESIGHT SYNTHESIS REPORT POLICY BRIEF REPERTOIRE OF STRATEGIC OPTIONS

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Acronyms

AB	Advisory Board
ANC	Area with Natural Constraints
CAF	Conceptual Analytical Framework
CAP	Common Agricultural Policy
CC	Climate Change
CoP	Community of Practice
DL	Deliverable
EIP	European Innovation Partnership
EU	European Union
FAO	United-Nations Agency for Food and Agriculture
FG	Foresight Group
FE	Foresight Exercise
GCM	Global Climate Model
GI	Geographical Indication
HLPE	High level Panel of Experts
IAP	Integrated Assessment Platform
ICHN	Compensatory allowance for permanent natural handicaps
IMP	International Mountain Partnership
INTERREG	Coopération territoriale européenne
IUCN	International Union for Conservation of Nature
LTVRA	Long Term Vision for Rural Areas
MaPs	Multi-actor Platforms
MOVING	MOuntain Valorisation through INterconnectedness and Green growth
MRL	Mountain Reference Landscape
MRR	Mountain Reference Region
NoWo	November Workshop
LEADER	
PDO	Protected Designation of Origin
PGI	Protected Geographical Indications
RCP	Representative Concentration Pathway
R&D	Research and Development
RT	Research Team
SDG	Sustainable Development Goals
SES	Socio-ecological Systems
SKE	Sustainable Knowledge Economy
SSP	Socio-economic Pathway
ToC	Theory of Change
STEEPV	Social, Technological, Economic (macro), Environmental, Political, Values
UNFCCC	United Nations Framework Convention on Climate Change
VC	Value Chain
WP	Work Package
WSSD	World Summit on Sustainable Development

Executive summary

This report presents several parts of the European mountain foresight 2050 done by the MOVING research consortium partners in collaboration with the 22 local foresight groups.

Report starts with the modeling impact of climate and demographic changes for 2050, as those two long term forces have been identified by most of the foresight groups as the most impactful for their future, in line with previous MOVING results. The modeling reveals concerning findings regarding land use and food security in mountain regions. A significant concern is the emergence of a large decrease of grassland, particularly affecting the alpine arc. This vulnerability is exacerbated by areas with limited arable land, posing challenges for local food availability, especially in urbanized regions. The discussion highlights that while land management in mountains may thrive, it may not necessarily be for food production purposes. Instead, alternative goals such as biodiversity conservation or carbon sequestration may be more suitable. The discussion underscores the need for appropriate policy frameworks and support to address the drivers toward "unmanaged land" and ensure sustainable land use practices. While climate change scenarios play a role in other impacts, such as biodiversity loss, efforts to mitigate climate change remain crucial for long-term food security.

The methodology and process of the MOVING foresight project is based on local engagement and bottom-up approaches. The creation of scenarios is done at the local level, involving stakeholders from various backgrounds to envision the future of rural communities. The focus is on a medium to long-term perspective, with a time horizon set at 2050, considering climate forecasts and national policy contexts. The role of research teams and foresight groups is important, as a motor of communication and collaboration throughout the process. Overall, the foresight underscores the participatory nature of the project and its aim to empower local communities in shaping their future.

The scenarios depict the potential future trajectories of various agricultural and rural sectors by the year 2050. Overall, these scenarios underscore the multifaceted challenges facing agricultural and rural communities, including environmental, social, economic, and political factors. Most of the cases have highlighted the climate and the economic drivers as shaping their future the most. Note as well that, after prioritization and the second workshop, the drivers highlighted below during the preparatory work done by each research team, have not all been finally chosen as long-term forces for constructing the final scenarios. Four main long-term forces affect mountain regions: climate change, market/economic factors, demographics, and tourism. Climate change poses challenges such as the need for infrastructure to combat natural disasters and threatens natural resources, with varying effects in dry and wet mountain areas. Economic factors, including market dynamics and product reputation, significantly impact the sustainability of mountain businesses. Demographic trends show a historical decline in mountain populations, with implications for services and livelihoods. Tourism is a key aspect of mountain identity, but its development raises uncertainties and environmental concerns, particularly regarding land use and resource management. Four main archetypes are identified based on the theories of change and final scenarios: Economic-driven, Nature-driven, Niche and Diversification-driven, and Knowledge and Innovation-driven. Each archetype presents a vision for 2050 and pathways to achieve it, emphasizing sustainability, local economic development, and community engagement. Regional strategies and interventions are also outlined, focusing on resilience to climate change, ecological conservation, economic diversification, and social well-being.

Europe's mountains are extremely diverse, due to the nature of the mountain ranges, each with its own geological history, climate and culture shaped over the centuries. Climate change, the impacts of which are faster and stronger than even the gloomy forecasts of the IPCC experts, the weakness of negative demographic trends which have not been halted since the decline began at the end of the 19th century, the pressures of mass tourism in certain regions and the globalisation of trade which places mountain products in severe competition with similar products from areas which face far fewer constraints, all these pressures mean that mountain communities need to develop ambitious strategies to ensure a better future by 2050. To support them in their efforts to realise their projects, European policy, under the impetus of the European Commission, which has the legislative initiative in the EU, only sporadically takes account of the specific realities of mountain areas. The main compensation tool is the compensation for natural handicaps (ICHN), which came under the second pillar of the CAP in 1975. In addition to this annual transfer of money to upland farmers, in a form that is modulated by the Member States in their annual strategic plans, this tool is subject to compulsory co-financing, in the same way as all the tools under the second pillar of the CAP. In addition to this tool, a few other regulations benefit the Montagne region, which makes extensive use of the protection of geographical indications and designations of origin, a 1992 regulation revised in 2006 and 2012. However, the introduction in 2012 of the reserved designation 'Montagne' has not had the response or impact hoped for by the mountain representatives grouped together within Euromontana. The other policies that have a major impact on mountain areas are cohesion, the environment and research. There is no mention of upland areas in these policies, and the tools and programmes dedicated to upland areas are sorely lacking in the light of the particularly severe period that has already begun, with the disastrous impact of the mass abandonment of villages in all upland areas that have no tourist activity, and the more recent but very serious impact of climate change.

As a result of the lack of this structuring political support, most mountain communities have little confidence in the future, and feel marginalised and forgotten by political priorities. This distance between the players and European policy, even when relayed by the regions and local authorities, is a worrying fact. For this reason, to support mountain communities in achieving their objectives for a better future, we strongly advocate re-establishing trust between the populations and governance at all levels. A structuring political framework is urgently needed to support local projects and initiatives, which we have identified and qualified as strategic options, some of which have the potential to be adapted for replication across a mountain range, or even several mountain ranges.

Key findings reveal a range of intervention needs, including:

- Securing economic prospects through value chain strengthening, rural tourism promotion, and income diversification.
- Preserving natural capital by adapting to climate change, investing in water management, and supporting ecosystem services.
- Promoting well-being through stable job creation and community collaboration.
- Multiplying innovation through knowledge acquisition and research support.

As results of a quantitative survey by 579 citizens in the MOVING countries, citizen preferences for interventions included land management, education investment, forestry and agriculture support, infrastructure development, business conditions improvement, technology transfer facilitation, university access enhancement, and nature protection.

Strategic options reflect the diversity of regional strategies, emphasizing the need for tailored policy mixes and supporting local governance structures. European-level tools such as

"Erasmus Altitude" and LEADER variants are proposed to support mountain communities' development.

Local networks play a crucial role in defining and implementing long-term strategies, fostering innovation, and sharing knowledge. Agency, or the capacity for action, emerges from these networks and contributes to local empowerment and adaptation to socio-technical challenges.

Experts suggest emphasizing mountains as livable spaces, recognizing community ownership, integrating sustainability into policies, diversifying development initiatives, sharing scientific research, capacity-building for stakeholders, adapting governance structures, and acknowledging non-economic benefits of mountain value chains.

In a policy brief, the report outlines a comprehensive set of 10 recommendations to address the unique challenges and opportunities faced by mountain regions, emphasizing the importance of tailored interventions, local governance, and community empowerment in achieving sustainable development:

1	Investment plans for each mountain range need to be drawn up as part of a concerted approach to regional planning with local communities and regional and national authorities. It is vital that cohesion policy includes a dedicated legislative basis for the mountains, with European funding earmarked for the mountain areas.
2	To modernize, upgrade and adapt to the Mountain LEADER and SMART-Village as tools for supporting the networks and strenghthening the mountain communities. These tools have a place at European level in the second pillar of the CAP. The tool should be designed to strengthen the capacity for agency.
3	Improve the competencies of mountains communities and regional / national authorities regarding the quality of products linked to their origin, the European regulatory framework and the tools that protect and promote the quality (PDO, PGI, Mountain quality term and organic scheme). Upgrade and support the farms and food artisanal that are active in those high-quality value chains and increase the funds that support their promotion. Take any initiative to enroll the producer groups in strategic foresight thinking, empower them to deploy their vision for a better future to cope with the main challenges and to build their resilience.
4	Changes in agricultural, forestry and tourism practices must be supported to increase ecosystem resilience, and measures to conserve natural resources and biodiversity must be defined in consultation with local communities.
5	The specific mountain scheme for remuneration of ecosystem services at the level of the various mountain ranges must be drawn up in consultation with mountain farming communities, civil society organizations for the protection of the environment and the competent local, regional, and national institutions. The definition of the services themselves should remain very brief, defining only broad categories. The conditions of access and control must be kept very simple and must not add to the all-consuming bureaucracy that undermines the motivation of beneficiaries. Its implementation, subject to Community co-financing, must be accompanied by a simplified administrative regime.
6	The opportunities identified for gentle tourism, balanced between the summer and winter seasons, are to be seized with strategic plans defined by local communities and targeted financial support in the rural development programmes under the second pillar of the CAP.
7	To develop a foresight tool at territorial scale, with methodological and financial support to enable any small region that so wishes to carry out a diagnosis and define a long-term strategy for a better future.
8	To make the existing policy tools and support for collective actions more accessible by local mountainous communities, to simplify the procedures, inform with simple tools and no complicated conditions to fulfil.
9	Strengthen the mountain communities to gain the agency capacity, by supporting the collective ability to form opinions and organize themselves to engage in collective action that structures the future use of sensitive resources and enables conflicts over use to be resolved by reinforcing community members' confidence in collective rules.
10	An "**ERASMUS Altitude"** would accelerate the exchange of knowledge within thematic networks. The geographical scope should be all mountain ranges. Its aim would be to enable physical and virtual exchanges, and to strengthen knowledge based on the exchange of experience between peers in the various mountain ranges and territories.

1 Introduction

The MOuntain Valorisation through INterconnectedness and Green growth (MOVING) general approach is focused on ensuring mountain resilience and future sustainable development.
The objectives are the following:

- Building capacities of mountain regions and stakeholders to enhance resilience to climate change.
- Identifying the socio-ecological factors that will shape the future of mountain value chains by 2050.
- Supporting policy design that enhances the resilience of mountain regions through new or upgraded value chains.
- Setting up a European community of stakeholders to foster the exchange of knowledge and experiences.

Building on a pan-European conceptual approach, an inventory of 400 value chains (VCs) in Europe, 23 empirically grounded, participatory VC analyses and 22 Foresight Exercises (FE) will identify success factors, future trends and associated drivers at regional, cross-regional cluster and EU levels.
The general objective of the foresight (MOVING-Workpackage#6) was to enable 22 local, 4 cross-cases, and 1 European multi-stakeholder platforms to engage in participatory co-construction of shared policy options that will shape the future towards more sustainable and resilient mountain territories.

As a starting point for the foresight exercise, several previous MOVING research results were already available.

The deliverable 3.2 “Land use system vulnerability matrixes and vulnerability maps” for the 23 reference regions (González-Moreno et al., 2022) did analyze the main vulnerability variables and provided maps to the local stakeholders that allow visualizing the locations where the impacts most likely happen, based on statistic occurrences.

There were several conclusions made out the in-depth review of 23 VCs analysis reports, representing diverse sectors and regions, including areas outside the EU (Deliverable 4 Participatory value chain analysis (Blackstock et al., 2022). The report shows that the 23 MOVING regions face typical mountain challenges like depopulation, limited infrastructure, ecological fragility, and the need for conservation. Structure and function of VCs focuse on practices across four stages: Production, Processing, Distribution/Marketing, and Consumption. Different actors are involved, with a dominance of men in earlier stages and a balance/dominance of women in later stages. Most VCs contribute positively to economic outcomes, providing valuable jobs, and generating revenue through taxes and excise duties, especially in agriculture-based VCs. They also provide socio-cultural benefits such as preserving cultural landscapes, enhancing local connections, and offering opportunities for young people, women, and immigrants, particularly in later stages of VCs. While some VCs improved environmental capital assets, others pose risks to environmental values. Mitigation practices are noted, but sustainability and resilience to climate change pressures remain critical. Physical infrastructure and institutions play crucial roles in enabling VCs, but challenges in connectivity and resource management persist. Many VCs have global value chain linkages, extending beyond the local and national boundaries, with most tele-coupling occurring in later stages of VCs. The analysis extends to explore assemblages of VCs, showing amplification of positive effects or resolution of conflicts within shared territorial assets. The findings underscore the need to protect territorial assets, retain value in rural areas, and leverage tele-coupling to enhance local outcomes. Mountain regions, while

vulnerable, offer unique cultural landscapes and ecological resilience, which should be leveraged for sustainable development. Overall, the study provides insights into the complex dynamics of VCs in mountain regions, highlighting the interplay between economic, social, environmental, and governance factors and emphasizing the importance of tailored policies for sustainable mountain development.

The deliverable 4.5 “Vulnerability and Resilience Performance” (Zagata et al.., 2023), concludes that stakeholders identified various threats including environmental, socio-economic, institutional, and political factors, with drought being the primary concern. Reduced precipitation is a significant threat across most mountain regions, particularly impacting production elements of value chains. Other notable threats include demographic changes, inflation, and rising energy prices, with the perception likely influenced by the ongoing energy crisis in Europe. Demographic changes, specifically the issue of generational renewal in European agriculture and the shortage of young people in rural areas, are significant socio-economic challenges affecting value chain assemblages. These impacts are not limited to specific agricultural processes but affected the value chains. For each MOVING region, the local stakeholders were able to identify the threats, the factors of vulnerability as well as the ones for building sustainability and resilience.

All these data analysis and conclusion were available both at local and European level, and the building of the competencies of the local stakeholders in the Multi-Actor Platforms and among the MOVING researchers was essential to start the foresight exercises at local, cross-cases and European levels.

This report presents several parts of the European mountain foresight 2050 done by the MOVING research consortium partners in collaboration with the 22 local foresight groups. In section 2 the modelling impact of climate and demographic changes for 2050 is presented, as those two long term forces have been identified by most of the foresight groups as the most impactful for their future, in line with previous MOVING results reported above. The section 3 presents the foresight methodological approach, followed by section 4 presenting the results of the 22 participatory foresight reports and the section 5 presenting the regional strategies and the strategic options. The section 6 present the quantitative survey, which was asking 573 persons about their priority of interventions for a better future in their regions. Section 7 makes a policy analysis focusing on the rare measures that are specifically applicable to the mountains. The section 8 consists in a policy brief with recommendations for new measures that could address the needs expressed by the MOVING foresight groups at each level and prioritized in the quantitative survey.

2 Modelling impact of climate and demographic changes for 2050

To bring an additional perspective on what mountain regions could look like in 2050, we used an integrated model developed in the context of three European Research Projects (CLIMSAVE, BIONEXT and IMPRESSION), by a consortium led by Paula Harrison, researcher at UKECH, to visualize diverse impact indicators in Europe. The model can combine different climate scenarios and socio-economic pathways and has obtained international recognition through several publications (Audsley et al., 2006; Harrison et al., 2013, 2016). The model combines the selected input scenarios to generate indicator scores at the scale of geographical “cells” in Europe, including Switzerland and Norway but not

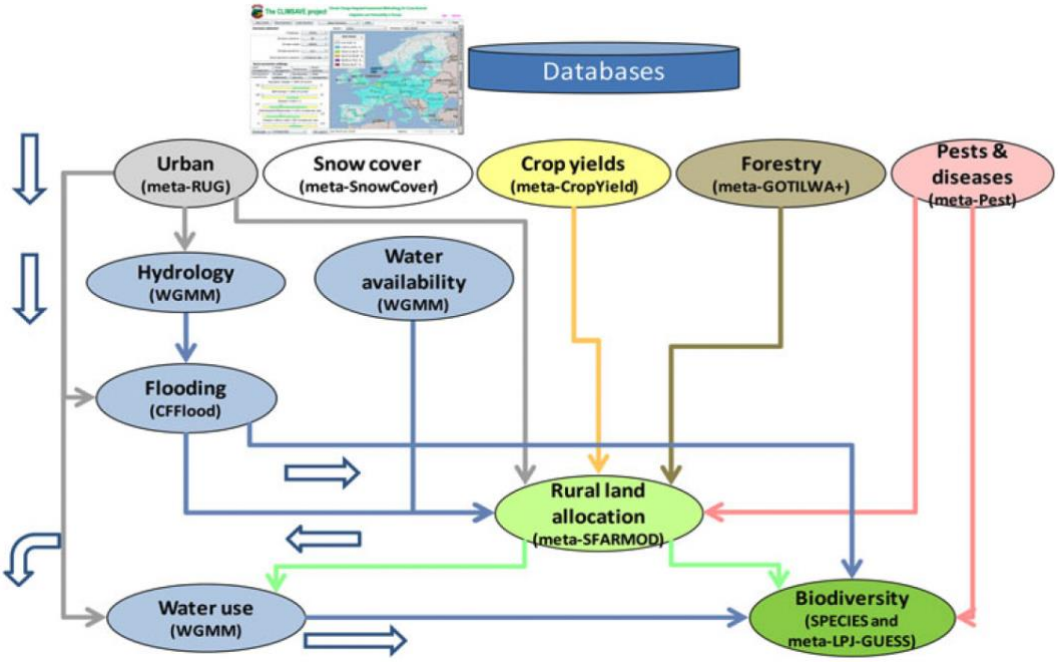
including most of the Balkan countries nor Turkey. The cells are squares of a "*spatial resolution of 10 arcmin × 10 arcmin (approximately 16 km × 16 km) and produces outputs of both sector-based impact and vulnerability indicators and ecosystem services in order to link climate change impacts directly to human well-being"*(Harrison et al., 2015)*."*
It starts from a baseline calculated on the averages of the period 1980-2010 and creates projections for the years 2050 and 2080 (as averages of 30 years around these points). In line with the MOVING participatory foresights conducted in the regions, we generated several outputs for the period 2050 to contrast the stakeholder's perspective with a broader lens from the model.
The model was not designed to be specifically used on mountain regions nor to draw regional results at a local scale. It was created to see the overall changes in Europe if the whole of Europe adopted a unified "behaviour" in line with the chosen scenario. Still, in the results, we also present the effect on impact indicators with a filter on mountain regions of Europe to see the effect and contrast between mountain regions of what could happen to these regions in the case of some development scenarios happening in all of Europe. Like in Harrison et al. (2019)*«The model is utilised to analyse how the spatial patterns and magnitudes of impacts differ between low-end (as represented by Representative Concentration Pathway (RCP) 2.6; Van Vuuren et al. 2011) and high-end (as represented by RCP 8.5) climate change scenarios. Furthermore, it is applied to examine how the different climate futures (RCPs 2.6 and 8.5) interact with different socio-economic futures (as represented by the Shared Socioeconomic Pathways, SSPs) to produce different spatial patterns and magnitudes of impacts and vulnerability."*
Therefore, we used contrasting input scenarios in terms of climate and socio-economic pathways to represent four possible diverging future scenarios for Europe, taking inspirations for important variables from the participative foresight exercises (reported in the sections 3 and 4 below) but generating the results independently.

2.1 Method for the modelling

2.1.1 The Integrated Assessment Platform (IAP)

The model is accessible online. It integrates different models that predict the reaction of natural systems to different evolutions of the climate and human systems. The primary focus of the integration of the different models is to determine the influence on and of different land use allocations especially rural land. Most interestingly, the IAP allows testing the effect of changes in population, among other parameters, on land uses, while considering different climate scenarios at the same time. Results are depicted on European maps and show the resulting evolution compared to the baseline in terms of impacts on land use, food production, biodiversity, floods, or other selected output indicators. The Baseline itself is generated via modelling and does not represent reality in 2010. The IAP works by integrating several existing databases and modules that were designed to model parts of it (as Figure 1 shows below).

Figure 1: Schematic figure showing the data transfers between the models within the CLIMSAVE IA Platform (Harrison et al. 2013)



Dunford et al.(2015) explain the available parameters in more details: “The IAP is an interactive, web-based, cross-sectoral modelling platform that includes interlinked metamodels for a number of sectors including urban development, agriculture, forestry, water provision, flooding and biodiversity (Harrison et al. 2013, 2014).” “The IAP presents results at a 10’ by 10’ grid cell resolution for the European Union (plus Norway and Switzerland). To represent the range of potential future climates, the IAP contains data for five Global Climate Models (GCMs: CSMK3, MPEH5, HadGEM, GFCM21, IPCM4), four IPCC emissions scenarios (A1b, A2, B1 or B2) and three levels of climate sensitivity (low, medium or high).”

2.1.2 The climate and emission scenarios

The IAP offers the possibility to test for several climatic futures. The climatic futures are determined first by the level of greenhouse gas emissions and then by the reaction of the atmosphere and physical systems to these emissions. The first part (emissions) is modelled from databases available from the IPCC.

The three options available correspond to widely used scenarios:

1- reduced emissions (“RCP 2,6”), temperatures increase by 1,6°C compared to pre-industrial temperatures.
2- controlled emissions (“RCP 4,5”), corresponding to projected increases in average temperatures of 2,4-2,6°C.
3- increased emission (“RCP 8,5”), temperature increase of 4,3°C compared to pre-industrial temperatures in 2100.

Of these three scenarios we modelled inputs using the two most extremes (RCP 2,6 and 8,5) to represent the two opposing sides of a scenario axis representing climatic futures by 2050.

Then in addition, there are models to determine how the global and regional climatic systems react to said emissions in terms of changes in precipitation, seasons, temperature, etc. The IAP offers the possibility to choose different combinations of global climate models (GCM) and regional climate models (RCM).
We base our choice of GCM/RCM on previous work and testing on Europe for similar work by Harrison et al. (2019) who already simulated outputs with all possible combinations of GCM/RCM with the RCPs and determined which combinations generate the most “extreme” outputs. We follow the same logic as we want to generate two largely contrasting climatic future with one being a “mild” and one a “severe” climate change for Europe. The outputs for climate differences were tested once again for summer and annual precipitations with the available combinations in the IAP and finally, the combinations selected for generating the scenarios were:

- “mild”: RCP 2,6 with EC-EARTH-RCA4 climate model.
- “severe”: RCP 8,5 with CanESM2-CanRCM4.

2.1.3 The socio-economic pathways

In the IAP, “any climate scenario can be run for either baseline conditions, the 2020s or 2050s and combined with one of four socio-economic scenarios developed at a series of international stakeholder workshops (involving individuals from government, NGOs, the private sector, research, and media, see Kok et al.). These socio-economic scenarios present four futures located at the extremes of two axes of “economic development” and “innovation success” (Gramberger et al. this volume; Kok et al. this volume)” (Dunford et al., 2015)
The IAP offers many options to manually change social, demographic, economic factors. In addition, 4 out of 5 IPCC pre-determined socio-economic pathways (SSP) are pre-programmed in the input parameters. The four SSPs are contrasting development scenarios for Europe that are summarized in the Table 1 below.

Table 1: The socio-economic scenarios as extracted from Dunford et al. 2015 and with some input parameters as in Harrison et al. (2019).

Scenario Name	Description	EU population change (% change from 2010)	Food imports (absolute % change)	Land allocated to agri-environment schemes (%)	Change in dietary preferences for beef and lamb (% change from 2010)	Change in dietary preferences for chicken and pork (% change from 2010)	Change in agricultural yields (% change from 2010)	GDP (% change from 2010)	Household preferences for lived environment: 1 = Urban; 5 = Country).	Compact vs sprawled development (Low = Sprawl; Medium or High = Compact); Baseline = Med
SSP1 - We are the world (WRW; successful innovation; stable economic growth)	characterised by effective government, a focus on well-being and wealth redistribution, reduced inequality, and more global cooperation. CO2 neutral society thanks to technology.	0.4	-13	6	-82	-34	-19	259	5	High
SSP3 - Riders on the storm (Riders; successful innovation; rollercoaster economic growth)	characterised by economic crises countered by investment in green technology, Europe displays a steady green GDP growth and an increase in purchasing power, which is reflected in a population increase.	-38	-5	2	0	35	-35	48	4	Low
SSP4 - Icarus (failed innovation; steady economic decline after 2020)	characterised by short-term planning, a stagnating economy, disintegration of social fabric, a shortage of goods and services and a declining population.	-22	4	5	0	35	89	200	2	Medium
SSP5 - Should I stay or should I go? (SoG; failed innovation; rollercoaster economic decline)	characterised by failing to address economic crises, political instability, increased inequality, and an insecure, unstable world. Organised crime reaches an all-time high and people live in an insecure and unstable world.	47	18	0	53	74	89	724	5	Low

Although the IAP offers the possibility to model outputs with all four SSP and varying input parameters, rendering the possibilities almost endless, we chose to reflect on similarities between those SSPs and the MOVING foresight scenarios (see sections 3 and 4 below) to define relevant scenarios for comparison. Therefore, the archetypes from MOVING regions were compared with the four SSP available and it appeared that each of the archetypes included similarities with SSP1 “we are the world”, which is also designed as the “sustainable” scenario. To see the input variables more precisely, the table above presented a selection of input parameters for the four available SSPs.

Previous studies (Harrison et al., 2019) (supplementary material) also already offered insights into the effect of the four different scenarios on the “alpine” region as defined by IPCC. The

combination of these inputs and reflections with the archetypes (see chapter 4.2) led us to choose the SSP1 scenario as a base for the socio-economic dimension of outputs. However, as “demography” appeared so prevalent in the regions’ long-term forces and is an input variable in the IAP, two extremes in this development could be modeled. Although current Eurostat projections indicate a likely population growth for Europe of +6% (Eurostat, n.d.), the SSPs have a width of -10 up to 27% growth of population in 2050 compared to the baseline. This is why we modeled these two “extremes” of population variations combined with SSP1.

Combining the two “extremes” of population growth with the two opposing climatic scenarios “mild” VS “severe” builds up four opposing scenarios on both sides of these two axes as will be depicted for the results below. We named these scenarios with a letter A to D as depicted in the Table 2 below.

Table 2: The four scenarios used to model outputs for 2050, based on the SSP1 configuration

Scenario	Population increase (+27%)	Population decrease (-10%)
mild climate change (RCP 2,6)	A	B
Severe climate change (RCP 8,5)	C	D

2.1.4 Impact Indicators (outputs)

The model was thus run once for the baseline and four times with the mentioned parameters above and outputs indicators extracted. The output impact indicators cover many aspects and are generated as absolute and “relative” to the baseline to track the evolution in 2050. The results are divided per “cell” which are the squares of 10’x10’.

The changes for impact indicators are presented below.

2.1.4.1 Land Use Changes:

Under this category are many output indicators that were the main aim of the model. For each cell, the model calculates what is the best repartition in percentage of 7 main categories of land use, some split in more sub-categories. Based on the input parameters, the model will calculate over the whole of Europe, which land use repartition will best answer to the need, first of food and fiber provision and does consider strongly which land cells are the most appropriate for that production. The model does not consider borders and trade among European countries but it does consider trade with outside-Europe. The baseline is also a calculated baseline according to the data on the input parameters.

For the results, we mapped the percentage of arable land and the percentage of unmanaged land for the scenarios. The maps for arable land are the only ones presented in relative change compared to the baseline, for a matter of visibility of the scales.

2.1.4.2 Agricultural outputs:

Similarly, within agricultural activities, the model calculates different outputs per cell, such as yields and hectares of many different crops. With our focus on mountain regions, we chose to map the outputs for hectares of grass production (combined grass, permanent grass, and extensive grass) as a proxy of grassland-based animal production per cell and pastures in the mountains. Intensive animal production based on concentrate and maize does not fit our approach, but we do the assumption that, in the mountain regions, most of the animal production is based on grassland. We also mapped winter barley hectares which did not produce maps with enough contrast to show. We tested the results also for livestock units per hectare as another way to show changes in food production for animal production in the case of extensive and intensive livestock, but the results were not conclusive to be shown.

2.1.4.3 Biodiversity:

Biodiversity in the model is calculated as the presence or absence of representative species according to the adequacy of the potential habitats in each cell. We used here the group of "mixed species" as representative of a mix to cover the whole of regions as a proxy. The 12 species this group includes are:

1. Common poppy (Papaver rhoeas)
2. Linnet (Carduelis cannabina)
3. Bilberry (Vaccinium myrtillus)
4. Hornbeam (Carpinus betulus)
5. Norway spruce (Picea abies)
6. Brown bear (Ursus arctos arctos)
7. Western dappled white butterfly (Euchloe crameri)
8. Common saltmarsh grass (Puccinellia maritima)
9. Strawberry clover (Trifolium fragiferum)
10. Bell heather (Erica cinerea)
11. Red deer (Cervus elaphas)
12. Capercaillie (Tetrao urogallus)

Biodiversity is thus shown on a scale from 0 to 12, according to the number of these species that are present.

2.1.5 Geographical representation

The output indicator values are thus available for the more than 20'000 cells of 16x16km in Europe. The outputs are generated considering a uniform behavior across Europe and thus not factoring in variations in regional reactions or behaviors. This means that the model does not give results specifically for mountain regions but for the whole of Europe and this is important to keep in mind. Still, the results look different in each cell depending on the geo-physical context and the situation at baseline. To filter out results and see the specificities of mountain areas, the cells for "mountains" were extracted to at least visualize the differences between the scenarios for European mountain areas.

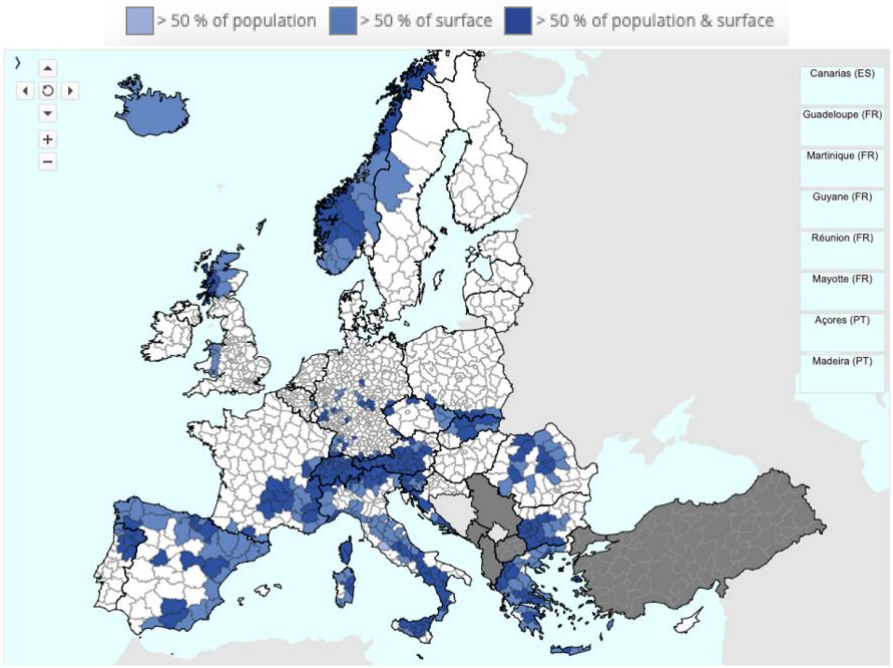
Our research showed that there are four ways (at least) to categorize the mountain are in Europe that could have been chosen to filter the cells as in "Mountain" VS "plain", depending on whether they are in one of these definitions:

- the IAP-built-in definition of "alpine" area as defined by IPCC.

- The geographical “massif” cartographic definition.
- The Eurostat definition of mountain areas categorizing each NUTS3 administrative surface in one of 4 mountains areas type.
- The Area used as definition of mountain area or area with natural constraints (ANC) for the payment of subsidies for agriculture by the EU states (art. 32).

On top of these definitions are also the areas defined within the MOVING projects for the case studies as either the MRR or MRLs, that from the start do not cover the whole of European mountain regions but selected case studies for participatory approaches. There are also national definitions in some countries and the development of marketing instruments like PDOs and the European quality scheme for mountain denomination that may define their own areas as mountain region.

All these geographical definitions rely on more complex aspects than simply altitude, which could also be used as a cut-off criterion to filter the IAP outputs. All definitions use other parameters like slopes, latitude, and the proportion of population within an area or the proximity to peaks and steep areas in the case of the Eurostat definition. Adding to these considerations the availability of geographical shapefiles and the size of the area covered in overlap with the IAP outputs, we chose to use the Eurostat definitions as mountain areas of categories 1-3 (all blue areas on the figure below) to filter out the results of the IAP into maps. This mountain zone offers optimal overlap with the IAP cells covered and includes 15 of MOVING MRLs. Serbia and North Macedonia’s are not covered by the Eurostat classification and Turkey is not covered by the model which meant that three MRLs could not be included for lack of data. For the countries covered in the model, (EU + Norway, UK and Switzerland), results of the output indicators were mapped both for the whole set of cells and for those that overlap with one of the Eurostat NUTS3 that is in one of the three mountain zones.



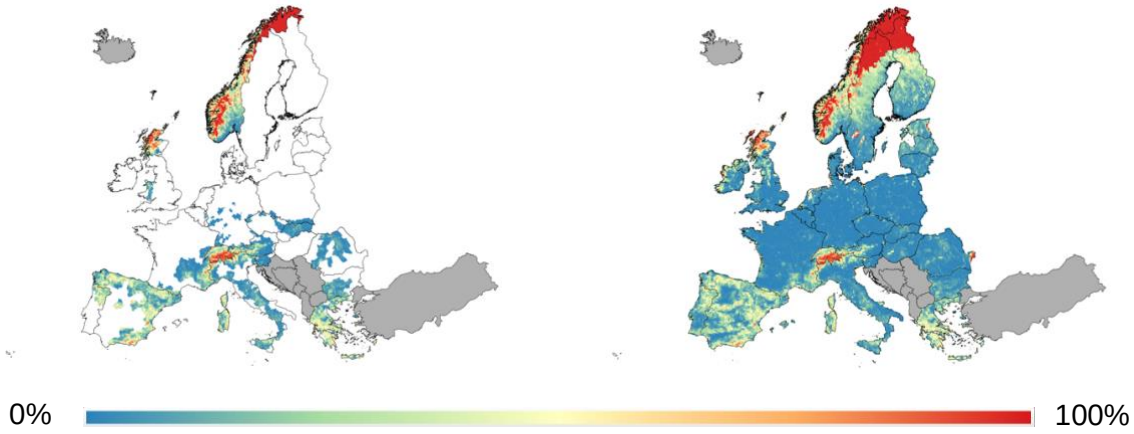
Map 1: NUTS3 administrative units colored according to the « mountain » category in blue (Eurostat, 2024)

The data was exported from the online IAP into R and then the indicators selected and imported into QGIS, where the maps with the filter on the mountain area was created with Eurostat shapefiles and represented into the final results.

2.2 Results of the 2050 model

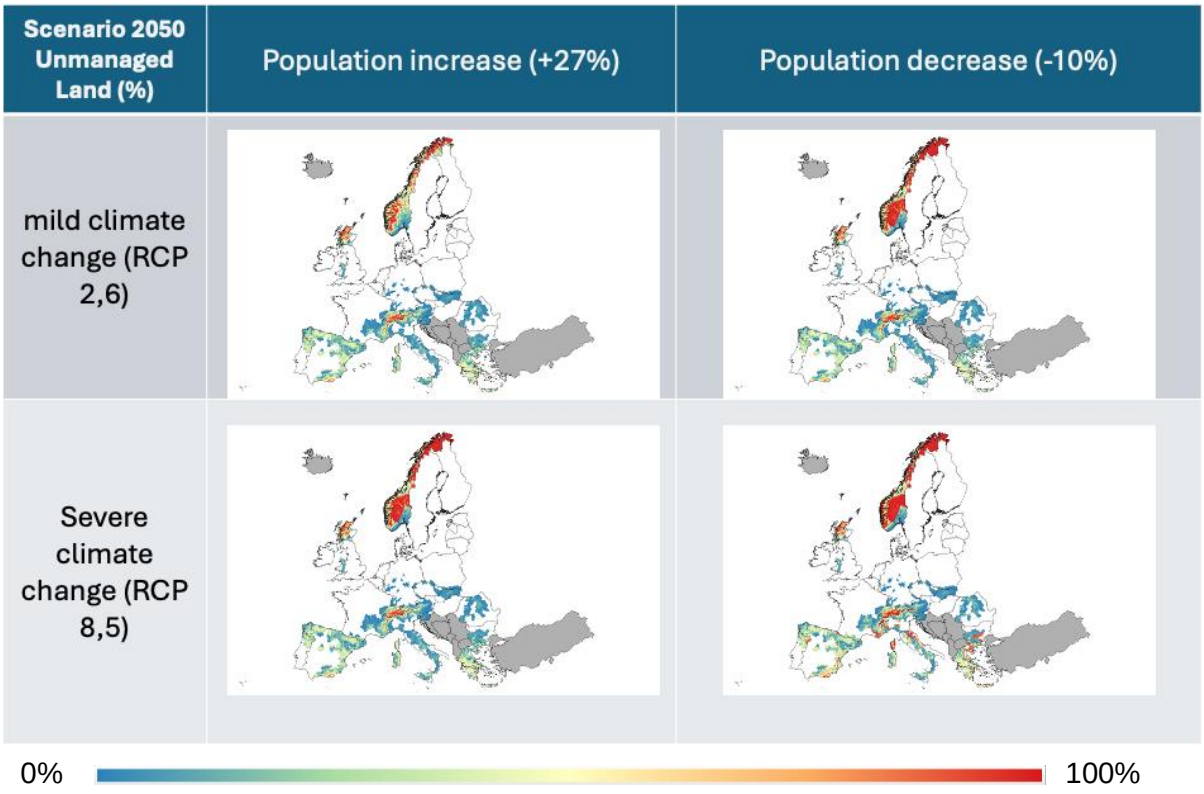
2.2.1 Land Use Changes

First, the results for the IAP output of “unmanaged land” in percentage of area per cell are presented on a map of Europe filtered for the mountain regions according to Eurostat. Important to remember is that unmanaged land is not including forest. We present first the baseline (calculated from the model as well) and then a map for each scenario A-D for 2050.



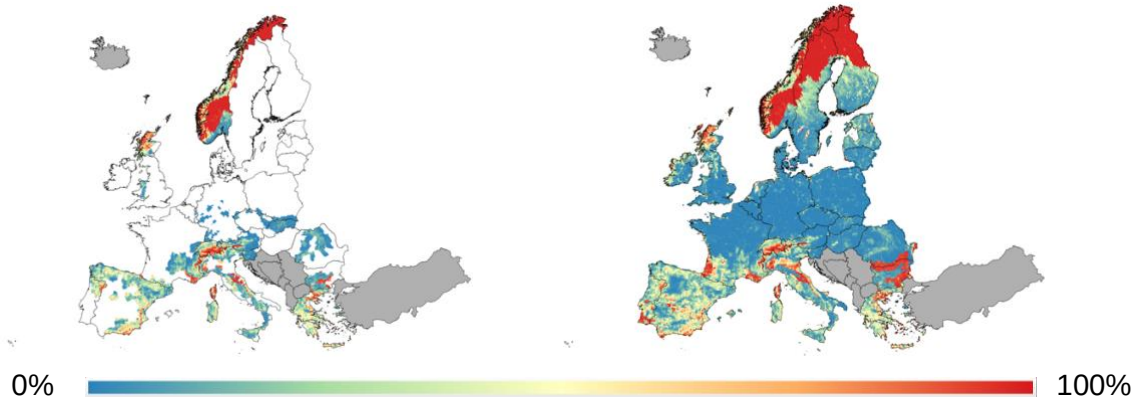
Map 2: Proportion of unmanaged land in each cell for the Baseline for the mountain NUTS3 (left) and the whole of Europe (right)

The Baseline Map 2 above shows a lot of unmanaged land in the North of Europe, in the Alps, especially Switzerland, and in South Spain. There is also around 50% unmanaged land in some parts of Greece and Spain. The rest of mountains seem to not present the conditions (as assumed by the model) for unmanaged land, or very little. The Map 3 for the four 2050 scenarios can be looked at as possible evolutions from this baseline.



Map 3: Proportion of unmanaged land in each cell for each 2050 scenario.

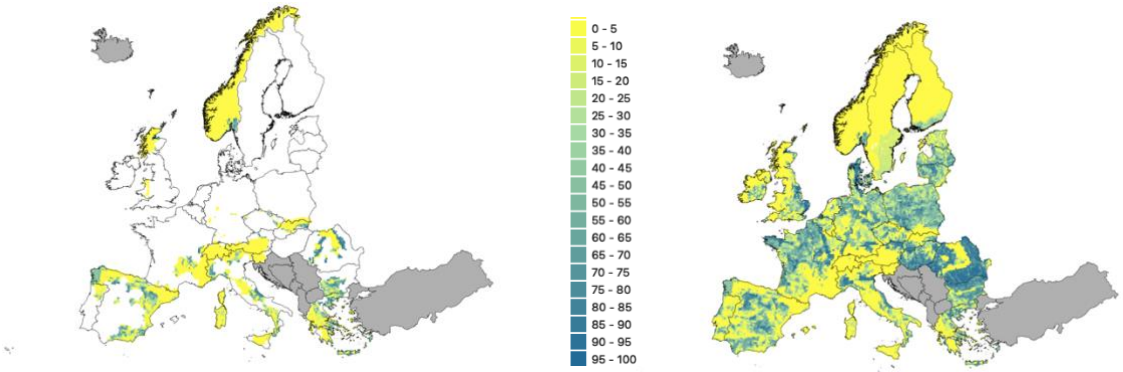
The four 2050 maps show a similar overall pattern than the baseline. Scenario A depicts almost the same situation as baseline, with just a little bit less unmanaged land in the north. Scenario B is the same as A except there is much more abandoned land in Norway and a little bit more in the Alps. Scenario C is again almost the same as B but unmanaged land slightly moves from the Alps to Italy and Greece (barely perceptible on maps). For scenario D however, changes are much more visible. Unmanaged land increases again in Norway but especially also around the Mediterranean and the first red areas appear as well in Spain, France (Corsica), Italy, Bulgaria and Greece. The red area of the Alps remains the same.
The Map 4 below also contrasts the scenario D for the whole of Europe and mountain areas in comparison.



Map 4 : Proportion of unmanaged land in each cell for scenario D for the mountain NUTS3 (left) and the whole of Europe (right)

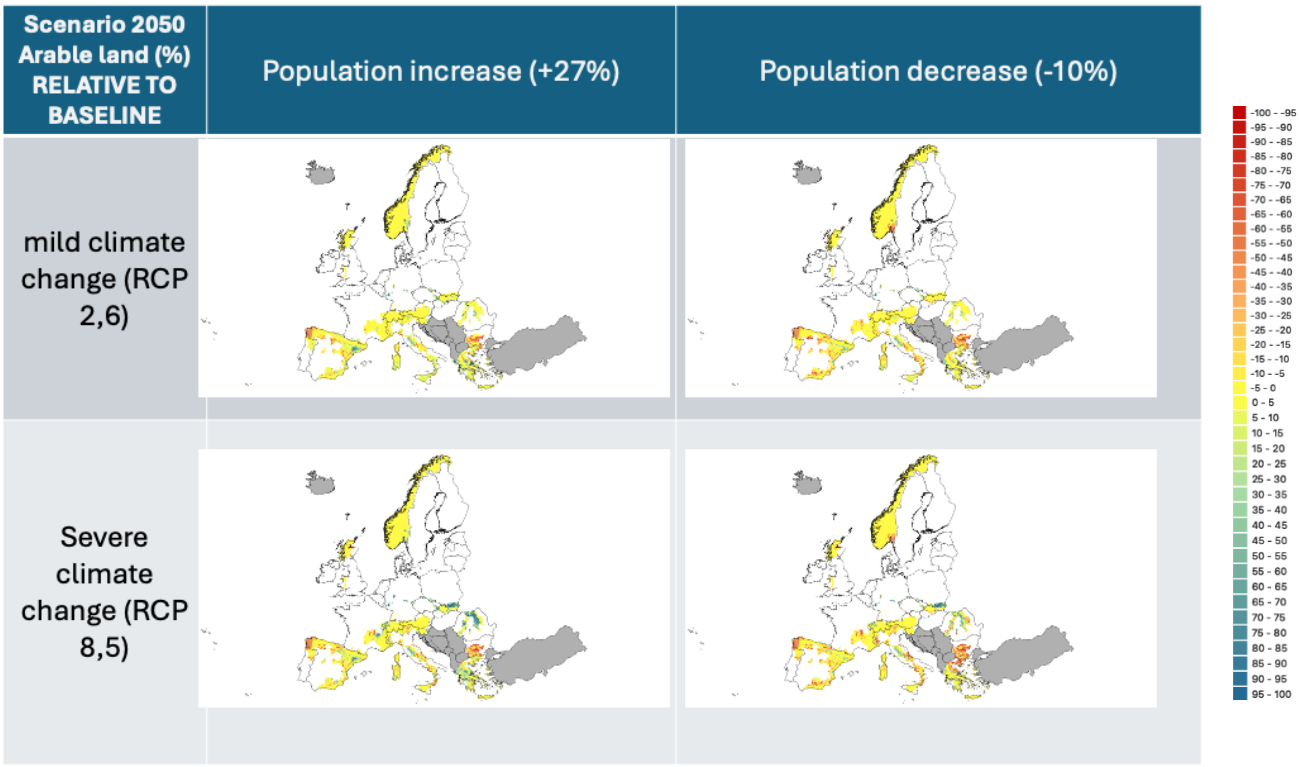
To contrast the potential progression of unmanaged land, we also mapped the changes in arable land (as proportion in each cell).

First, we present the baseline of the proportion of arable land as calculated by the model, with yellow representing low proportions and blue high proportions.



Map 5: Baseline for the proposition of arable land for the mountain NUTS3 (left) and the whole of Europe (right)

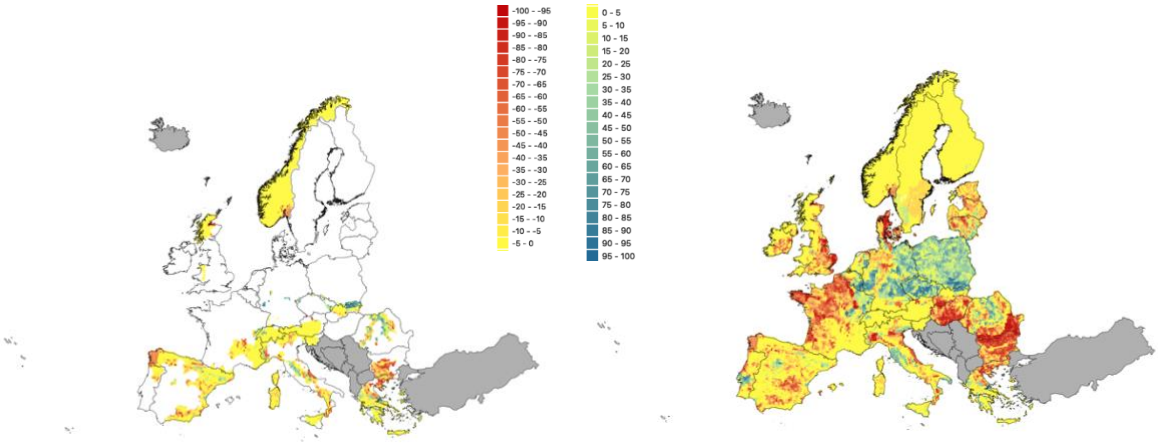
The Map 6 below is depicting not the actual calculated proportion of arable land in 2050 but the changes in relation to the baseline. This way changes can be seen more clearly. Red areas are where arable land is likely to decrease and blue where it would make sense to increase. The yellow area is where change is minimal and in the most part where there was no arable land to start with.



Map 6: Relative changes of the proportion of arable land in the 2050 scenarios compared to the baseline.

There are areas that seem to experience a decrease of arable land in any scenario, like many areas of Spain (except the north-east), Bulgaria, Corsica and some parts of Italy and France. Even with severe climate change and large population increase (scenario C), it does not seem reasonable to start turning the Alps into arable land, as shown by the model (but meat demand per capita has decreased). There are relatively few areas where an increase of arable land in the mountain zone seems indicated. The most appear in scenario C and are situated in the Carpathians (Romania, Slovakia, Czechia), in Greece, in the western end of the Alps and north-east Spain. In the Northern, most part, arable land could increase at the Norwegian Swedish border but seems to make sense only in the case of large population increase (left side).

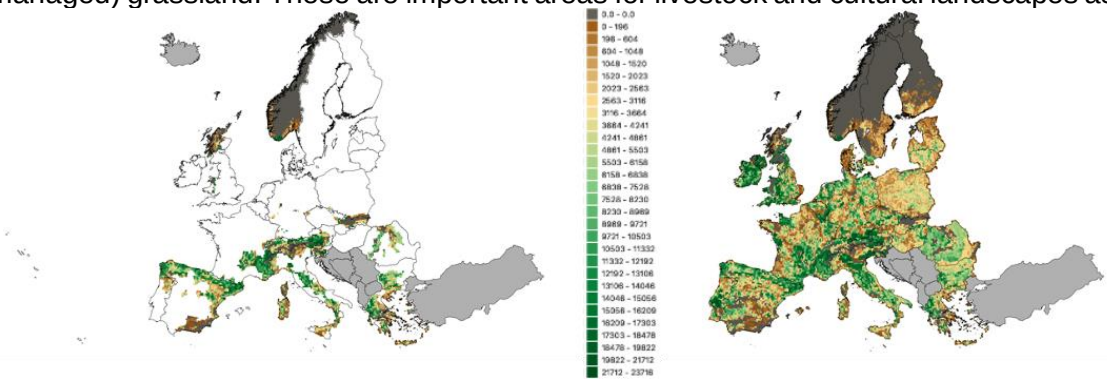
Playing with the IAP online, it was not possible to find a scenario where the Alps would be transformed into cropland, even in the SSP5 scenario, with large population increase and meat demand increase.



Map 7: Proportion of arable land in each cell for scenario D for the mountain NUTS3 (left) and the whole of Europe (right), same legend as before.

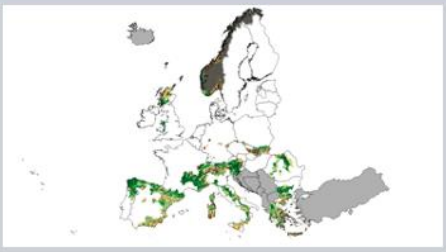
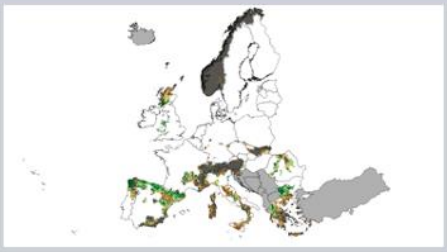
2.2.2 Agricultural Outputs

The model delivers many indicators on agricultural outputs in terms of potential yields and areas per cell. We present here the modelled area of grassland, as combined areas of grass, extensive and permanent grass, which are especially important for mountains and for Europe. The baseline map shows that most of mountains and the continent present very large area for (managed) grassland. These are important areas for livestock and cultural landscapes as well.



Map 8: Size of the area of grass (ha) within each cell for the mountain zone (left) and for the whole of Europe in the model (right).

The cells without any (managed) grass (0 ha) are represented in dark grey and we see that there aren't many cells except in northern Scandinavia, which is the same area we saw as largely unmanaged land in Map 8 above. This is conformed with the current image of mountains being occupied a lot by large pastures.

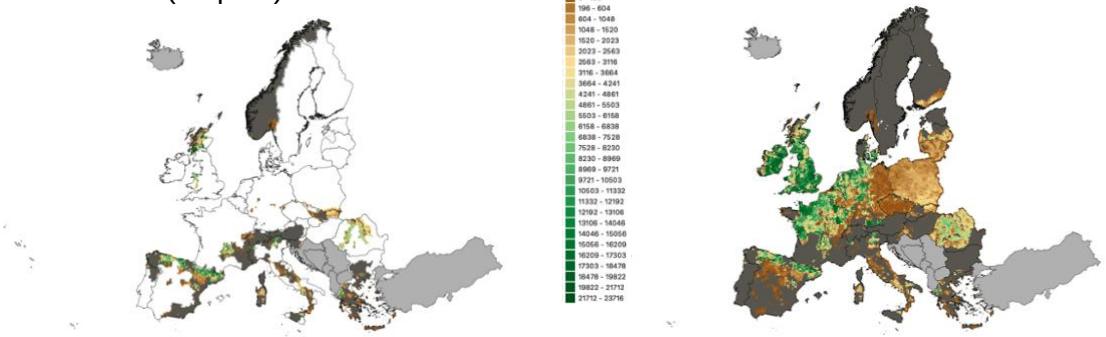
Scenario 2050 Total Grass (ha)	Population increase (+27%)	Population decrease (-10%)
mild climate change (RCP 2,6)		
Severe climate change (RCP 8,5)		

Map 9: Area of grass (ha) in each cell under the four 2050-scenarios

When looking at the potential evolution of grass areas for 2050, it seems that large areas could completely loose this (managed) grassland. Especially in case of population decrease (right side), large areas become dark grey (no grassland at all). If we compare with Map 3 (unmanaged land), these areas do not necessarily become abandoned grassland. At this point we don't know exactly what happens with them.

In case of population increase (left side), more grassland remains, everywhere like in the baseline for scenario A. For scenario C, grassland remains in the Alps and Northern Spain, but the rest of mountain grassland still seem dramatically negatively impacted as there would be a sever climate change in scenario C.

We also depict scenario C and D for the whole of Europe for comparison of what might happen in the lowland (Map 10).



Map 10: Grass (ha) in each cell for scenario D for the mountain NUTS3 (left) and the whole of Europe (right)

2.2.3 Biodiversity impact

Similarly, the impact of different scenarios of climate change and population growth are mapped in the figures below. For this, the output of the IAP for “Number species present” are mapped per cell as for the baseline and then in 2050 for the four scenarios. The results thus do not depict the absolute state of biodiversity or biodiversity production or vulnerability in 2050. The colors show how 12 key species may potentially extend or reduce their presence in each cell, depending on the modelled habitat.

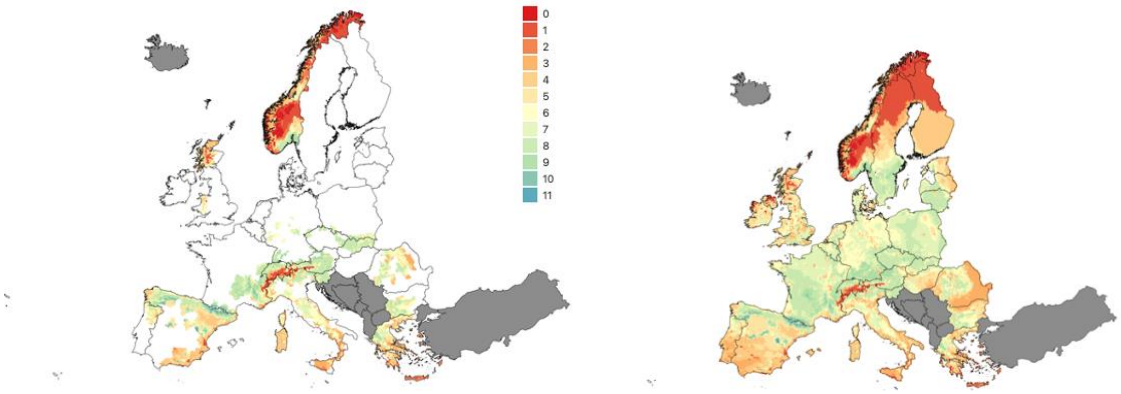
In all these scenarios, the “set-aside” of agricultural land for biodiversity protection is at 4% and is not changed across the scenarios used for modelling.

There are no cells where all 12 species are present, hence why the scale only goes up to 11.

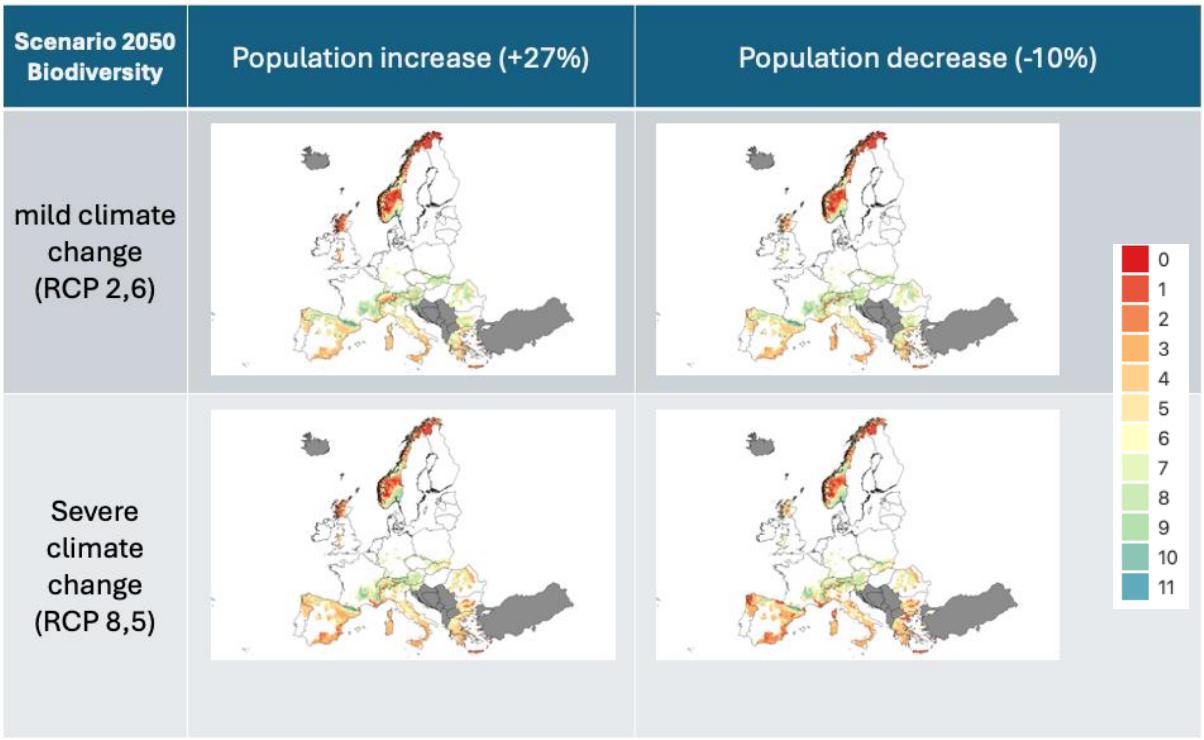
The Baseline shows large differences between regions to start with. These differences are mostly due to geo-climatic and land use differences. One already spots Norway and the Alps as not the best habitats (for these species). There is still a green zone in the middle and more of an orange zone around the Mediterranean.

When looking at the 4 maps resulting from the model runs for 2050, it appears that this general pattern remains mostly the same in all scenarios.

The “best” case for biodiversity, where the green cells increase the most is scenario B (mild climate change and population decrease) and the “worst” is scenario D (severe climate change and population decrease) where many more red cells appear, especially around the Mediterranean. The darkest orange appears in the north and south of Spain, Corsica, and Bulgaria to Greece. Interestingly, for Northern regions only (Scotland and Norway), scenario A (mild climate change and population increase) seems to be the worst.

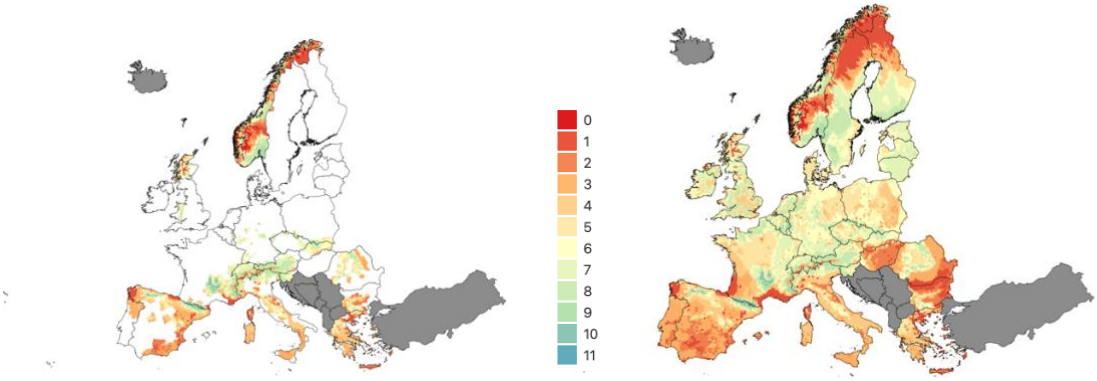


Map 11: Number of species present of the mixed group of representative species in the baseline model for the mountain NUTS3 (left) and the whole of Europe (right)



Map 12: Scenarios effects on Biodiversity per cell (in number of species present in 2050)

Finally, the variations in scenario D are also presented below for both the mountain regions and the whole of Europe.



Map 13: Biodiversity in number of species present (from 12) in each cell for scenario D for the mountain NUTS3 (left) and the whole of Europe (right).

2.3 Preliminary Discussion from the modelling

One of the most worrying results is the emergence of a large grey zone in the grassland maps, which shows also, to a lesser extend in the map of unmanaged land and decrease of arable land for scenario D especially. This zone covers the entire and largest alpine arc but is actually much larger than just the Alps. Dunford et al. (2015) also noted this zone in terms of food

security vulnerability in their WRW scenario (=SSP1) "… *little to no food is produced in Norway and a belt from southern France across the Alps to Hungary and, thus, there are more cells classified as being not self-sufficient in terms of food provision, and thus vulnerable.*" They also note that this result appears with most climate scenarios and also with SSP4 and 5. This contradicts lightly with our results, where in scenario C (with population increase), unmanaged land and abandonment of grassland seem much less acute. A hypothesis to confirm could be that if needed to feed the population, food production would actually still take place in these areas, including also livestock, even in a world where people eat less meat. But what the model does in scenario D, is that other areas are more suitable and better able to produce all the calories needed so that no additional grassland would be needed. There is a hierarchy of cells in the model in their "priority" to receive the food production function according to their suitability. However, there are aspects that the model does not take into account, such as trade within cells, the prices and quality schemes of the production or the subsidies, or that grassland might be prioritized for other purposes.

Two conclusions can still be tentatively drawn.

First, is that cells that combine grassland in grey and inexistant or decreasing arable areas are vulnerable to food insecurity. A quick test of the overlap of the maps on grassland and arable land shows that in scenario D, all the grey area in the first correspond also to areas with no arable land at all. They might become very vulnerable to declining local food availability and food insecurity, especially if they contain cities that need to feed a large population that can't rely on local land for food production. Dunford et al. (2015) wrote that in this case "*urban areas will always be dependent on food producing areas, and those with low levels of available capital will be most vulnerable*." We identify that mountain areas might be in the same situation as urban areas and depend on availability of capital to allow trade in of food, although mountain areas typically have less capital available than cities, making this even more critical.

And this brings us to the second conclusion: land use and management in the mountains might thrive but not for the purpose of calories production. Food production is already nowadays not necessarily profitable in the mountains, as we see it clearly from the model output already from a pure material perspective, and considering that it is under competitive disadvantage and heavily subsidized. But it also appears that not managing the land can be detrimental to sustainability indicators like biodiversity as was briefly tested here. This congruent with other research, which show the impact of lack of land management based on a SES conceptual perspective, a piecewise structural equation modeling and a network analysis to assess the interaction between water resources, biodiversity, and the social and economic elements of the system (Zango-Paulo, 2024). Other indicators might bring more evidence towards this but also many authors have highlighted that biodiversity or carbon sequestration are the most supported in extensively managed land use forms although regional and altitudinal differences are important (Plieninger et al. 2014; Sartorello et al. 2020; Török et al. 2016). These land use systems should thus be pursued for other goals than food production or concerted plans could be thought of for rewilding, reforesting, etc, while considering the local population and risks for food security. Food exports outside of Europe should also be considered with more attention in how they impact the incentives for land use for food production. These concerted efforts would need the appropriate policy frameworks and support to work despite the strong drivers towards "unmanagement".
The driver to be the most worried about, in what we tested, and in line with what Dunford et al. (2015) found is likely not climate change. They noted that for food security "there is little difference between the high and moderate climate scenarios" and that "the differences identified are driven by the extra stress put on the system by climate change: where there is

greater stress, such as in the hotter, drier … scenario the vulnerability to food provision is projected to be less because food is being grown wherever possible, at the expense of other sectors". This highlights the power of putting priority of land use for food production or not. We noticed in our map that varying demography, and thus demand seemed to have the higher impact. We also suspect that the decreased demand for meat in SSP1 played a substantial role in the results, although we would need to test this further.

Still, climate change scenarios do play a major role in other impacts. Dunford et al. (2015) found that "the Biodiversity Index is one of the most climatically sensitive indices: moderate climate scenarios show considerably less "vulnerability" than their high-end counterparts, irrespective of socio-economic scenario". The efforts to mitigate climate change are equally crucial for food security, even more when considering long-term negative impact of biodiversity loss for food production.

This modeling shades light about the long-term consequences of the forces that have been identified as the major one in 9 cases (Climate Change) and 6 cases (Demographic trend) out of the 22 case studies (see Table 3 in section 4 below). Beyond this participatory foresight, the DL3.2 and DL4.5 highlighted the major concern related to climate change as a major factor of vulnerability impacting the resilience of the value chains. The modeling part enriches the long-term perspectives on several dimensions based on scenarios that have been selected according to the results of the participatory foresight (below). Taking the outputs of the modeling, the policy recommendations (see section 8 below) have been consolidated and emphases the need to engage in radical changes and in consistent support to adapt the mountains both to the climate change and the demographic challenges.

3 Methodological approach of the local foresights

As highlighted by some authors (Barnett, J. et S. O'Neill, 2010; Magnan A., 2013), maladaptation to climate change is a risk, not only related to some genetic adaptation of the local species but as well to human decisions that may complicate instead of preventing or remediating to the negative impacts. This is a reason to embark the Mountain Communities in a participatory foresight exercise. We did give the local agents an occasion to share their views about the future of their mountain region, based on a common methodological approach, coached by a research team that has analyzed the local geographic context and a precise value chain from many perspectives. This is as well an approach that was inspired by the presentation done at the International Mountain Conference in September 2022 in Innsbruck, by Anna Zango Palau & al, about "Integrating local mental frameworks and global development pathways into decision making: developing a protocol for adaptation in local mountains". The authors show how the lack of a common understanding and join vision about the pathways to address the current challenges may bring the communities to take decision that are taken at global or national scale and does not always align to local context. They show as well that some actions taken at local levels are differently appreciated by groups of diverging interest, who do not easily reach an agreement about what action should fit to global and local contexts.
Our approach takes the point of view that preventing maladaptation largely depends on not repeating past mistakes in land use planning and managing natural risks such as hazards. This suggests that those involved already have practical experience to start adapting and partially address uncertainties about the effects of climate change. This experience at local level is hard to decide, as local and global actions may differ, but certain global messages may be taken up by local actors that have private interest linked to them. Therefore, reaching

the same understanding of local context and envisaging to get a consensus about the relevant strategic options is crucial for the future of the mountain and their communities.

In MOVING foresight, local research teams did explore, anticipate, and shape the future to help building and using collective intelligence in a structured, and systemic way to anticipate developments (European Commission webpage accessed on Dec 2, 2023). Scenarios are applied at many different scales to resolve specific issues.
Scenarios and strategic foresight are descriptions of plausible, possible and/or preferable futures (European Commission webpage, accessed on Dec 2, 2023). A scenario study is an approach aimed at bringing strategic and innovative thinking by way of writing scenarios.
The dynamic of the socio-ecological system (SES) and the way the SES is building resilience is impacting sustainability at each level of its three dimensions: economy, society, and natural resources. In fact, the transformation of natural resources into commercial products is carried out through techniques which have a mediating function between social systems and agroecosystems (Moretti & al, 2023). This is particularly sensitive in mountain areas where production costs are an ever-present issue. Mountain agroecosystems are generally not designed to ensure maximum performance, with a significant gap between them and the plains.
Despite being focused on a relatively large scale, the currently dominant climate scenarios may be useful to apply on a smaller scale as well to assess the potential responses to future climate crisis. However, the enabling nature of such a 'top-down' approach for local communities is debated (Ensor & Berger, 2009; Shaw et al., 2009).
In WP3 climate vulnerability analysis were conducted for all the 23 case studies regions, and the local foresight exercise are built upon them, with a time scale being the short-term. This difference in the time scale makes has great importance when reflecting on the results.
The modelling presented in the section 2 was not before the local foresight exercises. This was a choice based on the complexity of the platform that we had selected before the start of MOVING project. Indeed, the number of possibilities that exist to run the model would have overloaded the local groups with the outputs, in a way that was not targeting their major concerns. The model was run based on the outputs of the local foresights and shade light onto the specific aspects that matter for the future of the mountains.
Taking this into account, our 22 local Foresight Exercices (FEs) did start with the creation of scenarios at the local level, rooted in the concerns, aspirations, and goals of local communities (Wardekker et al., 2020). Such a 'bottom-up' approach can in turn lead to new ideas about what kind of policies and, moreover, social-ecological interactions, might be relevant to foster resilience strategies for rural communities.
The time horizon influences what elements are included in the foresight. A time frame up to around 25 years ahead enables participants to zoom in on concrete adaptation actions that lead to more resilience (Notten et al., 2003). This time frame is also important for participatory exercises with a knowledge and capacity building goal as to focus on the question of what climate information or any support would be needed, and when.
The participatory foresight has clear medium/long time perspective: the MOVING **time horizon is set at 2050**, a period for which climate forecasts are available in the IPCC reports (the latest was published in August 2022: https://www.ipcc.ch/report/ar6/wg1/#SPM).
The geographical scope is defined according to the most relevant scale for thinking about the future of the Value Chain and its reference landscape, and more broadly, its reference region, as the Value Chain's socio-ecological system (SES) is in the Mountain Reference Region (MRR). In the light of these guidelines, future thinking requires a focus on the local level to make output relevant for citizens and policymakers (Notten et al, 2003; Crawford, 2019). There are several entry points for starting the Foresight Exercise (FE): one is the "Value Chain (VC) perspective" for the purpose of differentiating the farming/forestry systems and their

incidences on resilience and sustainability. But other entry points must be considered as well because they reflect the local dynamics and challenges in the reference region (for example: other value chains that make use of the land, tourism activities, industry, conservation area, etc.). At the same time, global and national scenarios play a role as context material to assess local visions and their implementation's pathways.
Therefore, the geographical scope may also be broader than the Mountain Reference Landscape (MRL) and cover up to the Mountain Reference Region (MRR**)**. Inputs from experts and policy makers at national level have been taken in the foresight exercises, to link the VC and its MRL to the MRR but also to the national policy context. In addition, there was some flexibility for RTs to adapt the final choice of the geographical scope of their foresight to a wider or narrower area than the MRL, if there were a logic behind. In fact, the final decision on geographical scope should answer the ultimate question guiding the FE in the 22 case studies: "*What are the key factors we would like to know about the future to improve the quality of our decisions?*" and turn around the expected output, which is a strategic policy options repertoire. The focus therefore was on placing the community in the driver's seat: *"what does the community want and how can they make it happen?"*
The role of the Research Team (RT) composed by 2 or more researchers from the MOVING consortium was to design, implement and report on the FE in the region. In principle, the RT were MOVING partners employees. The main responsibility of the team focal point was to communicate with the MOVING WP6 team (Origin for Sustainability) and to participate in all 9 training sessions. The purpose of these trainings was to take stock and discuss any outstanding issues. Outside of these meetings, the WP6 team was fully available to answer any questions that were urgent and would have blocked the progress of the work.
Foresight groups (FG) have been created to carry out the exercise. This group was very important, because these people have been participating in 3 three participatory workshops to define the scenarios. Regional stakeholders in the 22 reference regions have been involved in the regional Multi-Actor Platforms (MAPs) and interacted online and in face-to-face workshops to contribute to appraisal, assessment, and foresight activities. The participants to the FG included farmers and producers downstream in the VCs, business providers, people involved in different stages of the VC, not only in the region, but also outside, policy makers and representatives of the public authorities at local, regional, and national levels, experts and youngsters and women, from nearby areas interested in the future of rural areas. The FG were groups of **8 to 12 participants** who took part in the workshops (most of them in all workshops, and a few of them only to some workshops, because being less available but marked as important and influent). The important thing is that these people were actively involved and that collectively their projects, interest, individual anticipation and skills contribute to elaborate a common vision for **2050**.

4 From case studies to archetypes

4.1 Synthesis from the case studies

4.1.1 Baseline scenario

The baseline scenarios presented below depict the potential future trajectories of various agricultural and rural sectors by the year 2050. There are built considering that the current trends remain unchanged. Overall, these scenarios underscore the multifaceted challenges facing agricultural and rural communities, including environmental, social, economic, and political factors.

Most of the cases have highlighted the climate and the economic drivers as shaping their future the most. Note as well that, after prioritization and the second workshop, the drivers highlighted below during the preparatory work done by each research team, have not all been finally chosen as long-term forces for constructing the final scenarios.

Summary of most important long-term forces per case study regions:

1. Drôme Valley Sheep Value Chain:
   - Decline in export market competitiveness due to lower production costs in neighboring countries.
   - Climate change impacts, such as reduced pasture availability, threaten sheep farm yields and farmers' income.
   - Aging farmers struggle to pass on knowledge to the next generation.
   - Public policies fail to modernize the industry, leading to the disappearance of small farms.
4. Sjenica Lamb Value Chain:
   - Lack of organized advocacy for producers' interests and unpredictability in subsidy support.
   - Climate and weather conditions strain overall productivity, affecting fodder and meat quality.
   - Decline in rural population and lack of policy support lead to challenges in market visibility and distribution.
2. Trends in Agriculture and Viticulture Development in Eastern Alps (Trento):
   - Water scarcity risks competition between viticulture and other sectors.
   - Decrease in small farms, replaced by large private companies dominating wine production.
   - Climate change affects vineyards, leading to increased production costs and changing wine characteristics.
   - Decreased attractiveness of the sector for young people due to non-competitive remuneration and declining wine consumption.
3. Agriculture and Viticulture Development in Spanish Pyrenees (Ayerbe y Loarre):
   - Decrease in small farms, with large investment companies dominating wine production.
   - Climate change impacts vineyards, increasing production costs and water scarcity risks.
   - Decrease in young farmers due to difficult working conditions and economic challenges.
4. Cheese Value Chains (3 value chains):
   - Increased cheese prices for consumers, with sales primarily through supermarket chains.
   - Concentration in all stages of the cheese value chain, with fewer small-scale producers.
   - Weakened connection to the territory among residents, leading to environmental challenges.
   - Lack of coordinated efforts in agriculture, grazing, forestry, and tourism.
5. Betic Mountain Ranges Olive Oil Production:
   - Aging population and abandonment of traditional olive groves lead to a decline in production.
   - Environmental challenges like drought, erosion, and forest fires threaten olive production.
   - Economic decline, with tourism as the main source of employment.

6. Iberian Ham Production in Sierra Morena:
   - Environmental challenges such as climate change impact acorn production and tree health.
   - Aging population and lack of generational replacement lead to farm disappearances.
   - Economic challenges due to bureaucracy, regulations, and market competition.
   - Opportunities lie in technological advancements, consumer education, and policy recognition of public goods provided by the dehesa.
8. Tomato Production in Elmali District of Antalya:
   - Increased greenhouse farming leads to environmental problems, cost increases, and income losses for farmers.
   - Drought, water scarcity, and overuse of resources threaten sustainable production.
   - Decreasing tendency of young people to engage in agriculture and difficulties in recruiting labor.
9. Whisky Production in Scotland:
   - Climate change impacts reduce water flow and availability for distilleries.
   - Outward migration of workforce-age population leads to staffing shortages and reduced tourism.
   - Economic uncertainty and policy changes affect visitor numbers, investment, and sales.

In other cases, the scenarios are not underlining the economic factors as primary, and some regions maybe grouped around similar value chains:

10. Changes in Crete's Agricultural Landscape:
    - Demographic decline, extreme weather, urbanization, and tourism weaken the primary sector.
    - Subsidy regimes render farmers dependent, while traditional farming practices and knowledge decline.
11. Sumava Region:
    - Scarcer land for agriculture due to tourist pressure and nature conservation.
    - Extensive agriculture model with low added value due to hindrance from inhabitants and urban tourists.
    - Farm economics reliant on subsidy policy changes, with challenges in attracting qualified employees.
12. Maleshevski Region in N. Macedonia:
    - Migration and disinterest of youth in agriculture and rural tourism due to low incomes and investments.
    - Climate change impacts and ineffective implementation of laws affecting natural resources.
    - Threat to local brand due to counterfeit products and weakened tourism offer.
13: Canton of Grisons in CH:
    - Aging population and emigration of young people, resulting in a shortage of skilled labor.
    - Few jobs available, with a trend towards luxury residential areas and declining agricultural sector.
    - Centralization of farming and processing, with a focus on efficiency rather than local added value.
14. Impact of Climate Change on Beekeeping (1 value chain):
    - Irreversible changes in natural processes affecting fauna, flora, and honeybee life cycle.

- Diminishing forage areas reduce honey production, while societal barriers hinder solutions to beekeeping issues.

15. Challenges in Chestnut Farming (2 value chains):
    - Rising temperatures, drought, and extreme weather degrade chestnut groves, decrease chestnut yields, and increase instability in agriculture.
    - Public policies inadequately support chestnut farming, leading to production decline and land tenure disorder.

4.1.2 Long-term forces

The two axes chosen to construct the scenario are two of the long-term forces that have been selected by the research teams then refined and validated foresight groups. The selected LT forces must correspond to be of "high impact, high uncertainty" on the future of the MRR beyond being impactful on the selected the value chain. This choice ensures that the parameters of the four spaces defined by their intersection are clearly differentiated.

These axes may be the same as the drivers identified in Task 4.5, but in fact, this was not always the case. WP4.5 drivers were identified with a short-term perspective. Short-term mean that the stakeholders may give priority drivers that will have direct short-term consequences for getting more subsidies for investments (such as for irrigation or water storage) that mitigate the risks instead of accompanying deeper changes. On the contrary, the idea of the FE is to address long-term and sustainable trends (with horizon 2050 in mind), which may have less short-term priority in the eyes of local stakeholders. This discussion is very important, as we are aware about the possible conflicts of perception on what is fitting the most the local context, opposed to what is identified as global level as measures and intervention that suit the most of regions. This choice of intervention emphasized by upper levels (regional, national, European) policies that do not suit local context may lead to maladaptation (see section 3), and the long-term perspective may be preventive of those local opportunistic decision-making processes that may lead to maladaptation outcomes.

These quadrants formed by the selected axes may then be developed into scenario narratives, reflecting the influence of previously identified events, trends, and drivers of change, in addition to those already represented on the two axes.

This selection process should care about the relevance and accuracy of each axis. The consistency between the 22 case studies should be as high as possible. Therefore, the WP6-team has discussed it with each local RT in a bilateral way.

Across the value chains, the RT and the FG identified the following long-term forces.

In the Table 3 below, the long-term forces have been reported. Four main long-term forces emerge from the 22 case studies. Interestingly, these four are congruent with recent scientific publication, which flags climate, demography and tourism as drivers that influence the economic development pathways in the Pyrenees Mountains (Zango-Palau et al., 2024).

Climate change

In the mountains, climate change is leading to a major need for heavy infrastructure and equipment to combat natural disasters. The stakeholders most affected are farmers, foresters, winter tourism and hydropower, while other stakeholders are not yet very concerned. Natural resources are the most directly threatened by CC. In the mountains, there are contrasting effects between dry and wet mountains. Mountains are often a major source of precipitation because they are cooler due to glaciers, altitude, and wood cover - Dams anticipating the level of precipitation expected in 2050 - Systemic effects of investments on other natural resources (biodiversity).

Demography

In the mountains, the historical trend is towards decline, which may worsen further, and which local players link to the risk of desertification (with abandonment of land), and some regions which are in demographic balance, rarely growing, and, when this is the case, it is mainly due to tourism. The risk of demographic decline implies the risk of the disappearance of a certain number of services (schools, dispensaries, local shops, post offices, social outlets such as village pubs). Mountain areas are both attractive (natural setting, landscape, authenticity, cool climate) and sometimes unlivable (medical deserts).

Market / Economy

This long-term force is very important, as it is the main force for any mountain product to get a reward on the markets, allowing the producers (being farmers and the other actors up-stream and down-stream in its value chain) to sustain and economically sound business-driven activity, independently from the public support. This market linkage must deal with the specific origin and reputation linked to this origin. The sourcing by local raw materials (as it is in the product that benefit from the EU regulation Nr. 1151/2012 on quality schemes for agricultural products and foodstuffs) for Protected Designation of Origin and the MOUNTAIN quality sign) is crucial, as it impacts the price paid for their raw agricultural product to the farmers. In certain cases, the raw agricultural materials maybe sourced outside the region (this is the case for the food which is protected by the EU regulation for Protected Geographical Indication, or without any EU regulation but branded by a quality mark) but the food benefits from the reputation and the down-stream actors may get an economic reward. The access to markets plays a crucial role as well in the economic balance for the producers: local markets are accessible at low-cost for marketing and transport but very competitive on prices due to high competition among the producers. At the other end, export markets are more expensive to reach (trade, marketing, packaging, longer storage, transport, more intermediaries to reach the final consumers), but may give a better price due to less competition. Many values, like links to historical heritage, identity, and cultural values, emphasized if there is a strong touristic activity in the region, are incorporated to the final price to consumers. At the same time, there are some consumption localization trends because of the sense of community that is maintained around the food and how to prepare it, that plays important sense of belonging of the local inhabitants to their community. The “premium price” effect depends strongly on the rarity of the product. In the Mountains, the availability of farmland to feed the local population or to feed livestock may become an issue, in case of very high success for a well-known local product. Side and negative impacts of the economic success led to high level of specialization (e.g. export cheeses, whisky, wines, high-quality meats, specialized orchards) with some major limitations to the agronomic potential of the mountains.

Tourism

Touristic sector is a strong marker of the mountain identity, with major uncertainties, like the induced effects on agriculture and land use. The way of which tourism develops (luxury vs. mass or "soft", "sustainable") takes charge of a tourism development strategy. Currently, winter tourism is highly impacted by climate change but also technological changes and the impact of social networks (quota and regulation issues, entry, and tourist taxes). Accessibility and sustainability of these activities becomes an issue in many some frequented places (with overload of roads and parking especially where the tourism is inserted in large scale network mobility). Tourism puts a strain on natural resources, even though the grandiose character of the countryside and nature (biodiversity, air and water quality, landscapes) attracts tourists.

Table 3 : Long-term forces for the 22 case studies

Nr	Archetype	Case	Natural environnement and resources	Social and Policy	Economic context
5	Economy	Drome	*Climate change*		*Socio- economic context*
9	Economy	Trento - Eastern Alps	*Water availability*	*Demographic trend in wine (decrease in working population)*	
12	Economy	Cordilhera central		*Connection Cheese-Mountain Territory*	*Willigness to pay for Ecossystem Services*
13	Economy	Maciço Noroeste	*Water availability (there is water but the conflict for other uses is very likely)*	*Demographic change (depopulation and aging)*	
15	Economy	Dinaric mountains	*Climate change*		*Market Trends*
17	Economy	Betic Systems		*Public policies (absence, presence)*	*Market (globalized VS distributed , decentralized)*
18	Economy	Sierra Morena		*Rural landscape trends*	*Changes in market models (corporative or traditional)*
19	Economy	Spanish Pyrenees		*Loss of active population in wine growing vs. increase in active population in wine growing*	*Economic context (favourable vs. unfavourable)*
21	Economy	Swiss Jura	*Climate change*		*Socio-economic Context (supportive or declining)*
22	Economy	Beydaglari	*Climate change*		*Economic Conditions (favourable or unfavourable)*
23	Economy	Highlands and Islands		*Societal attitudes*	*Market Globalisation*
7	Knowledge&Innovation	Transdunabian Mountains		*Alternative Knowledge Economy Vs Sustainable knowledge Economy functioning level*	
8	Knowledge&Innovation	c. Appennins		*Technological innovation*	*Prices trends*
1	Nature	Austrian alps	*Climate change*	*Political support and policies*	
3	Nature	Sumava		*Role of the state VS Tourism industry*	
16	Nature	Slovak carpathians mountains	*Climate change (mild vs. extreme)*	*Biodiversity (Health of bees - weak or strong)*	
4	Niche / Nature	Corsica	*State of chestnut groves/orchards*		*Chesnut value chain Organisation*
6	Niche / Nature	Crete		*Value system (globalisation vs preservation of cultural heritage)*	*Economic growth*
10	Niche / Nature	N. Appenins		*Demographic trends (new population/rural exodus)*	*Chestnut groves maintenance (recovery/abandonment)*
11	Niche & Diversification	Maleshevski Mountains	*Vulnerability to climate change*	*Quality of tourism offer*	
14	Niche & Diversification	S. Romanian Carpathian		*Socio-demographic trends (out-migration and ageing population).*	*Increasing demand for land for building development*
20	Niche & Diversification	Swiss Alps		*Societal responsibility (acts responsible or egotistic)* *Direction of the agricultural policies (focus on productivity versus resource conservation)*	

4.1.3 Key-variables

The key-variables are essential for the future of mountains. We define key-variables as factors that are possible to influence by the policies, the local actors, and their initiatives. This is the core difference with our definition of the long-term forces, which the stakeholders may hardly influence their trend and stop them. Impacts of the long-term forces may still be mitigated, reduced, or neutralized by the activation of the key-variables. Variables can affect the impact of LTFs. The ability to anticipate and prepare for, or adapt to, these LFTs, making it possible to "live with" them without being able to "act on" them. These two major modes ("acting on" and "living with") are to be referred to the great visions of efficiency (Jullien 2022).

This activation of some of those factors are real determinant of the long-term performance of value chains and have huge effect on their reference regions. **Indeed, activating a key variable is possible, when local stakeholders mobilize their own capacities for**

innovation to act directly and try to adapt to the long-term forces, and reduce their negative impacts. We have excluded any kind of policies from the long-term forces, contrary to certain research teams, as we have flagged them as enabling the local communities to act to counter the effects of long-term forces on key-variables. As for more arguments in the consideration of policies in the strategy building of the local stakeholders, in the case study reports, there is little mention of specific support for mountain areas, except the regulation (EU) No 1151/2012 on quality schemes for agricultural products and foodstuffs, which defines the optional quality term “mountain”. Furthermore, only 1 foresight group, the one being in Romania, did refer to this optional quality term. More groups, eight in total, did refer to the geographical indications (PDO, PGI). Generally speaking, the members of those eight foresight groups do not have deep knowledge about geographical indication, and some do not know even that the local product benefits from this European regulation that protects the local wines or food stuff. As per geographical indications, and their use in the mountain, it is worth to highlight that those GI products are most often designed to circulate beyond the area, with a strong export strategy outside the region or the country (Scottish Whisky, Portuguese, Spanish and Italian wines, Swiss Cheese from the Jura, Betic Olive Oil, etc.).

We have decided to keep any policy as key variable, and no long-term forces. But in fact, four foresight groups did consider the policies as long-term forces! For us, this choice denotes that some communities are rather pessimistic, and feel policies are major drivers that they cannot have any power to influence. It means that they feel very far away from the decision-making processes. More generally, as reported as well in other research parts of MOVING (WP4 and 5), the mountain farmers, entrepreneurs, and population in general, endure severe conditions, have often sometimes the feeling to be ignored and counted for zero in the political scene. They are “defeatists”, and do not trust the centers of the political and economic power enough. In some regions, like Romania, Bulgaria, Hungary, Portugal, Alto Molise, Spain, Creta, N. Macedonia, residents sometimes lack a large range of basic public services like roads, public transports, broadband, hospitals, or even basic medical services and even pharmacies, primary, secondary, or high schools, aid and support to the elderly people, post offices, banks, even café, restaurants, or food stores. Our foresight was clearly more focused on value chains, and their contribution as pillar for the future, and how some spillovers may contribute to a better welfare at local level. Some of these aspects were addressed by most the foresight groups, for which demography is a long-term force that affects all other aspects (Eastern Italian Alps, Maciço Noroeste in Portugal, Spanish Pyrenees, Northern Appenins in Italy, Southern Romanian Carpathian) including the farming and survival of the value chains that are giving work to the local community and sustain the conservation of the landscape and habitability of the area. Some foresight groups, especially in the countries where the governance is not well-established and where corruption was mentioned as a concern (Eastern European and some of the Mediterranean countries participating to the project), are highly pessimistic and do not trust governance, public authorities, nor politicians. Indeed, some communities may already be or become passive. This means that they see only constraints and limitations, and hardly a possible path to a better future. This was especially the case in Dinaric Mountain in Serbia, in Creta and in Turkish region Beydaglari. The most illustrative region was the Maciço Noroeste in Portugal where the first theory of change was: “*IF the population declines and ages drastically, IF water will no longer be easily available for viticulture, and IF policies are not rapidly putted into place, THEN the region will become a wine desert THROUGH overexploitation of viticulture but with no link to local communities*”.

On the contrary, proactive communities show a strong desire to take control of their own affairs and to move forward, to stop being just "victims »: indeed, some local communities already influence long-term forces! This was the case for example in Drôme Valley, where the foresight group has identified pathways towards “sustainable food systems, sustainable climate-friendly consumption, vibrant sustainable rural environment, and carbon neutrality by 2050.”, or for

Highlands and Islands in Scotland, with the vision of “continued exports of whisky, sustainable tourism to the region, carbon offsetting through land management practices and sustainable rural services by 2050.”
These are reasons for us to consider that, more than policies, and at first, empowerment, collective action and governance are key characteristics of the local community that support the adaptation to the pressures of the long-term forces on the key variables.
This point is highlighted as well in the cross-cluster comparison analysis, which underscores the interconnected challenges faced by the value chains (VCs) in mountain areas. Findings highlight the interdependence of core topics across clusters, such as the impact of climate change on natural resources and the role of governance structures in sustainability. Challenges in attracting young people, fostering innovation, and addressing demographic shifts emerge consistently across clusters, emphasizing the need for a comprehensive and collaborative approach to promote sustainability and resilience in mountain VCs. Overall, the analysis stresses the importance of addressing these multifaceted issues collectively to effectively enhance the sustainability and resilience of mountain areas.
A major limitation in our foresight exercises at local level is the representativeness of the set of case studies. For good reasons, the cases were chosen before the start of the project, and close and trustful relationships between the local research teams and stakeholders did prevail. But indeed, that way, it seems to be at risk that some of the concerns relayed by the sectors reflect the preoccupations of realities of non-significant supply chains in terms of economic, social, and environmental impacts.

In a nutshell, the key-variables are reported in the Figure 2. To establish this short-list, we have reported all key-variables in a single table, classifying them into categories. For the categories, we have sub-classified into key-variables linking similar items. We have reported these aggregated key-variables in the Table 4.

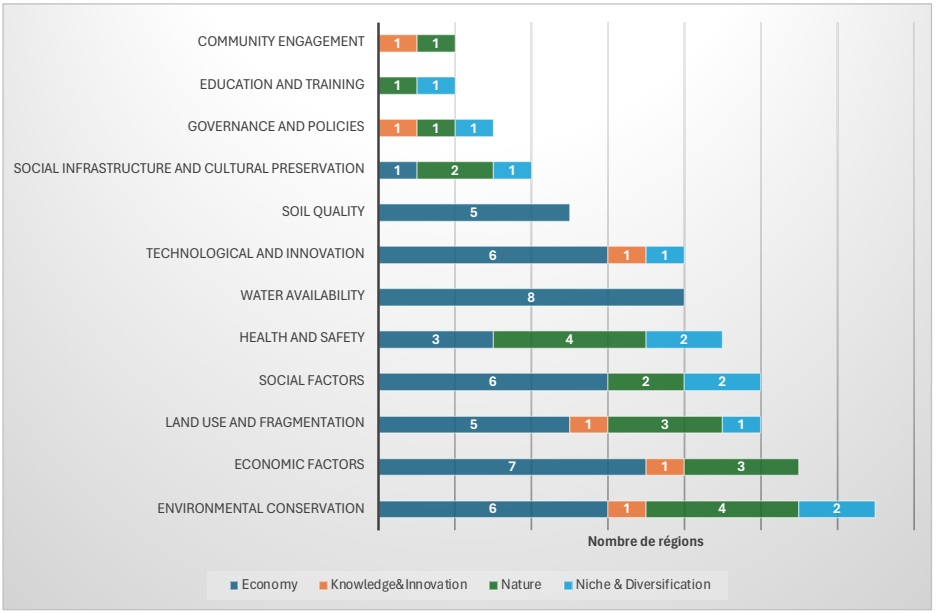


Figure 2: Key-variables in a Nutshell.

Table 4: Categories and aggregated key-variables

Category	Key-variables					
Water Availability	Water availability, including conflicts of use	Irrigation water availability and access to this resource	Water quality			
Soil Quality	Soil quality	Soil erosion				
Land Use and Fragmentation	Land availability	Land use				
Economic Factors	Public aid/Economic support to market	Price of the product	Profitability of production	Financial support for non-business activities	Financial attractiveness of alpine farming	Financial motives and policies to bolster socioeconomic sustainability
Social Factors	Attractiveness of the sector for young people	Changes in lifestyle	Generational renewal	Society polarization	Migratory flows to city centers	Employment opportunities
Social Infrastructure and Cultural Preservation	Social infrastructures	Tangible and intangible cultural capital	Traditional practices			
Governance and Policies	Policies, Governance, Democracy, and autonomy	Legislation and policy support	Regional development policies	Agricultural Policy	Subsidies	
Health and Safety	Diseases and pests	Pandemic situations				
Education and Training	New skills and training	Education programs matching the needs of the sector				
Community Engagement	Cooperation and collaboration	Social integration and community engagement				

Technology and Innovation	Research responsiveness to challenges	Technological innovation	Digitalization, innovation, artificial intelligence			
Miscellaneous	Multi-use of mountain areas	Arrivals to the sector of processing industries, large corporations, and investment funds	Increase of civil unrest in Europe	Capacity for local processing of meat	Predation	

4.1.4 Theories of change

Beyond the long-term forces and key-variables, and as a summary from the final scenario, the MOVING research teams have summarized the 2050-Vision of their foresight group through a “Theory of change” (cf. section 11.2).
Based on these different theories of change, we have sort out four archetypes (cf. section 4.2 below).

> ToC is concept that emerges in the mid-95, when Weiss (1995) outlines the steps leading to a long-term vision, and the pathways to get there through roadmaps and their related activities. While initially focusing on simple output illustrations, the emphasis is given now more on the process of developing ToC to foster common understanding among stakeholders. This approach was used at the end of the reporting of the cases studies, to better bring together the 2050-vision of the 22 foresight groups and was elaborated as part of the 1-page summary of all the participatory work done by them.

Clearly formulating the vision for 2050 in each case study, along with the assumptions and pathways to achieve it, is crucial for understanding the underlying logic, values, and main paradigm driving the transformation of the value chain and region towards a better future. This approach helps to identify potential threats, obstacles, opportunities, and supports envisioned by the foresight group. By grouping these aspects and characterizing the paradigm, beliefs, and values, four archetypes emerge, representing different visions for the future. It's important to note that multiple groups within a region may hold varying beliefs and values, leading to potential conflicts in shaping the region's future. However, achieving consensus and establishing joint objectives among these diverse groups is essential for creating a shared vision and developing a SMART roadmap towards that vision.
The theories of change of the 22 case studies are reported in the table in the Annexes, Section 11.2.

4.2 Archetypes

4.2.1 Main traits of the scenarios for the archetypes

The foresight groups did elaborate a final scenario, being for some case studies a most preferred scenario, for others, the plausible one (cf. section 0 in the annexes).

Economic driven

Market Strategies and Economic Stability	Market diversification and export growth despite advertising restrictions. Sustainable tourism practices contributing to regional economic growth. Value Chain increases local anchorage towards direct sales and local produce emphasis. Emphasis on quality and short distribution channels for economic stability.
Consumer Awareness and Value Chain Integration	Consumer education on product quality and labeling for market transparency. Integration of value chains and promotion of sustainable practices. Experiential marketing strategies enhancing consumer engagement. Investment in local infrastructure and affordable housing for community growth.
Agricultural Practices and Innovation	Innovative practices and knowledge adaptation for climate change resilience. Water management optimization and predation regulation for industry viability. Mechanization and technological innovations addressing labor shortages. Sustainable land management practices and afforestation initiatives for ecosystem health.
Community Support	Dialogue forums and regulatory measures addressing industry challenges. Inclusive stakeholder participation for environmental sustainability. Investment in local infrastructure and affordable housing for community growth.

Nature driven

Environmental Conservation and Awareness	Conservation efforts and awareness-raising about biodiversity and sustainability. Protection of landscapes and natural resources for long-term sustainability.
Sustainable Practices Across Sectors	Prioritizing sustainable practices and environmental stewardship. Emphasis on sustainable practices in agriculture, forestry, and tourism. Building vibrant, resilient rural landscapes through community collaboration. Collaboration among stakeholders crucial for implementation
Inclusive Solutions	Addressing challenges like aging populations and neglect of rural regions. Engaging youth in sustainable practices crucial for rural vitality. Implementing inclusive solutions to tackle rural inequities
Agricultural Diversification and Multi-functionality	Diversification of agricultural activities for resilience and revenue. Utilizing rural landscapes for multiple functions, such as chestnut production in Corsica.
Sustainable Tourism	Sustainable tourism development boosts local economies while preserving resources.
Innovation and Climate Resilience	Technological advancements and alternative land management strategies for adaptation. Mitigating climate change impacts through innovation is crucial.

Niche and Diversification driven

Agriculture and diversification	Diversified farming and responsible land use enhance community well-being. Strong community bonds and respect for agriculture attract newcomers. Economic focus on local cooperation, circular economy, and innovation. Support for small producers and waste management funding aid sustainability. Integration of local products into tourism bolsters agriculture.
Tourism and Economic Resilience	Premium food prices drive local economy. Agrotourism flourishes as people seek food production connection.
Tourism Development	Destination management units attract investment and foster collaboration. Diversified offerings and trained staff ensure authentic experiences. Integration of local gastronomy benefits producers and boosts economy.
Community and Building Development	Returning migrants contribute to sustainable development. Simplified regulations and funding access aid community growth. Cultural heritage promotion and architectural incentives enhance community identity.
Climate Change Adaptation and Landscape Management	Biodiversity measures and resource use responsibility promoted. Adaptation includes water and soil management, renewable energy adoption. Alpine pasture and bush encroachment demand landscape management.

Knowledge and innovation driven

Growing Demand for Sustainable Knowledge	Ecological crises spur increased demand for sustainable knowledge, reaching marginalized groups.
Business Alignment with Ecology	Businesses favor nature-based solutions, reflecting the ecological paradigm shift. Circular economy put forwards recycling, upcycling, and reuse, as well in the traditional value chains
Shift in Urbanization and Land Use	Urbanization declines as focus returns to living soil and sustainable practices. Alternative movements resist centralization, advocating decentralized approaches.
Expansion and Diversity in Knowledge Economy	Sustainable knowledge sector experiences growth, with diverse education and providers.

Each of these four scenarios has been shared and discussed in one workshop, with participants being stakeholders or MOVING researchers having participated to the local foresight exercises. The participants did validate the relevance of the four archetypes and reflected about their pathways to achieve the desired or most probable scenario.

4.2.2 General Description of the 4 Archetypes

An archetype represents recurring patterns of essential qualities found across various examples within a category. In the context of the MOVING foresight project, archetypes serve as illustrative examples that help construct scenarios and trajectories discussed during participatory workshops. These workshops bring together stakeholders from different cases to discuss motivations and strategies for scenario development and implementation.

Assigning Value Chains (VCs) to archetypes may suggest that they fit into classic categories. However, archetypes are defined in general terms, with characteristic traits that operate on their own logic. VCs don't need to perfectly embody a single archetype; they often exhibit traits of multiple archetypes or straddle the line between two. Therefore, assigning VCs to a dominant archetype should not be mistaken for belonging to a specific type.

Four primary motivations emerge from the process of comparing the 22 case studies:

- ECONOMY Motivation: Focuses on enhancing the economic performance of the sector.
- NATURE Motivation: Emphasizes the careful management of natural resources by sector stakeholders.
- NICHE and DIVERSIFICATION Motivation: Involves diversifying products or activities to create niche markets and multiple income sources.
- KNOWLEDGE AND INNOVATION Motivation: Centers on developing new knowledge or adopting technological innovations to address constraints and foster educational activities.

Each archetype is characterized by these motivations and is accompanied by a scenario reflecting its unique characteristics (see Table 5). These reflections are guided by the synthesis of four theories of change, derived from the commonalities observed between baseline scenarios and long-term forces identified across the 22 cases.

Table 5: Characteristics and Policy Linkages of the Archetypes

<table>
<tr><th></th><th colspan="2">Main Characteristics</th><th>Policy linkages</th></tr>
<tr><td rowspan="2">Economy driven</td><td colspan="2">Long term VISION 2050:

The 2050 perspective of the value chain is secured THROUGH enough demand and good prices and a fair remuneration of the products

Narrative:
Development is based on market growth and remunerative prices

Theory of Change:

IF the climate change has moderate impacts and IF the markets are good enough THEN community will achieve the vision

Trade-offs:
- Market success vs. overexploitation of natural resources
- Specialization /Monocropping lead to loss of biodiversity</td><td rowspan="2">Quality schemes (GI, Mountain labelling, organic),

1st Pillar of the CAP (Cooperation measures, Producers Organisations and Operational Programmes)

2nd Pillar of the CAP

Rural Development Program
- LEADER
- investments
- agri-environmental schemes</td></tr>
<tr><td>LT forces:

1. Market/Price/ Demand</td><td>Key-Variables:

1. Technology</td></tr>
</table>

<table>
<tr><td></td><td><ol start="2">
Climate Change
Tourism</td><td><ol start="2">
Production (facilities, mechanization, automation</td><td></td></tr>
<tr><td rowspan="2">Nature driven</td><td colspan="2">Long term VISION 2050:

The long-term perspective of the value chain is secured THROUGH enough motivation of young farmers, and enough remuneration for ecosystem services

Narrative:

Socio-Ecological System is preserved thank a good balance between human interventions and the natural resources.

Theory of Change:

IF the demography is stable and IF the payments for ecosystem services are supportive to the farms and the local Value Chains, THEN the community will achieve the vision

Trade-offs:

Nature preservation vs. Decrease in demography</td><td rowspan="2">Linking with Natural and Regional Parks

2nd Pillar of the CAP (agri-environmental schemes),

LIFE – i.e. Nature Preservation strategies NATURA2000 at EU level</td></tr>
<tr><td>LT forces :
Demography
Climate Change
Tourism</td><td>Key-Variables:
Land Use
Jobs creation thank slow tourism and nature care
Ecosystems services (biodiversity, fauna and flora preservation, water)</td></tr>
<tr><td rowspan="2">Niche Products and Diversification driven</td><td colspan="2">Long term VISION 2050:

The long-term perspective of the Niche&Diversification is to increase the local self-sufficiency and for the niche, growing whilst maintaining the prices

Narrative:

Niche&Diversifica-tion addresses the vulnerability in mitigating risks, whatever the cause (CC, market instabilities, etc.)

Theory of Change:

The long-term perspective of the Niche&Diversification is to increase the local self-sufficiency and for the niche, growing whilst maintaining the prices

Trade-offs:

- Costs linked to introducing more activities for diversifying
- Collective action may as well induce transaction costs and consensus finding
- Economy of scales are limited</td><td rowspan="2">Second pilar of the CAP:

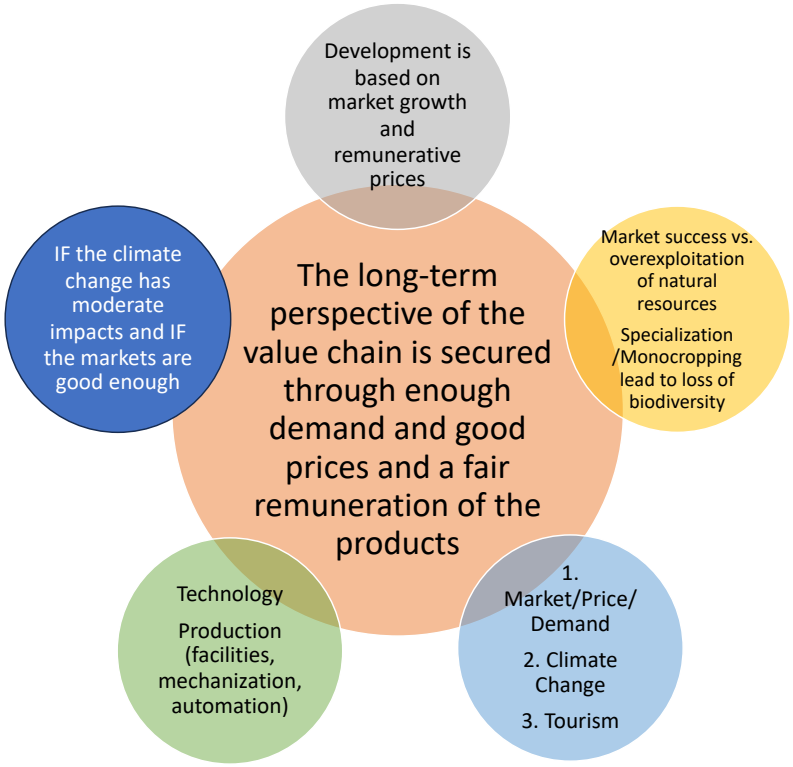
Adapting the production to the local markets, short supply chains, diversification to build resilience, « close to nature » and « rural tourism », organic, permaculture, small-scale farming, micro-farms</td></tr>
<tr><td>LT forces:
Markets/Social attitudes and demand
Tourism dynamics</td><td>Key-Variables:
Reputation (region/product)</td></tr>
</table>

<table>
<tr><td></td><td></td><td>2. Collective Action to boost the local initiatives (local fairs, local open air markets)
3. Local consumption</td><td></td></tr>
<tr><td rowspan="2">Knowledge and Innovation driven</td><td colspan="2">Long term VISION 2050:
The long-term perspective of the K&I economy is secured THROUGH enough dynamics of knowledge generation and sharing.
Narrative:
Knowledge and innovation are key to respond to the Climate Change Challenge - K&I as new business.
Theory of Change:
IF the new knowledge (which addresses well the challenges), is accessible (=is public), THEN the community will achieve the vision
Trade-offs:
- K&I as new business
- New knowledge will remain mainly private to pay-back the investments.
- Innovation may generate unexpected side effects in the overuse of certain resources</td><td rowspan="2">European Innovation Partnerships
R&D (European Research Programmes, INTERREG)
Innovation support
Digitalization
Smart Villages</td></tr>
<tr><td>LT forces:
1. Climate Change
2. Markets trends (for Knowledge and innovation)</td><td>Key-Variables:
1. Nature-based solutions
2. Technology and Infrastructures, Digitization, AI
3. The new knowledge is accessible (=is public)</td></tr>
</table>

Based on the description of the 22 final scenarios, and the related theory of change, we have summarized the final scenario among the case studies that are close to the archetypes. This first approach of synthesis has been discussed and refined during the 4 cross-cased workshops in the November 2023 Workshop in Budapest, with consortium members, experts, and members of the foresight groups. This allowed the foresight led team to add some synthetic elements to the vision for each of the archetypes, and to enrich and refine the pathways to achieve the vision.

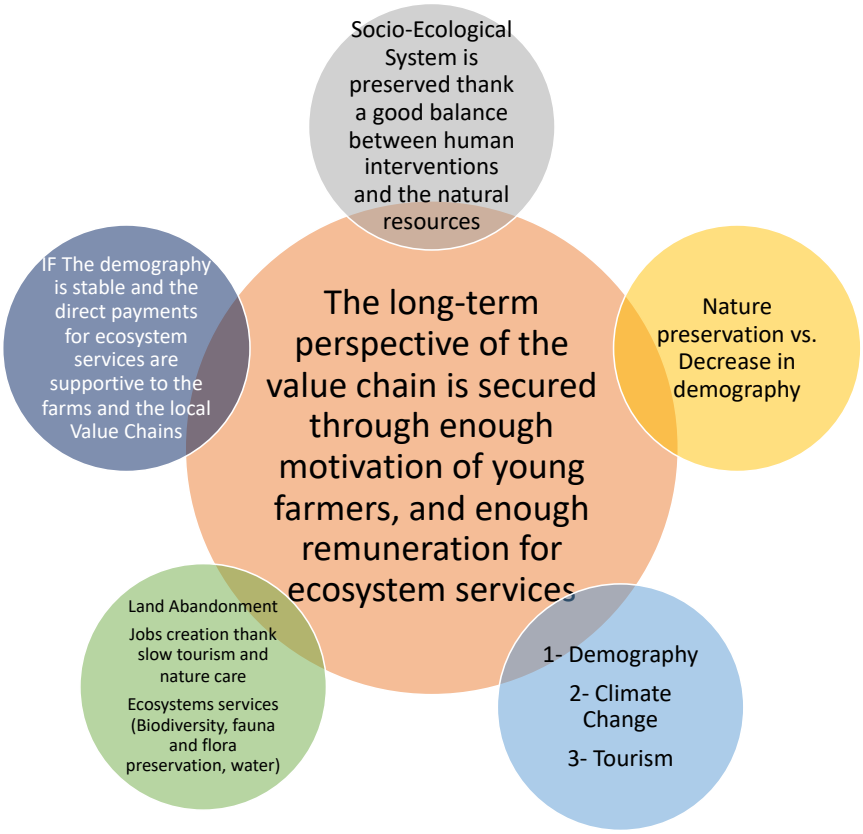
Economic driven

The vision for 2050 is to foster sustainable development across various sectors, including food systems, rural environments, and climate action. It emphasizes local, agroecological food systems, innovative rural development, and integrated landscape management. Additionally, it highlights the importance of sustainable and innovative agri-food systems, targeted subsidies, and infrastructure development in mountain areas. The overarching goal is to achieve carbon neutrality by 2050 while ensuring sustainable production, consumption, and rural livelihoods through holistic approaches and recognition of traditional knowledge and practices.



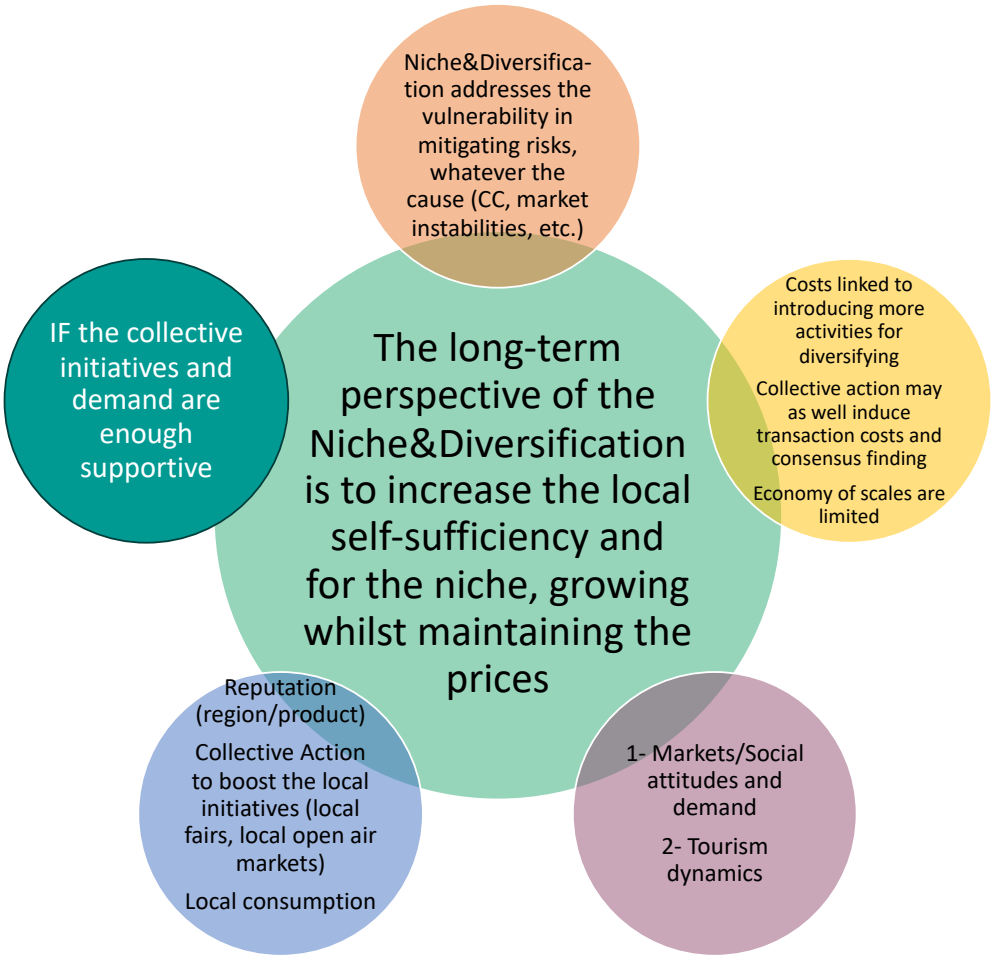
Nature driven

The vision is to reduce reliance on public funding systems by promoting a sustainable local economy, soft tourism, climate-resilient landscape management, and integrated regional development. The vision emphasizes strong cooperation among various stakeholders to support ecosystem services, promote local food production and consumption, and invest in education and skills. Additionally, it underscores the need for meaningful collaboration between local actors, experts, and policymakers to support biodiversity, sustainable resource management, and dynamic rural environments, fostering balanced growth and decentralized decision-making while encouraging sustainable living, responsible tourism, self-sufficiency, and community participation in resource management.



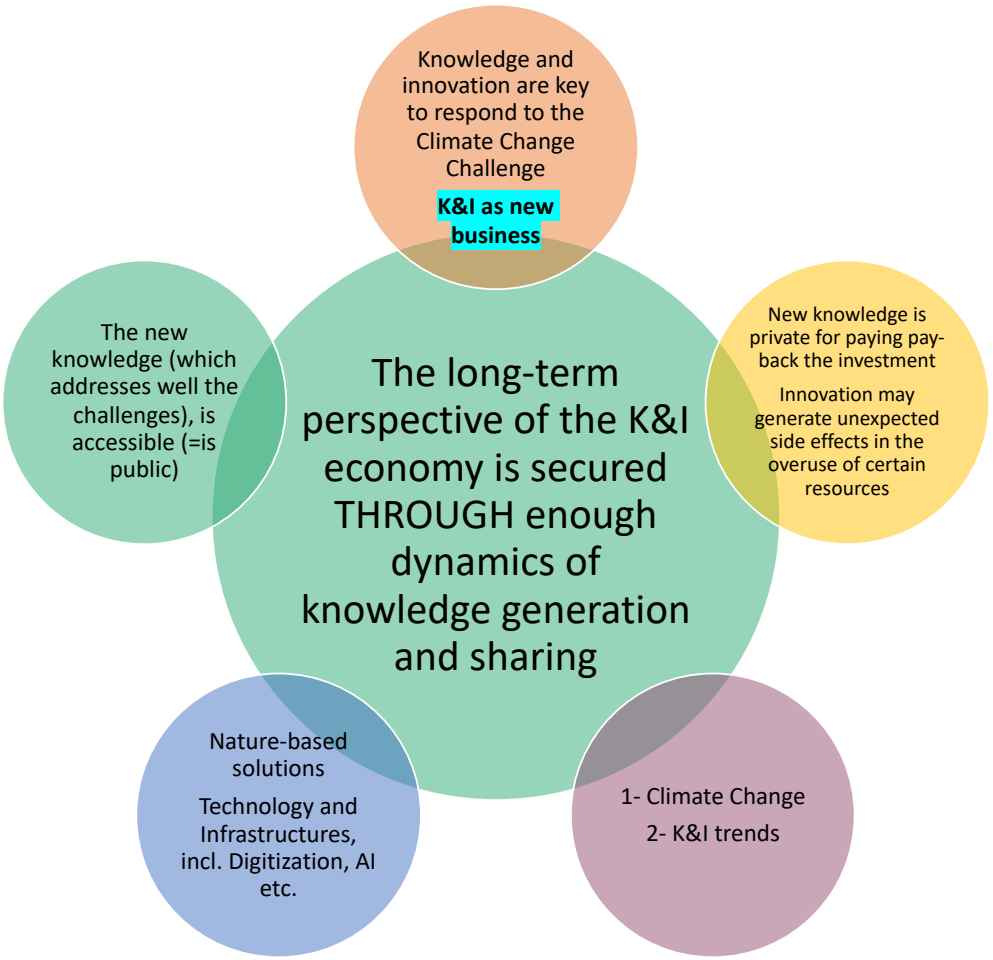
Niche and Diversification driven

Vision for the region is to become a SMART region by 2050 through protecting natural wealth, investing in green economies, and developing human capital. It emphasizes the development of sustainable forms of tourism, greening and diversifying the local economy, and fostering social cohesion. Additionally, the focus is on promoting local food systems, sustainable consumption practices, innovative value chains, and an engaged society within the region.



Knowledge and Innovation driven

A vision of the dissemination of trustworthy information regarding sustainable livelihoods, emphasizing excellence in cognitive, practical, and ecological aspects



5 Regional Strategies and Strategic Options

5.1 Regional strategies from the 22 case studies

The research teams, together with their respective foresight groups, elaborated a regional strategy to address the challenges posed by the long-term forces. They were elaborating a vision, and a pathway to achieve the vision. This pathway is most often a list of interventions, at different levels. As the teams were not guided by a systematic way of listing the interventions, there was a classifying and grouping of them, that was done after analyzing the narratives that describe the 22 strategies. Those narratives were first synthetized around their key constitutive elements.
The outcome of the grouping of interventions was the following (see Table 6).

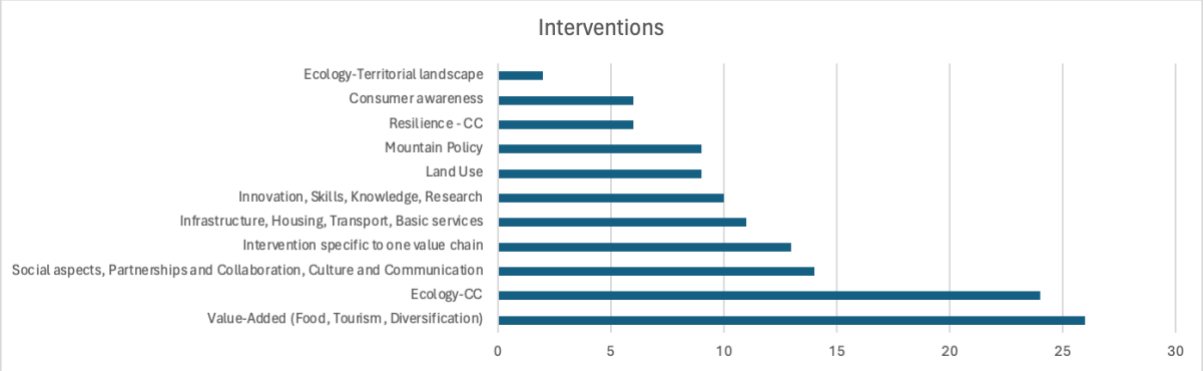
Table 6 : Regional Strategies - List of Interventions

Resilience - CC	Addressing Climate Change Challenges
	Climate-Friendly Solutions and Innovation
	Integrated Resilience Training
	Regional Resilience Objectives
Ecology-CC	Water Resource Optimization
	Remuneration for Ecosystem Services:
	Community Investment and Sustainable Practices
	Capacity Building and Support for Farmers:
	Public Management of Genetic Resources
	Specific Adaptation of Agriculture
Ecology-Territorial landscape	Integration of Forestry and Pastoralism
	Territorial Approach in Serra da Estrela
Land Use	Land Reclamation and Management
	Multi-Use Zoning and Collaboration
	Political and Planning Framework
Food-Value-Added	Value-Added Product Promotion
	Clear Quality Standards and Fraud Prevention
	Sustainable and Adaptable Food Production
	Development of High-Quality Products
	Support for Local Products and Services
	Innovative Marketing Strategy
	Role of Private Sector
	Financial and Funding
	Diversification of Income Streams
Consumer awareness	Consumer Education and Promotion
	Consumer Awareness and Marketing

Mountain Policy	Tailored Policy Formulation:
	Policy Flexibility and Recognition
	Inclusive and Long-Term Policies
	Policy and Legislation
Social aspects, Partnerships and Collaboration, Culture and Communication	Addressing the Social Context
	Health and Well-being
	Communication and Awareness Raising:
	Integration and Collaboration
	Partnerships
	Promote a Culture of Effort and Value
	Offer Stable Employment Opportunities:
	Communication and Engagement
	Education
Innovation, Skills, Knowledge, Research	Support Innovative Projects
	Creation of a Sustainable Knowledge Economy (SKE) Alliance.
	Investment in Research and Education
	Community Engagement and Knowledge Exchange
	Invest in Research and Innovation
	Digitalization and Infrastructure Improvement
Infrastructure, Housing, Transport, Basic services	Housing
	Transport
	Addressing the Challenge of Depopulation:
	Prioritizing actions for basic service provision and improvement (transport, health)
Specific to one agriculture product and landscape	Diversified Sheep Installations
	Ecosystems and Wildlife
	Predator Management and Conservation
	Create Spaces for Responsible Wine Consumption
	Promoting Wine Production Businesses
	Technical Agronomic and Winemaking Aspects:
	Promote Sustainable Vineyard Practices:
	Relationship Between Distilleries and Stakeholders

Based on the number of occurrences of each of those interventions in the regional strategies, we may identify the most popular ones.

Figure 3 : Regional Strategies : most popular Interventions



We see that the regions, to prepare their future, express their needs mostly towards:

- Interventions related to secure and broaden the economic perspectives in their region, related to strengthening the value-chains, increasing sustainable rural tourism and the diversification of diverse and alternative sources of income.
- Interventions to preserve the natural capital, in the sense of adapting the farmers to climate change through increasing their sources of income for the care of the natural resources (i.e. the remuneration for ecosystem services), the improved management of water, the capacity building for adapting the farming and foresting practices, and a better public management of genetic resources.
- A need to foster the well-being in the Mountains, the encouragement of collaboration and promoting the engagement and culture of effort and value, as well as the offer of more stable jobs.
- Innovation, skills, knowledge, and research.

5.2 Strategic options

After working in a participatory way with the local foresight group and analyzing their theory of change to 2050, their final scenario and their strategy for getting there, we began to look for possible redundancies in their strategies. We found that they had similar needs in terms of policies to support mountain communities in implementing certain interventions. But the way communities define a long-term vision is more along the lines of building one or more projects, combining tools, support measures and funding in what we have called "strategic options".

In our understanding, Strategic Options are defined as follow: they address one or several **challenges**, a specific **governing organization** that decides on the goal and the pathway being funded through an identified **funding mechanism** most often being a mix-funding one and deploying a set of **interventions**.
The geographical scope of a strategic option may be very limited as well as quite broad but should be suiting the perimeter of an intra-national area, although in certain cases, it can be a cross-border area.
The scope of application of a SO is very diverse. It can be limited to one sector (like beekeeping or chestnut) as well as concerning a vast range of activities of the whole population.
A strategic option can be replicated, with minor or major adaptation, in other places. This replication may be supported by a specific national or European mechanism. SO with limited scope of application may be fostered in many places with little adaptation. As the complexity

of a mix of interventions increase, adapting and tailoring the SO to the local context may be more demanding, limiting the copy-pasting approach in the definition of the precise interventions.
Many SOs are already in place all over Europe and could be more tailored to address the specific challenges of the Mountains. Some SO are emerging and should be evaluated with regards to their potential both to match the needs expressed by the MOVING Multistakeholder Platforms and to be replicated.

An example of a SO with limited geographical scope is the Smart Village, and with broader geographical scope is the regional Park.

Regional Parks	
Challenges	Conservation of the Natural Resources
Governance	Consortium of Municipalities
Funding	Municipal and National co-funding, Mix of Core funding and Project Funding, INTERREG, LEADER and other European funds
Interventions	Large range of interventions with activities in Natural Resource conservation, sustainable farming and forestry practices, Interpretation centres for spreading knowledge about natural resources and points of interests, etc.
Replicability	Very high, with many local adaptations
Policy Support	National laws, international recognition through International Union for Conservation of Nature (IUCN) founded in 1948.
Level of Establishment	Very high

Smart Villages	
Challenges	Digitalization to address various Grands Challenges in the Rural area
Governance	Private organisations, or Municipality, or various forms of consortium
Funding	Municipal, Regional-European co-funding, Mix of Core funding and Project Funding, mostly LEADER and other European co-funding (EIP, INTERREG)
Interventions	Large range of interventions with activities in transport, energy, public services, tele-medicine, tele-working, etc.
Replicability	High, with many local adaptations
Policy Support	European support through the various Policies and the CAP (Rural Pact)
Level of Establishment	Starting phase (since 2010)

During the European workshop (see reporting in Annex 11.5), several emerging SO running at local/regional levels have been presented. Others have been elaborated in working groups and give a flavor of future Strategic Options that need to be experimented and fostered, to address more specifically the current and future needs of the European Mountains. Indeed, this workshop was targeted to imagining the future of Mountains in 2050, and the participants were high-level experts from 18 different countries (among them 14 EU Member States), working in different types of institutions (research centers, Universities, High-Schools, EU commission, local mountain NGO).

The SOs that have been presented are illustrative of options that fit the need of each of the four archetypes (see Table 7). Some of them are existing in the MOVING regions, some other

have been identified and selected to warm up the groups at the European foresight workshop, some other have emerged during the discussion at this workshop. The last category is the vaguer, as the time was very limited to deepen the reflection but illustrate the range of innovations that could foster a better future in the mountains.

After a short feed-back of all parallel working group, a final panel discussion has been the momentum to share the views among the 46 participants of the European workshop. This productive brainstorming was resulting in very relevant points of conclusion:

1. Emphasise the **vital nature of mountains as places to live**, not just as providers of natural areas, and the need for effective communication to raise awareness and enhance the value of these regions.
2. Consideration of mountain resources as a **common good**, with the need for recognition of community ownership and governance adapted to the diversity of needs and perspectives.
3. Using **mountains as connectors between people and nature**, highlighting the need to raise awareness of the importance of living with nature and to prevent the growing disconnection between people and their environment.
4. Need for a change in mindset among policy makers to integrate long-term sustainability into policies and decisions, with awareness of the value of mountain areas and their role in society.
5. Need for both specification and diversification in the development of mountain policies and initiatives.
6. Creation of a **research platform** to make accessible all the results of scientific research already available through numerous projects funded by the EU and others, to facilitate their subsequent use.
7. Put a focus on **capacity building** for elected representatives and professionals, particularly at local and regional level. Examine for example the concept of an "**Erasmus Altitude**" to enable mountains professionals and elected representatives to learn from the experiences of other mountains, using Erasmus structures and funding.
8. Establishing a “**triple helix of capacity building**” for mountain nature-based businesses, focusing on learning to establish mountain green businesses using both traditional knowledge and modern technologies.
9. **Adapting governance in mountain areas** to take account of the diversity of people and nature, giving a voice to marginalised populations and promoting more inclusive and flexible governance.
10. Importance of **recognising and quantifying the non-economic benefits of value chains**, as well as sharing failures and challenges encountered to foster learning and innovation.

Table 7 : MOVING Strategic Options

Strategic Option	Archetype	Challenges	Narrative
Swiss Local Food Competition **Swiss Jura – Switzerland** **Olivier Boillat FRI** **Fondation Rurale Interjurassienne** **olivier.boillat@frij.ch**	Economy	• Public visibility Producers Empowerment • Agricultural and artisanal incomes	The Swiss Local Food Competition draws producers and visitors alike to celebrate Swiss gastronomy. Over two days, participants present their offerings, fostering a sense of community and appreciation for local traditions. This event epitomizes Switzerland's rich culinary heritage and its artisans.
Terra Thessalia **Greece** **Theodosia Anthopoulou** **Panteion University** **t.anthopoulou@gmail.com /** **Dimitris Goussios** **University of Thessaly** **dngoussios@gmail.com**	Economy	• Climate Change Market dynamics Cultural Preservation • Youth Engagement	Terra Terra Thessalia establishes transparent value chain governance and develops branding for Thessaly Mountain dairy products. It focuses on adapting to climate change and promoting fairness in the Greek economy.
Global Competence Centre for Whisky **UK** **Liz Dinnie** **James Hutton Institute** **Liz.Dinnie@hutton.ac.uk**	Economy	• Developing standards • Strict regulations on alcohol • Public visibility	Centre to raise whisky public awareness through festivals, and conducting feasibility studies, emphasis on inclusivity, tradition, and health-conscious marketing. It seeks collaboration between research and industry, with a focus on developing associated products and marketing internationally.
Integrated territorial project ***Idea that emerged during MOVING European foresight workshop***	Economy	• Community Empowerment • Social Integration • Land use	Setting up living labs and managing land allocation to foster community engagement and adaptability. It focuses on addressing identity, bureaucratic burdens, and land management issues to keep rural production attractive and retain young people.
Wine as a key product for an integrated territorial project Europe **Cristina Micheloni** **VINIDEA** **cristina.micheloni@vinidea.it**	Economy	• Demographic dynamics Economic development Nature Conservation • Climate change	The project focuses on leveraging wine as a key product for integrated territorial development. It promotes cooperation among sectors, sustainable production systems, and innovation support. The project draws insights from wine cases in Alto Douro, Ayerbe, and Trento, showcasing the potential of quality wine to drive integrated development and resilience against climate change and depopulation.
Towards a triple sustainability, economic, environmental, and social **Betic System, Spain** **Raquel Moreno, ADEGUA** **rmoreno@adegua.com**	Economy	• Producers Empowerment • Climate change	The Betic System project focuses on achieving European certification for mountain ecological olive oil, increasing the cultivation of mountain ecological olive groves, fair trade for local producers, and providing special training for climate change mitigation and sustainable practices

Community interests: Tomato Festival **Beydaglari, Turkey** **Murat Yercan** **Ege University** **murat.yercan@ege.edu.tr**	Economy	• Market Dynamics Community empowerment • Cultural Preservation	The Beydaglari Tomato Festival project includes seminars, competitions, and cookery contests to increase national and international recognition of products. The project's success in 2023 suggests potential for expansion. Key objectives include raising awareness about agriculture, encouraging young people to farm, and introducing new technologies to farmers.
Place-based and Thematic Partnerships **UK** **Liz Dinnie,** **James Hutton Institute** **Liz.Dinnie@hutton.ac.uk**	Economy	• Market Dynamics Community Empowerment • Social Integration Climate change • Nature Conservation	Project in the UK focused on adopting the Place Principle for partnership working. Innovation hubs and social enterprise initiatives support regional regeneration and social innovations, with governance models and interventions replicable across territories. It aligns with Scottish government strategies like the Land Use Strategy and Community Wealth Building to promote sustainable development and community empowerment.
AGRO-ECOCLIM Project CEDD Swiss Jura – Switzerland **Olivier Girardin FRI** **Fondation Rurale Interjurassienne** **olivier.girardin@frij.ch**	Knowledge & Innovation	• Climate Change • Market dynamics • Agricultural succession • Producers Empowerment	AGRO-ECOCLIM aims to establish a research centre, incorporate social sciences, and collaborate with other initiatives. It integrates research and education. The project's success depends on support from local authorities and farmer organisations.
Ecorys **France** **Elodie Salle** **Ecorys** **elodie.ealle@ecorys.com**	Knowledge & Innovation	• Community Empowerment • Knowledge Transfer	Ecorys in France analyzes local MAPs, manages members, and categorises them into topics. It aims to present discussion papers, upload them to a database, and empower actors. Governance is multilevel. Funded by the EU.
Seeds' Valley Ecological Farm at Terény **Hungary** **Zoltan Dezseny** **MagosVölgy Ökológiai Gazdaság** **zoltan.dezseny@gmail.com**	Knowledge & Innovation	• Economic Development • Land use • Nature Conservation • Producers Empowerment • Demographic Dynamics	Seeds' Valley Ecological Farm in Terény, Hungary, is a project based on a community-supported agriculture scheme, the establishment of a community place, educational tours, and attracting young urbanites to the village.
COZZANO Smart Villages **Corsica, France**	Knowledge & Innovation	• Community Empowerment • Digital inclusion • Demographic Dynamics • Economic Development	The Smart Villages project focuses on technological solutions, environmental monitoring, and integrating smart city concepts into rural contexts to improve quality of life.
Alternate Knowledge/System of Sustainable Living ***Idea that emerged during MOVING European foresight workshop***	*Knowledge & Innovation*	• *Knowledge transfer* • *Community Empowerment*	*Knowledge platform. Emphasis on outreach expertise services to transform knowledge into marketable products, preserving diversity, considering day-to-day life and specific governance for the Mountain region's ecosystem.*
Open Platform/ AI & New Technologies ***Idea that emerged during MOVING European foresight workshop***	*Knowledge & Innovation*	• *Digital inclusion* • *Community Empowerment* • *Knowledge Transfer*	*A platform which aims to address digital skills, knowledge ownership, and language barriers, promoting inclusivity among younger audiences.*

Local Innovation Partnership ***Idea that emerged during MOVING European foresight workshop***	*Knowledge & Innovation*	• *Community Empowerment* • *Regional Collaboration* • *Producers Empowerment* • *Knowledge Transfer*	*Partnership focused on local development through collaborations with universities and farmer organizations, formalizing agreements for regional operational success.*
Local community revitalization ***Idea that emerged during MOVING European foresight workshop***	*MOVING Rural Renaissance*	• *Demographic Dynamics* • *Community Empowerment* • *Nature Conservation* • *Knowledge Transfer* • *Cultural Preservation* • *Social Integration* • *Market Dynamics*	*The project aligns with regional and European policies like LEADER. It focuses on revitalizing local communities.* *Strategies include economic diversification, training programs for youth, and preserving local cultural heritage.*
Valposchiavo **Swiss Alps – Switzerland** **Paola Gioia** **Kedge Business School** **paola.gioia@kedgebs.com**	Nature	• Demography dynamics • Climate Change • Tourism seasonality and short stays	The project in Valposchiavo, Switzerland, focuses on addressing challenges such as demographic decline, climate change, and tourism impacts by preserving the landscape, developing branding strategies for local products, and enhancing the region's attractiveness. Polo Poschiavo leads the initiative, funded by Swiss and European public funds. Notable achievements include the recognition of Rhaetian Railway as a UNESCO World Heritage and the establishment of Valposchiavo as a "Smart Valley Bio" with a 100% bio brand.
Bieszczady Multiactor Platform **Poland** **Paweł Chmieliński** **Institute of Rural and Agricultural Development of the Polish Academy of Sciences (IRWiR PAN)** **pawel.chmielinski@gmail.com**	Nature	• Demographic Dynamics • Tourism Management • Nature Conservation	The Bieszczady Multiactor Platform project in Poland. Led by the LEADER Local Action Group "Green Bieszczady" and supported by various funding sources, initiatives include the establishment of a social economy enterprise, workshops for local producers, skill-building projects, and a school of sustainable tourism.
Territorial and value chain actors collaboration for the future management of natural resource (Cartography Project to support decision making) **Corsica, France** **Olivier Mora** **INRAE** **olivier.mora@inrae.fr**	Nature	• Climate Change • Nature Conservation (chestnut orchard) Cultural Preservation • Knowledge Transfer • Social Integration	Cartography Project to support decision-making, and strategically manage resources. It focuses on preserving chestnut orchards amidst climate change, aiming to mitigate the loss of cultural heritage and enhance productivity.
Triple helix of capacity building for nature-based business in mountain areas ***Idea that emerged during MOVING European foresight workshop***	*Nature*	• *Economic Development* • *Nature Conservation*	*The project focuses on capacity building for nature-based businesses in mountain areas, integrating traditional knowledge with modern technology for sustainable entrepreneurship.*

Mountains as connectors between humans and nature	Nature	• Nature Conservation Knowledge Transfer Social Integration Land Use	Project to promote activities that address human-nature disconnection, focusing on integrating human activities with natural resources and promoting nature-based education.
Diversity and inclusion ***Idea that emerged during MOVING European foresight workshop***	*Nature*	• *Nature Conservation* *Landscape Diversity* *Community Empowerment*	*Project to promote focus groups and working tables aims to promote diversity and inclusion in nature governance, focusing on diverse landscapes and ensuring inclusion in decision-making processes.*
Strengthening cooperation in local beef production ***Idea that emerged during MOVING European foresight workshop***	*Nature*	• *Landscape Diversity* *Market Dynamics* *Community Empowerment*	*The project proposes new business relationships for sharing processing facilities, increasing locally produced and processed beef, and introducing a common regional label for certification. Key actions involve setting up a facilitator, coordinating cooperation, developing a regional marketing brand, and promoting local products.*
Guesthouse Villa Hermani **Southern Romanian Carpathians** **Alina Alexa** **Highclere Institute** **alina@highclere-consulting.com**	Niche & Diversification	• Market Dynamics • Community Empowerment • Predation Context • Landscape Diversification	The project in the Southern Romanian Carpathians focuses on developing certified ecotourism, engaging stakeholders in wildlife conservation, and creating sustainable ecotourism tours centred around the "wolf" and Carpathian Nature.
BioVallée **Drôme Valley – France** **Hugues Vernier** **Communauté de Communes de Val de Drôme (CCVD)** **hvernier26@gmail.com**	Niche & Diversification	• Youth Engagement • Producers Empowerment • Economic Development • Knowledge Transfer • Landscape Diversification • Predation Context	Led by local community organizations, including the Val de Drôme, Crestois et du Pays de Saillans, and Diois, the project is facilitated by a non-profit association acting as a multistakeholder platform. Key initiatives include diversifying farm products, promoting short distribution channels, and developing organic farming, with a target of 30%. The project also involves the establishment of a BIO Pôle in collaboration with various stakeholders. Capacity building programs, research partnerships, and specific policy measures are proposed.
A cross-border approach to VC development: product and production process (InterReg Project) **Corsica, France** **Olivier Mora** **INRAE** **olivier.mora@inrae.fr**	Niche & Diversification	• Market Dynamics • Economic Development • Producers Empowerment • Community Empowerment • Youth Engagement • Knowledge Transfer • Landscape Diversification	It fosters collaboration among diverse stakeholders to revitalize chestnut orchards, preserving natural resources while empowering local producers. Through innovative approaches and European funding (InterReg), the project enhances agri-food productivity, strengthens cooperative ties, and establishes an Innovation Transfer Center, igniting sustainable development across the Mediterranean region.
Political bottom-up advice groups ***Idea that emerged during MOVING European foresight workshop***	*Niche & Diversification*	• *Infrastructure & Connectivity* • *Land Use* • *Tourism Management* • *Landscape Diversification* • *Food Authonomy* • *Nature Conservation*	*Advice groups address infrastructure gaps and promote eco-sustainable tourism to sustain landscapes and traditions, fostering community ownership and stakeholder cooperation.*

Agricultural trainings ***Idea that emerged during MOVING European foresight workshop***	*Niche & Diversification*	• *Knowledge transfer* • *Landscape Diversification*	*Summer schools, innovation coaches, and demo farms to enhance knowledge sharing and practical learning. Agricultural training to bridge the gap between research and farmers, focusing on innovation and diversification in agricultural practices, especially targeting young farmers.*
Erasmus Altitude ***Idea that emerged during MOVING European foresight workshop***	*Niche & Diversification*	• *Infrastructure & Connectivity* • *Landscape Diversification* • *Community Empowerment* • *Regional Collaboration*	*"Erasmus Altitude" scholarship system to address the lack of connections between policymakers and technicians at a local level, offering training for elected officials and professionals to promote territorial development.*
Adopting destination management approach for strengthening rural tourism capacity and value chain **Maleshevski Region, Turkey** **Nehat Ramadani** **CNVP** **nehat.ramadani@cnvp-eu.org**	Niche & Diversification	• Demographic Dynamics • Youth Engagement • Community Empowerment • Market dynamics • Tourism Management • Climate Change	The project in the Maleshevski Region aims to strengthen rural tourism capacity and value chain. Strategies include preserving natural landscapes, branding the region and local food, improving infrastructure, and modernizing tourism. The project will focus on joint rural tourism strategy development, supporting local producers in obtaining certifications and enhancing accommodation quality.

5.3 Living Repertoire of Strategic Options for Mountains

Strategic options are plenty.
We started opening the Repertoire in the preparatory phase of the European foresight workshop, and identified eight of them, which are related to the four archetypes. Those ones are already established or newly started SO, that are strongly linked to the Mountains, addressing the common Grand Challenges in a specific mountain area, with strengths and weaknesses, threats, and opportunities.
Replication was discussed after the presentation of an SO that was already more mature, did establish a governance, and did benefit from many human and financial supports.
The Repertoire is in annex 11.5. Our intention is to put the repertoire as well as an online living resource.

6 Quantitative survey

6.1 Method and sampling

A quantitative survey among stakeholders to evaluate preferred scenarios and policy options has been conducted. Utilizing a Likert-scale questionnaire, stakeholders from diverse backgrounds across 22 reference regions have been engaged, to collect between 30 to 100 responses per region.
Data analysis was done with the STATA software.

The demographic breakdown of respondents was the following:

- **Age**: Most respondents fell within the age bracket of 40-65 (55.13%), followed by 25-40 (31.30%), >65 (8.17%), and <25 (5.39%).
- **Archetype**: The 4 archetypes were represented in the European sample: economic (38.00%) and niche (33.68%) archetypes, followed by nature (17.27%) and knowledge (11.05%).
- **Gender**: Male respondents constituted the majority (58.12%), followed by female respondents (41.71%), with a minor representation from other genders (0.17%).
- **Education**: Respondents primarily held university degrees (47.46%), followed by further education, PhD, or specialist qualifications (16.99%), professional school/apprenticeship certificates (15.94%), and high school diplomas (12.08%).

Limitations:
Throughout the survey, we are very limited participation from three countries (see section 11.4 in the Annexes).
The survey results may have been biased due to the overrepresentation of individuals with higher education levels, resulting in a misrepresentation of the population.

6.2 Results

6.2.1 Validation of the archetypes

Regarding the link made by the respondents with the most relevant dimension they identify with their value chain, they were interestingly very much in line with the 4 archetypes (see Table 8).

Table 8 : Links between the value chain and different aspects of the regional life, per archetype

Economy	
economy	2,23
natural ressources	2,20
diversification	2,13
culture and education	1,91

Nature	
natural ressources	2,18
diversification	2,08
economy	1,78
culture and education	1,65

Knowledge	
culture and education	2,07
natural ressources	2,07
diversification	2,03
economy	1,75

Niche	
diversification	2,00
natural ressources	1,92
culture and education	1,89
economy	1,59

6.2.2 Drivers and influential factors in the 22 regions

Regarding the factors that exert the most influence on the production (of the MOVING value chain product), answers are quite the same for all archetypes (only the respondents for the archetype “knowledge and innovation” had a different ranking, placing demographic changes first) (see Table 9).

The selling prices of the products/services and climate change are the two factors that come out as most influential, reflecting well the considerations from a vast majority of the foresight groups.

Table 9 : Most influential factors on value chain production

Score of the most influencal factor on production	Economy	Nature	Niche	Moyenne
The selling prices of the products/services of this activity to consumers	3,83	4,06	3,78	3,8
Climate change	3,65	3,66	3,49	3,58
Demographic changes (positive & negative)	3,14	2,88	3,4	3,23
Tourism	2,71	2,85	2,89	2,78

Knowledge	Moyenne
Demographic changes (positive & negative)	3,56
Climate change	3,5
The selling prices of the products/services of this activity to consumers	3,39
Tourism	2,6

For the “need to improve the situation of the farmers”, the respondents were pointing out the importance of the **water management**, the **public subsidies, better soils,** and **more biodiversity** (see Table 10 and Figure 4). Some slight differences can be found among the different archetypes: more biodiversity coming at first for the regions where the motivations are more nature driven, public subsidies coming at place 4 for the regions where the motivations are more economic driven.

Figure 4 : Mean of the interventions supporting the farmers
(ranks have been translated into weight, the most preferred has been attributed the highest rate=9).

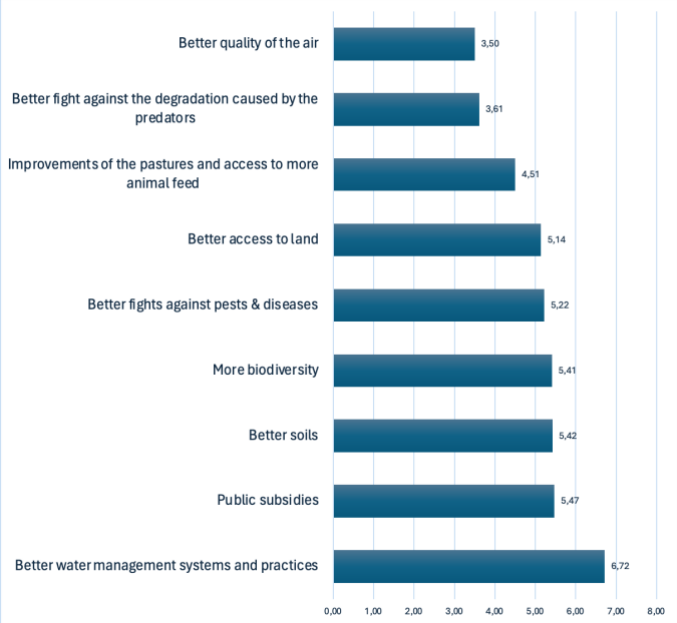


Table 10 : Interventions supporting the farmers, per archetype.

Economy	Mean
Better water management systems and practices	7,34
Better soils	5,78
Better access to land	5,62
Public subsidies	5,45
Better fights against pests & diseases	5,30
More biodiversity	5,29
Improvements of the pastures and access to more animal feed	4,10
Better quality of the air	3,78
Better fight against the degradation caused by the predators	3,35

Nature	Mean
More biodiversity	6,46
Better water management systems and practices	6,32
Better soils	5,57
Improvements of the pastures and access to more animal feed	5,37
Better fights against pests & diseases	4,81
Public subsidies	4,75
Better access to land	4,63
Better quality of the air	3,83
Better fight against the degradation caused by the predators	3,26

knowledge	Mean
Better water management systems and practices	6,73
Better soils	5,83
Better access to land	5,61
More biodiversity	5,48
Public subsidies	4,98
Better fights against pests & diseases	4,81
Improvements of the pastures and access to more animal feed	4,33
Better fight against the degradation caused by the predators	4,00
Better quality of the air	3,22

Niche	Mean
Better water management systems and practices	6,22
Public subsidies	6,03
Better access to land	5,83
Better fights against pests & diseases	5,48
More biodiversity	4,98
Better soils	4,81
Improvements of the pastures and access to more animal feed	4,58
Better fight against the degradation caused by the predators	3,96
Better quality of the air	3,10

To foster the entrepreneurs, the ranking of factors that may support them are **quality and reputation**, access to **new markets** and as well as to **finance and more technologies** (see Table 11**)**. In the recommendations, we have emphasized the role of quality and reputation, therefore of the importance of the European regulation 1151/2012 on quality systems for agricultural products and foodstuffs in the policy recommendations in section 10 below.

Table 11 : Interventions supporting the entrepreneurs.

	Average
Progress on quality and reputation of the products	7,72
Access to new markets for the local enterprises	7,21
Access to finance	6,99
Access to more technology	6,48
Decrease of the prices of the energy	6,19
Digitalization	6,00
Education	5,95
Public subsidies	5,48
Jobs	5,09
Increase of population	4,69
More tourists	4,40

6.2.3 Favorite interventions for a better future

Based on the results of the foresight exercises, some interventions have been proposed to the respondents to reach a better future for the value chain in their region (see Table 12).
To this question, priority was clearly given to land management. In average, the investment in knowledge building (primary and permanent education) came second, followed by support to forestry and agriculture. Mobility and infrastructures were positioned then after. Consequently, we have taken those aspects and priorities in the final recommendations in the policy brief in the section 8. The protection of the natural resources, the investment in renewable energies, and in the circular economy are not given much priority.
The last consideration is given to the access to health services, the support to cooperation between farms and enterprises, and the least priority was given in average to giving more funds to the municipalities and to invest in the local government. This is really in line with the strong distrust towards policies and governments that was expressed in the foresight groups.

Table 12 : Priority of 5 key interventions

Intervention	Preference
Land management	5,00
Invest in primary and permanent education	4,46
Support more the forestry	4,38
Support more the agriculture	4,01
Mobility & infrastructure (roads. trains. airports. public transports)	3,80
Fostering better business conditions for the enterprises	3,50
More access to high schools and universities to transfer technology and innovation	3,17
Protect more the nature	3,04
Access to local products at lower prices	2,81
Invest in renewable energies	2,75
Support the tourism	2,42
Invest in circular economy like recycling. re-using. managing the waste. etc	2,08
Access to health services	1,99
Support the cooperation between farms and enterprises	1,69
Giving to municipalities more funds to invest in infrastructures and local projects	1,68
Invest in the local government	1,24

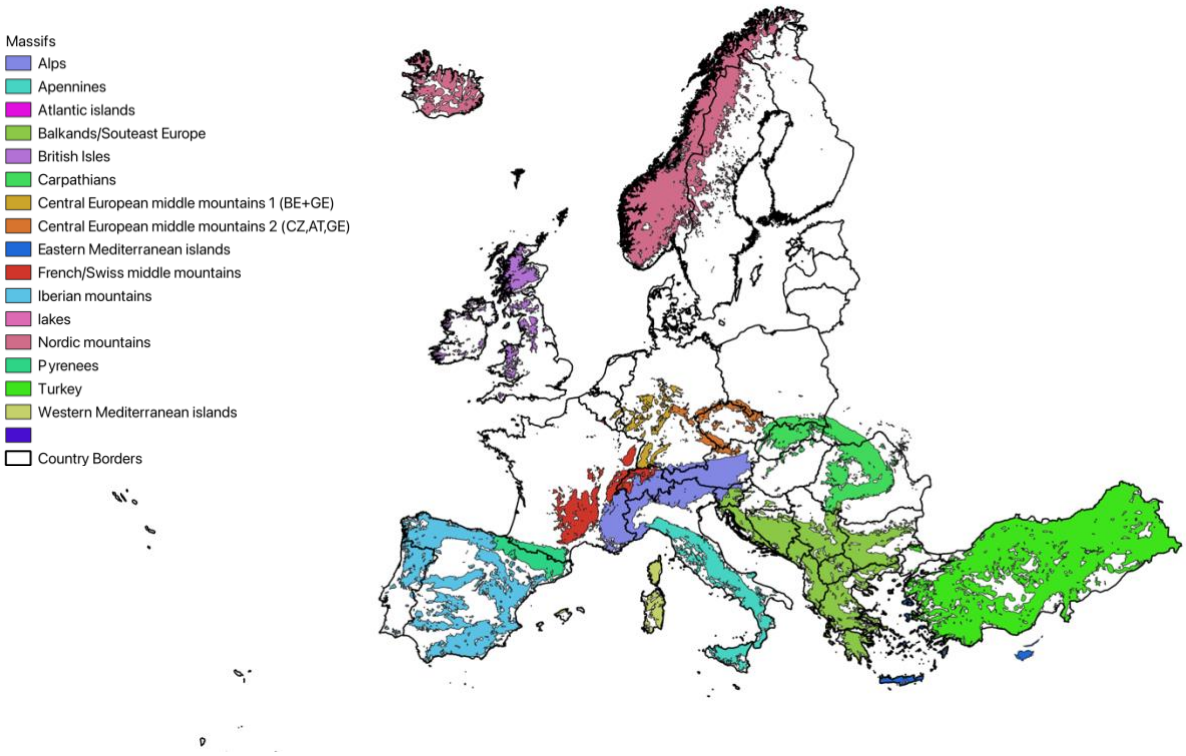
7 Political aspects and multi-level governance of mountain ranges

The foresight groups and the quantitative survey have provided a basis for formulating policy recommendations. This section makes the analysis of the existing European policies that fosters the framework conditions for the mountain regions, in order to identify which are the gaps in the current policies, for which new or adapted interventions and tools policies are presented in the policy brief in section 8.

7.1 Diverse mountain ranges

Each mountain region contributes to Europe's geographical, ecological, and cultural diversity.

Map 14 European mountain ranges



These mountains, according to the geographical definition of massifs, cover around a third of European territory and account for a fifth of its population, representing 65% of the total population of rural areas. According to the political (and more restrictive) definition of the mountain area, which requires that more than half of the surface area or population of the administrative entity of reference is located, respectively lives, in a mountain area, this represents 17% of the surface area of the European Union, and 10% of its population (i.e. a third of the population living in rural areas).

The Scandinavian mountains stretch across Norway, Sweden and part of Finland. This range is characterised by its impressive Norwegian fjords, formed by glacial erosion, and by its mountain plateaus known as "fjells". These mountains are also known for their vast boreal forests, tundra and rich wildlife, including elk, reindeer and various predators such as bears and wolves.
The mountain ranges of Northern Europe also include less elevated but geologically interesting formations such as the Giant Mountains (Krkonose) on the border between the Czech Republic and Poland. They are characterised by a rich biodiversity and landscapes shaped by thousands of years of glacial activity.
The Scottish mountains, along with the Highlands, offer a radically different landscape, marked by deep glacial valleys (glens) and rounded mountains (munros).
The Alpine massif is one of Europe's most famous and extensive mountain systems, spanning several countries including France, Switzerland, Italy, Austria, Germany, Slovenia and Liechtenstein. The Alps are renowned for their spectacular beauty, attracting millions of visitors each year for skiing, mountaineering, and hiking. Their complex geology includes sedimentary, metamorphic, and magmatic rock formations.
The Massif Central is an emblematic example of a volcanic massif in Europe. Situated in the heart of France, this mountainous region has a varied landscape with rounded peaks (puy), plateaux and deep valleys. This complex geological area is the result of millions of years of volcanic activity.
The Jura Mountain range, on the border between France and Switzerland, is characterised by high limestone plateaux, vast forests and karstic landscapes with caves, lapiaz and cirques.
Dry Mediterranean mountains, such as the Sierra Nevada in Spain, have a Mediterranean climate characterised by hot, dry summers and mild winters. These mountainous regions are important for their biodiversity adapted to an arid climate, including many endemic species.
The Mediterranean islands of Corsica, Sardinia, Sicily and Crete offer remarkable mountain landscapes. Their mountains are the result of complex geological processes, including volcanic activity and tectonic uplift.
The Carpathians, stretching from the Czech Republic to Romania, offer a rich and varied ecosystem, home to a flora and fauna that is unique in Europe. These mountains offer landscapes of wild beauty, marked by dense forests, sub-alpine meadows and precious wetlands.
The Pyrenees Massif is a mountain range formed by the collision of the European and Iberian tectonic plates, offering remarkable geological diversity. Some 430 kilometers long, it stretches from the Bay of Biscay to the Mediterranean Sea, separating the Iberian Peninsula from the rest of Europe. The Pyrenees are home to iconic peaks, deep valleys, glaciers and varied geological formations.
The Balkan massif, which crosses several countries in south-east Europe, is characterised by its pronounced relief, deep gorges, and numerous rivers.
Finally, the Caucasus mountains, on the border between Europe and Asia, boast some of the highest peaks on the continent, such as Mount Elbrus. This region stands out not only for its impressive mountain scenery but also for its remarkable cultural diversity, with communities with distinct ancestral traditions.

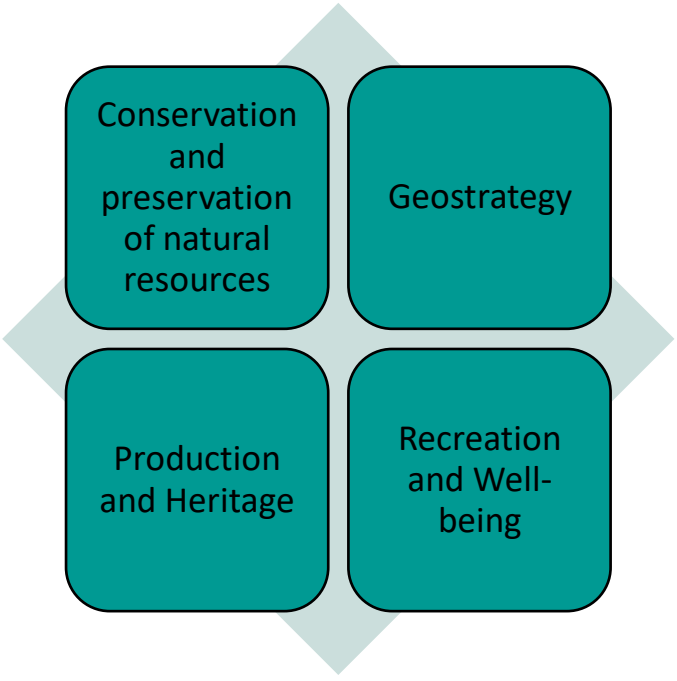
7.2 Key functions of the EU Mountains Ranges

The mountain ranges fulfil fundamental functions for the natural and human balance of the European continent:

- Conservation of natural resources: natural mountain areas are often protected as refuges of biodiversity. Some of them are classified as National and Regional Nature Parks, and UNESCO World Heritage sites. What's more, mountains are vital reserves of freshwater, which supplies all Europe's rivers. Mountains also act as carbon sinks, since their rugged terrain makes them unsuitable for farming. In this role, the peatlands of mountainous regions such as the Alps, the Carpathians, the Scandinavian mountains and certain parts of the British Isles play a key role in biodiversity and the storage of carbon and water.

- Geostrategic function: mountains are border areas par excellence. Communication routes play a crucial role as crossings, and there are often numerous controls and tolls, organising and regulating economic exchanges in the same way as major rivers and their bridges. The protection of communication routes, including tunnels and railways, is essential to the economic vitality of continental trade. Their geostrategic function is crucial in establishing relations between countries and governance regimes within the continent.
- Productive and heritage functions: forestry, farming and pastoral resources, as well as vineyards, orchards and feeder trees such as chestnuts, maintain landscapes that are often classified as World Heritage Sites by UNESCO, while supplying towns in the mountain ranges and being exported all over the world. Indeed, their pronounced character and qualities, recognised for thousands of years, have given them a reputation beyond their region of origin. This culinary heritage is accompanied by a rich cultural heritage, with centuries-old festivals and a variety of typical buildings adapted to the particular climatic conditions. Energy production is also a very important function, from hydro-electric dams to wind turbines.
- Recreational and well-being functions: The mountains have remarkable landscapes, which have enabled the development of tourism, offering areas for relaxation and rejuvenation, as well as for sports and health, with significant thermal spa resources, particularly in the Alps, Pyrenees and Carpathians.

Figure 5 : Functions of the European Mountains



7.3 The mountains are highly vulnerable to climate and demographic pressures

MOVING has produced a detailed vulnerability analysis (DL3.4). Across the 23 case studies, stakeholder perceptions indicate that the most critical factors influencing vulnerability in the 23 regions are climate-related, with changes in precipitation and temperature leading the way. Changes in precipitation, which indicate a general trend of decreasing precipitation, reflect a broad recognition of the changing precipitation patterns affecting most regions. All factors were seen to be increasing in severity, with temperature showing the most significant increase. Other factors, such as pests and invasive species, as well as under- and over-exploitation of land, had widely varying impacts from region to region, suggesting a context-dependent effect. In addition to climatic factors, demographic change has also been identified as a highly sensitive non-climatic factor. While temperature is currently considered highly relevant, it is predicted to have only moderate sensitivity over the next two decades, suggesting that it may not significantly influence management practices in the short term. This is partially contracted by the evidence gathered in the case studies during the participatory foresight exercises, where land abandonment was often anticipated to be stronger at medium and long terms, with impacts on forest location and health, as well as on crop and fruits yields, for example some groups were identifying that temperature raise will influence greatly mountain ecosystem including forest location and chestnut groves.

DL3.4 highlights that, in some cases, stakeholders believe that certain factors could positively influence land use systems. This is particularly the case for temperature in regions with a moderate climate, where it could boost productivity, as opposed to warmer regions. Changes in land use and land cover that increase the areas dedicated to sustainable practices, as well as physical soil degradation that favors beneficial land use systems (for example, organic farming encouraging permanent vegetation cover), are also seen positively. Physical land degradation, overexploitation, changes in land use and land cover, forest fires, pressure from wildlife (especially wolves) and increased frequency of extreme events were identified as causes of vulnerability, but less so than changes in precipitation, temperature, pest and invasive species, extreme events, and demographic changes.

7.4 The fragile future of mountain ranges

Modelling (section 2) has clearly shown that land use is subject to strong potential changes in the future. Depending on the scenario chosen, we can expect a decline in agriculture, particularly grazing, in mountain areas. This decline will not be accompanied by any great improvement in biodiversity; on the contrary, it seems preferable to maintain extensive, environmentally friendly farming to preserve it.

The toughest scenarios are those involving strong climate change, the impact of which is very likely under current conditions, and a sharp decline in population (envisaged at 10%). Although population decline is more uncertain than rising temperatures, its impact is likely in mountain regions, particularly remote and isolated areas. The challenge is therefore to find sufficient levers, capacity, and human resources to support agriculture that care enough on ecosystem services to maintain the cultivated biodiversity, rather than only to agricultural production.

The challenges identified by the 22 MOVING foresight groups are worrying in several respects:

- Demographics, with a decline exacerbated by a lack of basic infrastructure and public services, leading to pockets of desertification.
- Climate change, with fundamental questions about the increase in natural risks and the heightened vulnerability of current agricultural and forestry models.
- Economic conditions, whose chronic instability and profound crises destabilize markets, and therefore business models.

- Tourism, with major weaknesses in the current models for exploiting tourism resources, whether in winter sports due to the recurrent lack of snow, or the negative effects of over-visiting certain remarkable sites.

Opportunities have been identified:

- The importance of digitization in helping communities to strengthen public services, thereby encouraging population stabilization in certain locations that have advantages in terms of jobs, accessibility and connectivity.
- With climate change, the mountains are becoming areas of "climate refuge", as the altitude and forest cover form islands of coolness, helping to stabilize the population and the tourism sector, which is a major source of employment.
- The heritage, image and reputation of certain mountain products stabilize economic conditions and therefore the profitability of businesses.
- Soft tourism reinforces nature conservation efforts.

7.5 Governance and Policy Responses

7.5.1 Multi-level governance

At global level

The International Mountain Partnership (IMP) is a voluntary alliance of partners dedicated to improving the lives of mountain people and protecting mountain environments worldwide. It was created in 2002 following the World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa. Its main objective is to promote sustainable mountain development (SMD) on a global scale. This includes addressing issues such as poverty, food security, biodiversity conservation, adaptation to climate change and disaster risk reduction in mountain regions.

It brings together a range of stakeholders, including governments, intergovernmental organizations, non-governmental organizations, civil society organizations, research institutions and individuals.

The International Mountain Partnership plays an important role in promoting the sustainable development of mountain regions around the world by encouraging cooperation, sharing experiences, and mobilizing support for the unique challenges and opportunities facing mountain communities.

Its mission is to promote the integration of mountain issues into international agendas, such as the United Nations Sustainable Development Goals (SDGs) and the United Nations Framework Convention on Climate Change (UNFCCC). The Secretariat is based at the Food and Agriculture Organization of the United Nations (FAO) in Rome, Italy.

At European level

European governance is organized between direct popular representation (the Parliament), government representation (the Council) and regional representation (the Committee of the Regions). These three bodies have very contrasting weights and methods of initiative, since the Parliament examines and decides on subjects prepared by the Commission, and can ask the Commission to prepare new legislation, but the Commission remains sovereign in its choice of whether or not to prepare it; the Council examines and decides on subjects prepared by the Commission, by qualified majority or unanimously on sensitive subjects, and does not have the legislative initiative; the Committee of the Regions has an exclusively consultative role, and can take up new subjects by issuing opinions. The Commission is made up exclusively of civil servants; it has the legislative initiative, but no decision-making powers. The issue of mountain areas is addressed by all the bodies, although the Committee of the

Regions focuses more closely on the very specific issues of rural areas and cohesion policy. **The priority given by the European Commission to the issue of mountain regions is a key factor in any progress made in developing this policy.**
The European Parliament has issued a report on the Commission's proposal for a "long-term vision for rural areas". Isabel Carvalhais (European Parliament and Member of the RUMRA & Smart Villages Intergroup) made a number of points in this report that specifically address the issue of upland areas. In this opinion, one important point was highlighted:

> *"Point 34. Points out that extensive permanent grassland-based, silvo-pastoral, or extensive livestock breeding, often involving pastures of high environmental value and endangered farmed species and breeds, especially in remote mountainous areas, are key features of European rural areas, which must be supported and encouraged;"*

As part of agricultural policy, the **LEADER** initiative provides support for grassroots initiatives, enabling local networks to form an "agency" in order to establish their operation and governance. However, this measure does not target upland areas in particular, and represents a heavy administrative burden in that it requires the preparation of a completed project, which in turn requires a local capacity for consultation and drafting, which is lacking in upland areas more than elsewhere due to the remoteness of the centers where agricultural and rural support and advisory services are generally located. The capacity to advise rural communities on local development issues is virtually non-existent, unlike agricultural advisory services, which have dedicated missions, for example to support the implementation of the CAP's agri-environmental measures.

EUROMONTANA is a European organization dedicated to the sustainable development of mountain regions in Europe. Its mission of advocacy and representation is central to the advancement of mountain issues in European policies. EUROMONTANA facilitates the exchange of experience, knowledge, and best practice between European mountain regions. This is done through events, publications, research projects and networking initiatives. The organization also supports capacity building for local and regional actors in mountain regions through training, access to resources and tools, and the sharing of expertise. Its work includes raising awareness among the public and political decision-makers of the challenges and opportunities facing mountain regions. Finally, EUROMONTANA participates in projects funded by the European Union and coordinates transnational partnerships to promote the sustainable development of mountain regions.

The LEADER measure is a key element of the European Union's (EU) rural development policy, managed as part of the Common Agricultural Policy (CAP). LEADER" is a French acronym for "Liaison entre actions de développement de l'économie rurale". It aims to strengthen rural development by encouraging local and participative approaches, with an emphasis on innovation, economic diversification and capacity building in rural areas.

Objectives
1. Sustainable local development: LEADER aims to promote sustainable economic, social and environmental development in the EU's rural areas, taking account of local specificities and community needs.
2. Strengthening local governance: It encourages the active participation of local players, including local authorities, businesses, associations and civil society, in the design, implementation and evaluation of development projects.
3. Economic diversification: LEADER supports the economic diversification of rural areas by encouraging innovation, entrepreneurship and job creation in sectors such as agriculture, rural tourism, crafts and local services.

How it works
1. Local Action Groups (LAGs): The implementation of LEADER is based on Local Action Groups, made up of local stakeholders representing various sectors of society, which draw up a local development strategy (Local Development Plan) and select projects for funding.
2. Funding : Projects are funded by the European Agricultural Fund for Rural Development (EAFRD) and co-financed by national and local resources. Funds are allocated on the basis of the priorities defined in the Local Development Plan.
3. Flexibility and innovation: LEADER offers a degree of flexibility in the implementation of projects, enabling LAGs to respond appropriately to the specific needs and opportunities of their territories. This encourages innovation and experimentation in rural development approaches.

National support and consultation frameworks

The national strategic plans provide the budgetary framework for regional assistance, and therefore set out what assistance will be possible in mountain areas, in the same way as in other "disadvantaged" areas. As European support is subject to national co-financing, the budgetary framework sets the maximum amounts that will be allocated to mountain areas. National concerns are not directed towards sparsely populated areas, as the electoral weight is clearly that of a minority as opposed to dense urban areas. As a result, elected representatives from mountain areas need to fight and join forces to gain greater visibility and a bigger audience with the elected representatives and government departments in charge of budget framing.

Only those countries with a significant geographical and demographic share of mountain massifs have long-term strategies for equipping and improving the quality of life of mountain populations: France has had a mountain law since 1985, and Romania since 2002.

It is surprising that the countries of southern Europe, where mountains are omnipresent, including EU members such as Slovenia, Greece, Italy, Spain, Portugal, Croatia and Cyprus, as well as the Balkan countries in general, have not yet decreed their Mountain Policy, either at regional or national level. It should be noted that the Principality of Andorra, at the heart of the Pyrenees, has adopted an ambitious and exemplary mountain policy.

French law of 9 January 1985 on the development and protection of mountain areas

Article 1er : The French Republic recognises mountains as a group of territories whose equitable and sustainable development constitutes an objective of national interest by virtue of their economic, social, environmental, landscape, health and cultural role.
Mountains are a source of heritage, environmental, economic and social benefits.

Main objectives:
1. Environmental protection: The Mountain Law aims to protect the fragile ecosystems of mountain regions, in particular by regulating human activities likely to damage them, such as urban development, tourism and farming, and the exploitation of natural resources.
2. Economic and social development: This seeks to encourage balanced economic and social development in mountain areas, by supporting key sectors such as agriculture, tourism, crafts and local services. This includes measures to encourage business start-ups, support traditional farming activities and promote sustainable tourism.
3. Spatial planning: The Mountain Law aims to ensure coherent and harmonious spatial planning, taking into account the specific constraints linked to the topography and geography of mountain regions. This includes measures to preserve natural landscapes, limit urban sprawl and promote economical use of resources.
4. Public services and quality of life: This seeks to ensure that people living in mountainous regions have access to quality public services, such as education, health, transport and communications infrastructures. This includes measures to combat medical depopulation, improve road and rail links, and promote broadband Internet access.

Main legal provisions :
1. Protection and enhancement of natural and cultural heritage: The Mountain Law provides for measures to protect and enhance the natural and cultural heritage of mountain regions.
2. Financial and tax aid: It provides for specific financial and tax aid schemes designed to support the economic and social development of mountain regions.
3. Town and country planning: This defines specific town and country planning rules aimed at limiting urban sprawl and preserving the natural landscapes of mountainous regions.
4. Public services and transport: This includes measures to ensure that people living in mountainous regions have access to high-quality public services.

At regional level

The regions play a central role in the choice and management of interventions under the second pillar of the CAP and cohesion policy. However, the concerted authorities are often the administrative relays of the national bodies, and less so the regional parliaments, because these levels of democratic power do not exist in all the Member States or do not have sufficient powers or resources to exercise them.

Regional legislative instruments specific to mountains are rare. We have identified two: the Alpine Convention and the mountain policy of the Catalonia region in Spain.
This level of consultation and legislation makes it possible to implement the same principles of decompartmentalization between sectoral policies to seek coherence and synergies between the levers and to unlock the bottlenecks so that mountain communities, which are often isolated and deprived, can access the technological, human and financial resources to provide relevant responses to the specific pressures exerted on their fragile natural and human environment.

At local level, in the districts and communes

From a historical perspective, the management of common property has always been a reality in many mountain regions. A pioneer of collective management with the "commons", and therefore of forms of governance rooted in the doxa of community participation, respect for

the commons, its upkeep with group organization routines (impossible to do alone), and ways of regulating the efforts of the community and the efforts of everyone.
Some of these mechanisms are still very much in place, but others, such as water management, have been modified because of the monopolization of certain resources by the central state in the higher public interest, or by private companies that have acquired concessions whose fees help to balance municipal finances, for example water resources for the private companies that build and operate dams. At the present time, these mountain specificities in the use of the commons need to be rethought and shared use between several interest groups, whether local or remote, needs to be written on new bases of governance that need to be rethought, to enable the pressing issues to be addressed. An appropriate European framework could help communities to reassert their needs and capacities in this area. The example of SMART-Villages could serve as a model.

The links between plains and mountains have been highlighted in many studies of human geography, from transhumance areas in the Mediterranean (wintering on coastal plains) to trade between alpine cheeses from Alpine areas and towns on neighboring plains. These links between the plains and the mountains, between the center and the periphery, are an important factor in accessing existing aid, whether under European or national policy. With the new means of communication, long-distance relations and access to information need to be rethought and adapted and could improve understanding by mountain stakeholders and consideration of their requests by regional and national bodies.

Managing traditional knowledge is a key to helping mountain communities write their own future. Local cohesion and governance need to be improved to rebuild the bonds of trust that have broken down in most cases. Maintaining these links often requires long-term structures and spaces, as well as overcoming distrust and competition. This requires dedicated people or structures with the capacity, resources, and skills to facilitate the cohesion of these communities. Our MOVING regions and others offer many examples of the importance of these structures and their varied forms. Sometimes it's the agricultural advisers or the agricultural college (public agents) who take on this role, sometimes it's the committees of the management groups for geographical indications or protected designations of origin, or other cooperatives, sometimes it's the livestock census offices, or the networks around the Natural Parks and other initiatives. All these communities form and endure around a common goal, linked to the success of a sector or industry that is essential to these regions. In the case of PDOs-PGIs, this goal is also linked to the management and promotion of traditional knowledge. These are signs of the autonomy and agency of local communities.

Local policies, at the level of communes or communities of communes, of territories grouping communes such as National or Regional Nature Parks, or other groupings of existing territorial management units, consider the different needs specific to each small territory, on the scale of a district or a valley. The parks are well established in mountain areas, as these are prime areas for action to conserve natural areas. They receive targeted support to strengthen local governance and planning, and to promote synergies between the various policies and levels of supra-local governance.
The National Parks are organized as a knowledge network at national level in most Member States, and at European level as part of the EUROPARC network. Europe has 433 national parks covering an area of 1,257,382 km², covering 15.6% of the land surface of the 37 countries with a national park. In 2020, the European Union had 292 national parks covering 1,094,287 km², or 17.1% of its territory (source: EUROPARC).
In addition to national parks, whose main mission is nature conservation, there are around 900 regional nature parks in 22 EU Member States and 36 European countries. These parks

play a key role in the implementation of the European LIFE programme and its environmental policy tools.
For the moment, there is no "Mountain" section within the EUROPARC bodies.

7.5.2 Mountain policies

Under these conditions, and in view of the vulnerability of mountain areas and the threats posed by climate change and demographic change, a few measures have been taken at European level to help mountain areas under the Common Agricultural Policy. Cohesion, environmental and research policies, on the other hand, ignore the specific characteristics of mountain areas.

Specific "mountain" features of the common agricultural policy

In 1975, the Common Agricultural Policy introduced an instrument under the second pillar initially dedicated to supporting upland areas: the Natural Handicaps Compensation Allowance (ICHN), which introduces a direct payment to help farmers make a living from their activity, despite the natural handicaps (slope, climate, access) that cause significant additional costs for transport, buildings, facilities, and extra workload. The difference in production costs between lowland and mountain areas is estimated at 25%. This premium is granted regardless of the specific characteristics of each mountain area.
It should be noted that 58% of the European Union's utilised agricultural area is covered by measures to compensate for natural handicaps, and that 17% of the EU's UAA is classified as a mountain area. The Member States with part of their UAA in mountain areas are : Slovenia, 55.80%; Finland, 52.71%; Austria, 49.58%; Greece, 44.19%, Italy, 31.64%; Spain, 30.60%; Portugal, 25.48%; Slovakia, 25.38%; Bulgaria ; 19.20%; France, 16.45% ; Romania, 15.09% ; Czechia, 14.71% Sweden, 10.75 % ; Cyprus, 6.54% ; Germany, 3.47% ; Croatia, 3.13% ; Poland, 1.74%.

The compensatory allowance for permanent natural handicaps (ICHN) in mountain areas of the European Union is therefore part of a wider set of measures to support farming in difficult conditions, known as agri-environmental and climate measures. These measures are designed to compensate farmers for the additional costs and loss of income they incur because of natural handicaps, and to encourage the pursuit of sustainable farming and land management.

The natural handicap compensation premium in mountain areas of the EU

Context
Mountain areas are often characterised by difficult conditions for farming, such as sloping terrain, a harsh climate, low soil fertility and short growing seasons. These conditions lead to higher production costs and limit agricultural productivity. To maintain farming in these areas, which is essential for preserving landscapes, biodiversity and preventing land abandonment, the EU offers financial compensation to farmers working under these constraints.

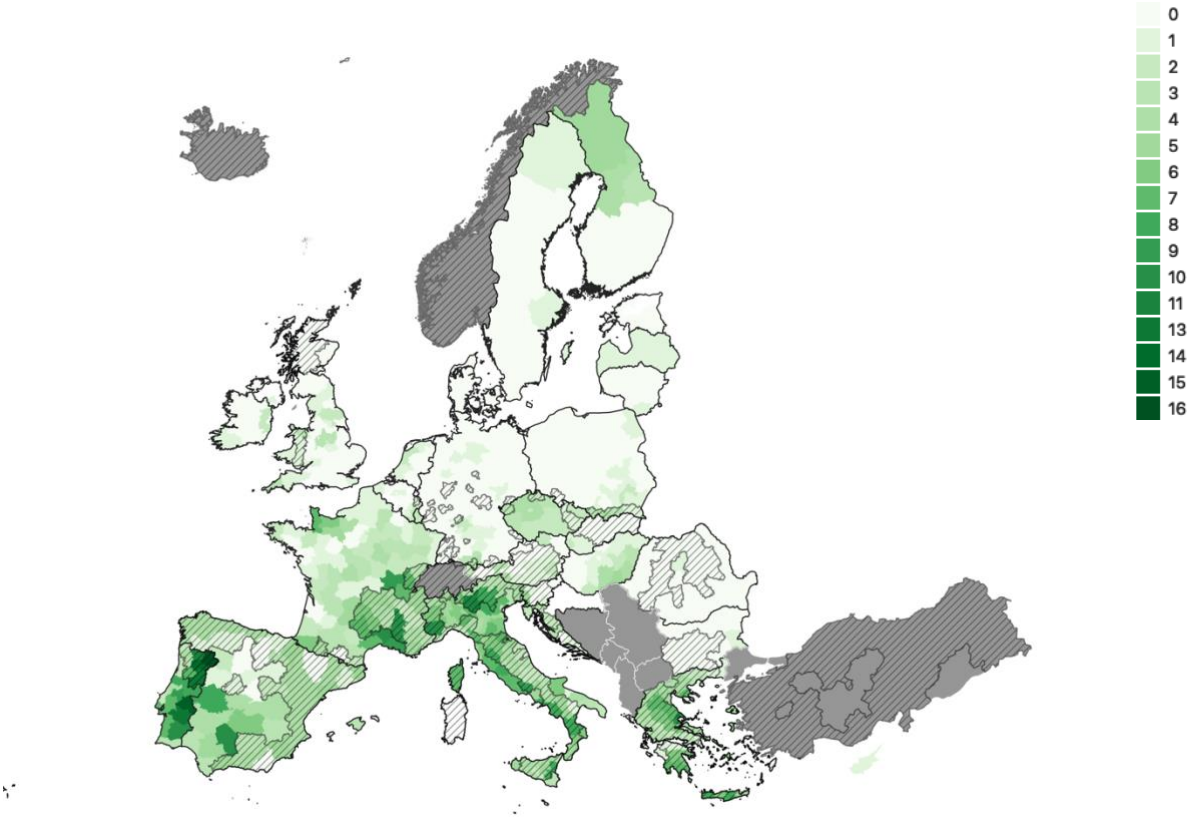
Legal and financial framework
The compensation premium for natural handicaps in mountain areas is financed by the European Agricultural Fund for Rural Development (EAFRD), one of the European Structural and Investment Funds. The specific measures and the amount of compensation are determined as part of the EU's Common Agricultural Policy (CAP), which is regularly reviewed and adapted.

Objectives
The main objectives of the compensation premium are :
- To support the economic viability of farms in mountain areas.
- To preserve the environment by encouraging sustainable farming practices that help to protect landscapes and ecosystems.
- To keep rural areas alive, by preventing land abandonment and encouraging the maintenance and development of rural communities.

Eligibility conditions and implementation
Farmers wishing to benefit from this premium must meet certain conditions, which may include implementing sustainable farming practices and complying with specific environmental standards. The exact conditions and amount of compensation may vary from one Member State to another, as each EU country draws up its own rural development programme based on CAP guidelines, but with the option of adapting it to local conditions.

In 1992, the European Commission and Council Regulation (EU) No 2081/92 of 14 July 1992 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs. This regulation was amended several times until Regulation (EU) No 1151/2012 of the European Parliament and of the Council of 21 November 2012 on quality schemes for agricultural products and foodstuffs, last amended on 8 June 2022. Santini et al. (2013) measured that in terms of economic importance, measured by the relative value of production at producer level, mountain farmers channel a significant proportion of their production under PDO and PGI, particularly in certain sectors such as dairy and fruit. As a result, and given the importance of the value of the products, their quality and reputation, as well as the opportunities to access remunerative markets, the role of geographical indications is fundamental for Europe's mountain communities.

Data from Flinzberger (2022), based on a purposive sample of 638 PDO-PGI in the EU, shows the striking preferential location of protected designations of origin and geographical indications in mountain areas, and their strong link with high values for the benefits of the socio-ecological systems associated with them on nature and landscapes.



Map 15 : Counted PDO per NUTS3 (total 638) - " mountain NUTS3 " with lines

Promotional measures for these products, as well as aid for cooperation under the second pillar of the CAP, producer organization status and aid granted under operational programmes are key measures for the future of mountain areas.
More generally, the second pillar of the CAP provides support for rural areas, and can support rural life in upland areas in the same way as other rural regions, without any special features.

In 2012, the European Commission extended the scope of quality promotion and protection at European level. The regulation of the "mountain" reserved term in European Regulation 1151/2012 aims to protect and promote agricultural and food products from mountain areas, recognizing their cultural, economic and environmental importance.

REGULATION (EU) No 1151/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 November 2012 on quality schemes for agricultural products and foodstuffs

Article 31 - Mountain produce

1. The "mountain product" is established as an optional quality term.

This term may only be used to describe products intended for human consumption listed in Annex I to the Treaty in respect of which:

a) Both the raw materials and the feed for livestock come mainly from mountain areas;
b) processed products are also processed in mountain areas.

2. For the purposes of this Article, mountain areas in the Union shall be those delimited pursuant to Article 18(1) of Regulation (EC) No 1257/1999. For products from third countries, mountain areas shall include areas officially designated as mountain areas by the third country or meeting criteria equivalent to those laid down in Article 18(1) of Regulation (EC) No 1257/1999.

3. In duly justified cases and in order to take account of natural constraints affecting agricultural production in mountain areas, the Commission shall be empowered to adopt, in accordance with Article 56, delegated acts laying down derogations from the conditions of use referred to in paragraph 1 of this Article. In particular, the Commission shall be empowered to adopt a delegated act laying down the conditions under which raw materials or feedingstuffs may originate outside mountain areas, the conditions under which processing of products is allowed outside mountain areas in a geographical area to be defined, and the definition of that geographical area.

4. In order to take account of the natural constraints affecting agricultural production in mountain areas, the Commission shall be empowered to adopt delegated acts in accordance with Article 56 as regards the definition of production methods and other relevant criteria for the application of the optional quality mention referred to in paragraph 1 of this Article.

Since 2015, the EU's CAP network has also been funding operational groups under the AGRI European Innovation Partnership (EIP). This is time-limited support for experience and knowledge exchange meetings for groups with innovative projects that aim to explore opportunities or find practical solutions to the problems of European farmers, foresters and rural people. The aim is to identify opportunities or find practical solutions to the problems facing Europe's farmers, foresters and rural communities. In this PEI AGRI, in 2023, 12 Italian groups, 3 Austrian groups, 1 Spanish group and one Irish group have been identified in the database as having worked, or still working, autonomously on mountain-related subjects.

Finally, in 2023, still in the context of the CAP, the EU CAP network launched a reflection group on competitive and resilient mountain areas, with the guiding question: "what innovative approaches and what innovations linked to agriculture, forestry and the bioeconomy can promote the competitiveness and the socio-economic and environmental resilience of mountain areas and their communities? The experts have selected a limited list of priority topics, which are as follows:

- Governance, with an emphasis on conflict management;
- Social inclusion, particularly of young people and vulnerable groups;
- Direct sales in short supply value chains;
- Biobased products and the circular economy.

The "mountain" specificity of cohesion policy

Only the European Parliament's resolution of 10 May 2016 on cohesion policy in mountain regions of the Regulation EU 2015/2279 could change the current situation, which is a complete lack of measures to address the major challenges facing the EU's mountain regions. "if the EU's mountain areas are too diverse to be the subject of an integrated European strategy, a framework for development strategies in mountain areas could be drawn up, and that this should take particular account of the challenges and importance of mountain farming, natural resources, biodiversity and climate change, biodiversity and climate change. Such a framework could be used as part of cohesion policy, but more flexible multi-level governance arrangements are also needed. Such a framework could be used as part of cohesion policy, but more flexible multi-level governance arrangements are also needed."[1]

Note that this important point was raised in the European Parliament's report on the long-term vision for rural areas, in which MEP Isabel Carvalhais calls "for a strong rural dimension in future cohesion policy regulations, which should include dedicated funding to that end; suggests that the Commission launch a study, following a public consultation, on the possibility of earmarking a share of the European Regional Development Fund and the Cohesion Fund to rural areas, in addition to other beneficial investments, with special attention to regions with specific geographical characteristics such as **mountains**, remote areas, islands and outermost regions".

[1] (Gløersen E, Price M, Borec A, Dax T, Giordano B. 2016. Cohesion in the EU's mountain regions-Research for the REGI Committee, European Parliament, Directorate-General for Internal Policies, Policy Department B: Structural and Cohesion Policies, Regional Development, IP/B/REGI/IC/2015_175. Brussels, Belgium: European Parliament. http://www.europarl.europa.eu/RegData/etudes/STUD/2016/573420/IPOL_STU%282016%29573420_EN.pdf)

8 Policy Brief
Europe's mountains on the road to a better future

8.1 A fragile future due to the severe impact of climate change and the absence of a structuring policy framework

Europe's mountains are extremely diverse, due to the nature of the mountain ranges, each with its own geological history, climate and culture shaped over the centuries. Climate change, the impacts of which are faster and stronger than even the gloomy forecasts of the IPCC experts, the weakness of negative demographic trends which have not been halted since the decline began at the end of the 19th century, the pressures of mass tourism in certain regions and the globalization of trade which places mountain products in severe competition with similar products from areas which face far fewer constraints, all these pressures mean that mountain communities need to develop ambitious strategies to ensure a better future by 2050.
To support them in their efforts to realize their projects, European policy, under the impetus of the European Commission, which has the legislative initiative in the EU, could take better into account the specific realities of mountain areas. The main compensation tool is the compensation for natural handicaps (ICHN), which came under the second pillar of the CAP in 1975. In addition to this annual transfer of money to upland farmers, in a form that is modulated by the Member States in their annual strategic plans, this tool is subject to compulsory co-financing, in the same way as all the tools under the second pillar of the CAP.
In addition to this tool, several other regulations benefit the mountain region, which makes extensive use of the protection of geographical indications and designations of origin, a 1992 regulation revised in 2006 and 2012. However, the introduction in 2012 of the reserved designation 'Montagne' has not had the response or impact hoped for by the mountain representatives grouped together within Euromontana. The other policies that have a major impact on mountain areas are the cohesion policy, the environmental policy, and the research policy. There is no mention of upland areas in these policies, and the tools and programme dedicated to upland areas are sorely lacking in the light of the particularly severe period that has already begun, with the disastrous impact of the mass abandonment of villages in all upland areas that have no tourist activity, and the more recent but very serious impact of climate change.

As a result of the lack of this structuring political support, most mountain communities have little confidence in the future, and feel very marginalized and forgotten by political priorities. This is reflected in the fact that none of the 22 local foresight groups involved in the MOVING project cited a policy measure - whether agricultural, cohesion, environmental or research - that corresponds to their needs as mountain regions.
This distance between the players and European policy, even when relayed by the regions and local authorities, is a worrying fact. Some of the groups involved in the MOVING project are very fatalistic and pessimistic and have lost faith in the ability of their politicians and governments to help them. It is worth noting that in the qualitative survey, interventions to support local government or to strengthen local budgets to support community initiatives were relegated to last place. Once again, this reflects the enormous mistrust and the gap between the needs of residents and the ability of elected representatives and politicians to respond to them.

For this reason, to support mountain communities in achieving their objectives for a better future, we strongly advocate re-establishing trust between the populations and governance at all levels. A structuring political framework is urgently needed to support local projects and

initiatives, which we have identified and qualified as strategic options, some of which have the potential to be adapted for replication across a mountain range, or even several mountain ranges.

8.2 Intervention needs in the mountain regions of the MOVING project

The members of the 22 MOVING foresight groups have actively identified major needs for intervention that require appropriate policies.

The foresight exercise as part of the MOVING project involved 22 foresight groups, working on the scale of the mountain region in which a value chain is located, which was also analyzed in detail as part of the project.
The research team, in consultation with the foresight group, has identified the long-term pressures that will have a long-term influence on the region's future. By prioritizing those pressures whose intensity is very high and over which local stakeholders have no direct influence, four scenarios were identified. A most likely or most desired scenario was then selected. Regional strategies for a better future, with targeted interventions and corresponding needs for political support, were identified in the final phase of this foresight work carried out at local level in the 22 regions concerned.

Analysis of the 22 scenarios has enabled them to be grouped into four archetypes, according to the motivations and values underlying the scenarios and the strategies for a better future. These four archetypes are motivated by considerations of: (1) economic growth and success, (2) preserving natural resources, (3) diversifying activities and developing niche products, and (4) developing and disseminating knowledge and innovations.

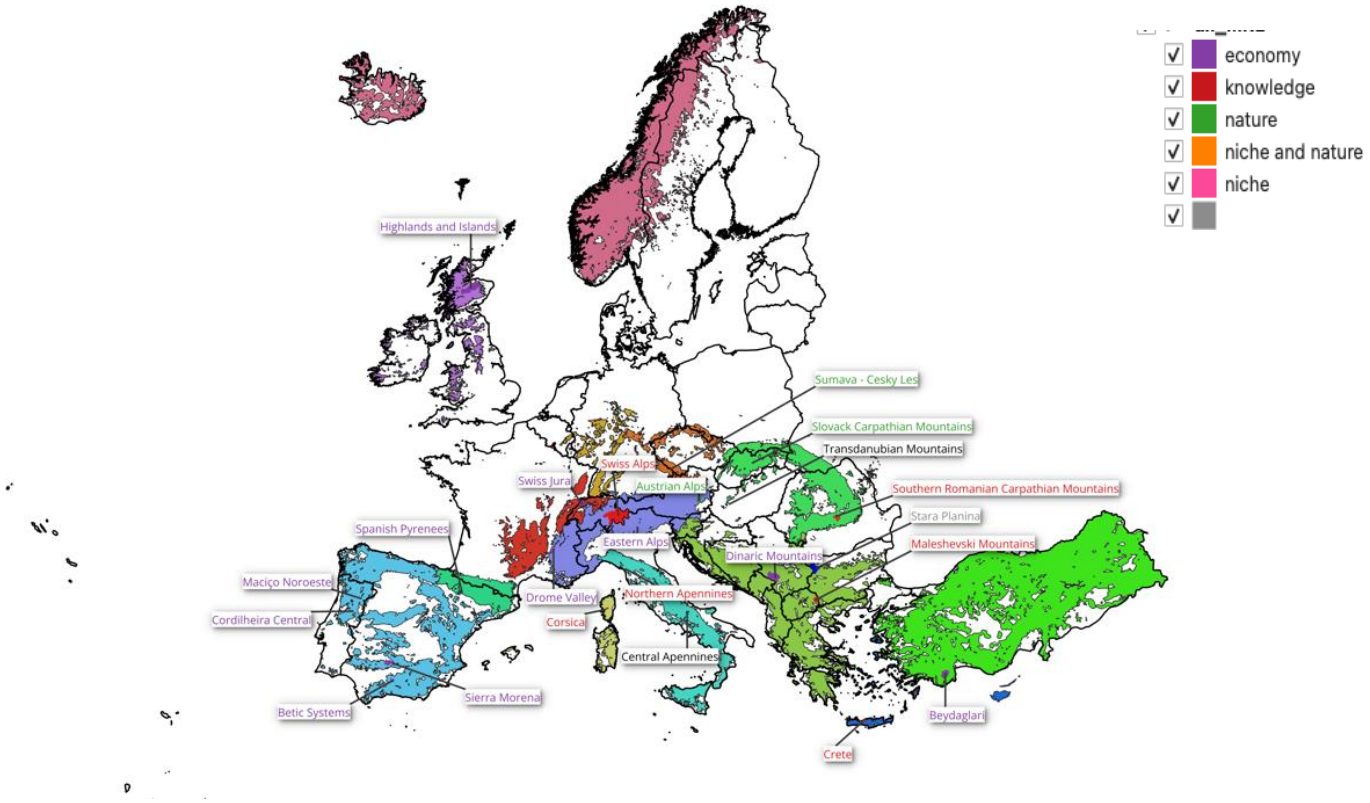
Half of the local foresight groups (11/22) saw their future as a consolidation of their sector's current economic model, identifying major investment needs to adapt to the many negative impacts of climate change in their region. Six regions have identified opportunities to diversify their activities and niche products. Finally, three regions have developed new sectors based on natural resources and soft tourism. Only two MOVING sectors have relied specifically on knowledge, new skills and technological advances to build their future strategy.

The following needs have been prioritized by the local MOVING foresight groups:

- Interventions linked to **securing and broadening economic prospects in their region**, linked to strengthening value chains, short circuits, increasing **sustainable rural tourism** and **diversifying** diverse and alternative sources of income.

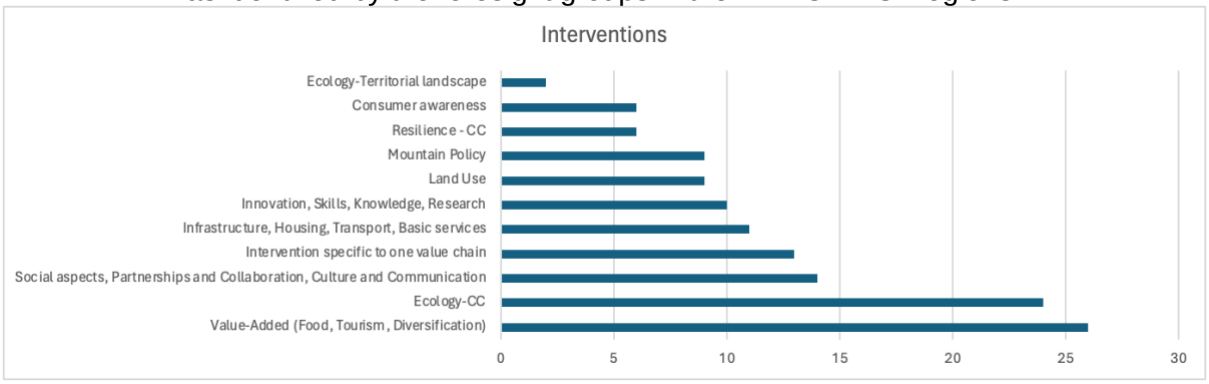
The priority given to **promoting product quality and reputation** to support local entrepreneurs in the quantitative survey underlined the crucial importance for the mountain of European Regulation 1151/2012 on quality schemes for agricultural products and foodstuffs.

Map 16 Position of the 22 MOVING case studies in the European Mountains chains.



- Interventions aimed at preserving **natural capital**, in the sense of helping farmers adapt to climate change by maintaining natural resources and first and foremost by **investing in infrastructure for water supply** and management, capacity building for **adapting forestry and agricultural practices**, **payment for ecosystem services**, and **better public management of genetic resources**. These points were highlighted as priority needs for improving the future of farmers by the quantitative survey.
- The need to foster **well-being** in the mountains, encourage collaboration and promote commitment and a culture of effort and value, as well as offering more stable jobs.
- The need to have the resources and support to multiply **innovation**, **strengthen skills**, acquire **knowledge** and be a **front-line beneficiary of research**.

Figure 6 Types of Interventions that are needed in Mountains for a better future in 2050 as identified by the foresight groups in the 22 MOVING Regions.



The eight interventions (out of 16 proposed) preferred by 563 citizens from the MOVING mountain areas were as follows:

1. Land resource management.
2. Invest in primary and continuing education.
3. More support for forestry.
4. More support for agriculture.
5. Mobility and infrastructure (roads, trains, airports, public transport).
6. Promoting better conditions for businesses.
7. Facilitating access to secondary schools and universities to transfer technology and innovation.
8. Greater protection for nature.

8.3 Strategic options

The extreme variety of regional strategies reveals that there is no single policy mix that will meet the needs of all Europe's mountains. Indeed, the motivations of the regions may be similar, tackling the same Grand Challenges, and the key variables that can be influenced by stakeholders are the same from one region to another.
The strategic options reflect approaches that emerge spontaneously in mountain areas, but some could become tools of future regional, national, or European mountain policy. There is a lack of Strategic option that propose intervention on the land resource management that has been selected as priority in the quantitative survey (cf. Figure 6). This can be explained by the composition of the foresight groups, that have followed a participatory process. Therefore, the groups did not address the most controversial topics, as the participants and the facilitator were trying to converge. This is a limitation of the participatory process based on deadlines and search for commitment and regular attendance of the invitees. Nevertheless, the feedback from research teams, and members of the foresight groups were very positive. Preparing together a vision for a long-term future motivate the members of the communities to engage in fruitful and constructive discussions. The role of the facilitator is essential.

To engage in the future, a set of interventions targeting gaps and needs may be developed by the local actors and be bundled in a “strategic option” that address some challenges.
According to the approach developed during the MOVING project, the strategic options are defined as follows:

- They tackle one or more challenges, with a specific lead organization deciding on the objective and the way forward, funded by an identified funding mechanism, usually blended funding, and deploying a range of interventions.
- The geographical scope of a strategic option may be very limited or very broad, but it must correspond to the perimeter of a sub-national area, although in some cases it may be sub-national but cross-border.
- The scope of an SO is very varied. It can be limited to one sector (such as beekeeping or chestnut growing) or it can cover a wide range of activities carried out by the whole population.
- A strategic option can be replicated, with minor or major adaptations, in other locations. This replication can be supported by a specific national or European mechanism.
- SOs with limited scope can be promoted in many locations with little adaptation. As the complexity of a package of interventions increases, the adaptation and customization of SOs to the local context can be more demanding, limiting the copy and paste approach to defining specific interventions.

Many SOs are already in place across Europe and could be better adapted to meet the specific challenges of mountains. Some SOs are emerging and should be assessed for their potential

both to meet the needs expressed by the MOVING multi-stakeholder platforms and to be replicated. Policies and tools are already in place for supporting the Mountain communities to identify and adapt existing SOs or innovate and create new ones.

8.4 Knowledge and intervention definition networks

Local governance plays a central role in defining long-term strategy, identifying strategic options and implementing them. Stakeholders need to be able to meet in networks and develop their skills by working together as an "agency".

MOVING research, like others, has helped to identify and understand the importance of local networks in enabling innovations to emerge and spread, whether they be adaptive or more radical, and of various kinds: technological, economic but also social, including those relating to governance.

Knowledge-sharing networks are also key to developing skills and experience. These networks, as real social breeding grounds for local innovation, need greater support in the mountains, to link agents and knowledge physically or virtually, at a time when isolation, remoteness from centers and physical and climatic distances and obstacles severely penalize mountain people.

Agency

The capacity for "agency"[2] is exercised based on past dynamics, but also based on those that emerge within these networks. This agency translates into a form of empowerment that is specific to each territory in its own context. It translates into a new configuration of practices, in an individual or collective effort to overcome the socio-technical barriers that lock players into a logic. The notion of agency was recently identified as crucial to the transformation of global food systems in the report of the High-Level Panel of Experts to the Committee on World Food Security of the United Nations Food and Agriculture Agency. Agency is essential for reducing inequalities in food security and nutrition. It is "...the ability of individuals or groups to make their own decisions about the food they consume, the food they produce, how that food is produced, processed and distributed within food systems, and their ability to engage in processes that shape the policies and governance of food systems" (HLPE 2020).

In the cases studied in the MOVING project, the "productivist" logic is rarely purely "extractive" in relation to natural resources (soil, water, biodiversity). This is because in mountain areas, soil and climate conditions do not allow for extensive intensification of the 'agro-industrial' type. However, hyperspecializing (in wine or olive production, for example) is well established in some of the areas studied.

In cases of hyperspecializing or productivist logic, the transition to a model that respects ecosystem balances often requires the scrapping, often before the end of the depreciation cycle, of machinery and installations, or even dedicated buildings. It also means buying new equipment, changing land use and redesigning existing buildings, or even building new ones. The levels are complementary, between the individual level, which requires adequate funding, and the collective level, which requires resources to take the time and acquire a new capacity to set up mediations between the players. In fact, there is a great deal of confrontation around

[2] Agenticity can be defined as a faculty present in humans that allows them to interpret and evaluate their past, imagine future projects and undertake actions to try to achieve them in order to change their present situation (Bériault, X. & Dubois, J. (2020). L'union fait la force: l'agencéité et les pratiques d'inclusion des mouvements de résistance patriote (1837) et métis (1869). Minorités linguistiques et société / Linguistic Minorities and Society, (14), 22-43. https://doi.org/10.7202/1072309ar

the trajectories and choices to be made when it comes to changing the way people live in these areas.

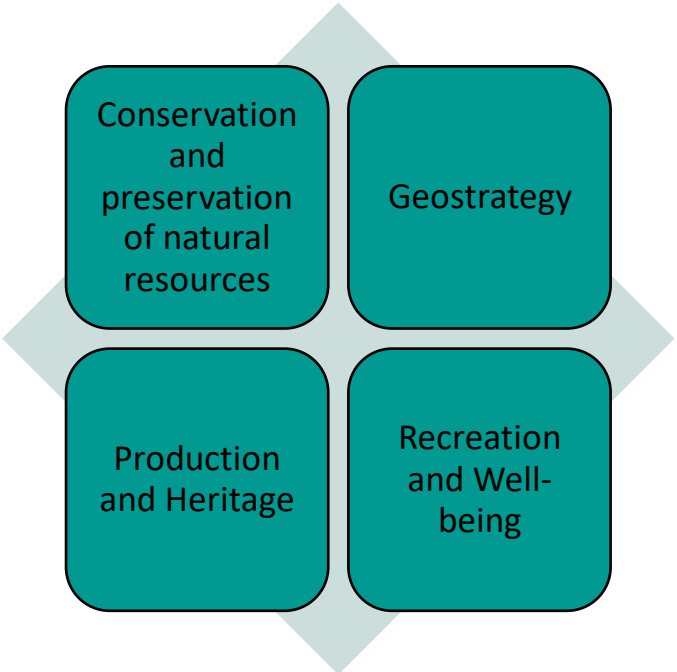
The foresight groups all expressed a desire to accelerate the cycle of major adaptations required to cope with the impacts of climate change, which they are aware they have already initiated.

In most of the regions studied as part of the MOVING project, the aim is to continue to change the trajectory of the essentially economic development of products (food or tourism), in favor of a trajectory of strong coherence with natural ecosystems, in a new balance of the socio-ecological system. This adaptation is underway in all regions, but it should be stressed that it is sometimes a matter of choice rather than necessity. It should be noted that some of the case studies focused on innovative initiatives, based mainly on nature conservation and ecosystem services, combined with a focus on soft tourism, traditional products, or niche products.

8.5 Recommendations for fostering MOUNTAIN Policies

Faced with these pressures and considering the opportunities, the needs of mountain communities to continue to fulfil all the functions of the European mountains have been identified by the foresight groups in the 22 participating regions of the MOVING project.

Four key functions should be preserved and reinforced through European and national policies. There are represented below, and for each, several recommendations are commented.



The **geostrategic function** is under severe threat, requiring investment in the protection and maintenance of access routes, as well as their restoration following extreme climatic events that are occurring at an accelerating pace. The main need relates to massive investments that

are urgently needed to adapt the capacity of mountain communities to tackle the impact of climate change on the infrastructures.

Recommendation 1. Investment plans for each mountain range need to be drawn up as part of a concerted approach to regional planning with local communities and regional and national authorities. It is vital that cohesion policy includes a dedicated legislative basis for the mountains, with European funding earmarked for the mountain areas.

Agricultural production is the function most affected in the short, medium, and long term, with major adaptations to be made to relocate production, to adapt the plants and animals through genetics, to promote and develop, or rehabilitate, irrigation and water storage systems, etc. Energy production from dams is threatened in the medium to long term by melting glaciers, and Europe's mountain communities are highly vulnerable and highly dependent on the implementation of the Paris climate agreements. The main gap is that most of the tools and measures that exist at European level are part of the second pillar of the CAP. There is an urgent need to raise the awareness of the regions and member state national authorities about the importance of the integration of those measures in the National Strategic Plans (NSP).

Recommendation 2. To modernize, upgrade and adapt to the Mountain LEADER and SMART-Village as tools for supporting the networks and strenghthening the mountain communities. These tools have a place at European level in the second pillar of the CAP. The tool should be designed to strengthen the capacity for agency.

The Montagne region cannot rely on competitive advantages linked to quantity, or economies of scale. The importance of the **function of heritage** is reflected in quality terms. All measures to encourage the upgrading of production structures, from farms to small food processing units, are tools that currently exist in European agricultural policy. They must be mobilized by local players, with the consequent support of their regional and national authorities. Indeed, in some cases, careless or clumsy interpretations lead to disappointment and damaging rejection at local level, as seen in the case of the Caccio Cavallo PDO in the Alto Molise region of Italy, for example.

Recommendation 3. Improve the competencies of mountains communities and regional / national authorities regarding the quality of products linked to their origin, the European regulatory framework and tools that protect and promote the origin (PDO, PGI, Mountain quality term and organic schemes). Upgrade and support the farms and food artisanal that are active in those high-quality value chains and increase the funds that support their promotion. Take any initiative to enroll the producer groups in strategic foresight thinking, empower them to deploy their vision for a better future to cope with the main challenges and to build their resilience.

The function of conserving and preserving natural resources will require greater efforts in the future due to the impact of climate change on wild fauna and flora, on peatlands and their functioning, and on soils with the worsening problems of erosion. The increased risk of fire because of longer and more severe dry spells means that higher budgets are needed for fire prevention and response.

Recommendation 4. Changes in agricultural, forestry and tourism practices must be supported to increase ecosystem resilience, and measures to conserve natural resources and biodiversity must be defined in consultation with local communities.

Recommendation 5. The specific mountain scheme for remuneration of ecosystem services at the level of the various mountain ranges must be drawn up in consultation with mountain farming communities, civil society organizations for the protection of the environment and the competent local, regional, and national institutions. The definition of the services themselves should remain very brief, defining only broad categories. The conditions of access and control must be kept very simple and must not add to the all-consuming bureaucracy that undermines the motivation of beneficiaries. Its implementation, subject to Community co-financing, must be accompanied by a simplified administrative regime.

In areas where winter sports used to be the driving force, the **recreational function** is being seriously called into question because of reduced snowfall and melting glaciers.

Recommendation 6. The opportunities identified for gentle tourism, balanced between the summer and winter seasons, are to be seized with strategic plans defined by local communities and targeted financial support in the rural development programmes under the second pillar of the CAP.

Apart of the functions of mountains, and to keep the communities able to act, three transversal recommendations relate to the importance of knowledge, networks, and agency to foster the empowerment and capacities of the Mountain Communities.

Recommendation 7. To develop a foresight tool at territorial scale, with methodological and financial support to enable any small region that so wishes to carry out a diagnosis and define a long-term strategy for a better future.

Recommendation 8. To make the existing policy tools and support for collective actions more accessible by local mountainous communities, to simplify the procedures, inform with simple tools and no complicated conditions to fulfil.

Recommendation 9. Strengthen the mountain communities to gain the agency capacity, by supporting the collective ability to form opinions and organize themselves to engage in collective action that structures the future use of sensitive resources and enables conflicts over use to be resolved by reinforcing community members' confidence in collective rules.

Recommendation 10. A possible future "**Erasmus Altitude" new tool** would accelerate the exchange of knowledge within thematic networks. The geographical scope should be all mountain ranges. Its aim would be to enable physical and virtual exchanges, and to strengthen knowledge based on the exchange of experience between peers in the various mountain ranges and territories.

Finally, the group of experts who took part in the MOVING European foresight project identified **ten points for action** specific to the mountains during a day of reflection on strategic options and a round table discussion:

Emphasizing Mountain Importance and Communication

1. Emphasize the **vital nature** of **mountains** as places to live, and not just as providers of natural areas, and the need for **effective communication to raise awareness and promote these regions**.
2. The use of **mountains** as **connectors** between people and nature, highlighting the need to raise awareness of the importance of living with nature and preventing the growing disconnection between people and their environment.

Advocating for Policy and Governance for the Mountains

3. Consider **mountain** resources as a **common asset**, with the need to recognize community ownership and **governance** adapted to the diversity of needs and perspectives.
4. Adapting **governance in mountain areas to take account of** the diversity of people and nature, giving a voice to marginalized populations and promoting more **inclusive** and **flexible** governance.
5. The need for a change of mindset among **political decision-makers** to integrate long-term sustainability into policies and decisions, with an awareness of the **value of mountain areas** and their role in society.
6. The need to **be more specific** and to **diversify** the development of **policies and initiatives** relating to **mountains**.

Capacity Building and Knowledge Sharing in the Mountain Communities

7. Emphasize capacity-building for elected representatives and professionals, particularly at local and regional level.
8. Set up a "**triple helix of capacity building"** based on nature, focusing on learning how to create **green mountain businesses** using both traditional knowledge and modern technologies.
9. Creation of a **platform** to make available all the results of **scientific research on mountains** already available through numerous projects funded by the EU and others, to facilitate their subsequent use.
10. The importance of **recognizing and quantifying the non-economic benefits of mountain value chains, as** well as sharing failures and challenges to foster learning and innovation.

9 Conclusion

Maladaptation to climate change poses risks stemming not only from genetic adaptations of local species but also from human decisions that could exacerbate negative impacts rather than prevent or mitigate them. This underscores the importance of engaging mountain communities in participatory foresight exercises. The lack of a shared understanding and vision for addressing current challenges can lead communities to make decisions that may not align with local contexts. Moreover, actions taken at the local level may be perceived differently by groups with divergent interests, making it challenging to reach consensus on suitable actions for both global and local contexts. By drawing on practical experience, stakeholders can begin adapting and addressing uncertainties related to climate change effects. However, reconciling local and global actions can be difficult, particularly when local actors have vested interests in certain global messages. Therefore, achieving a common understanding of the local context and striving for consensus on relevant strategic options are vital for the future of mountain communities.

The foresight approach developed in MOVING project combined modeling, a participatory exercise led by the researchers involved in collecting and analyzing data, and a quantitative survey of the local population. These different methods are complementary. Their combination showed, for example, that "land management" was ranked priority number 1 in the quantitative survey but was addressed only marginally in the discussions of the foresight groups and was not the subject of any strategic options. This interesting point shows the limits of the participatory exercise in the hands of a group of "foreign" researchers with significant time constraints, little experience in moderating groups and participatory methods, and very few skills in arbitrating conflicts. As a result, the local foresight groups were too consensual to tackle some very important but highly conflictive themes, such as land resource management. To animate these debates, relevant issues need to be debated in professionally moderated multi-level debate arenas, which is very complicated to organize in a time-limited research project like MOVING. More so as the skills of the research teams in charge of moderating the participatory sessions were built up during the limited duration of the project and had not reached a sufficient level of maturity to manage adversarial debate sessions, often more complicated as the regions are small and where differences of opinion are compounded by personal conflicts.

The modeling (discussed in Section 2) was introduced after the local foresight exercises and not before. This decision was made due to the complexity of the platform selected before the start of the MOVING project. The multitude of options available for running the model would have overwhelmed local groups with outputs that did not directly address their primary concerns. Instead, the model was executed based on the outcomes of the local foresights, shedding light on specific aspects critical to the future of mountain regions. The results have been essential to capture the importance of the challenges posed by climate change and demography to the mountains in the policy part.

What consensus emerges from the wide variety of situations in mountain areas?
At the end of this analysis of the 22 exercises aimed at developing visions of the future, land-use modelling and surveys of local players, the extreme diversity of cases cannot hide certain consensuses that were strongly expressed.

Two main ones stand out:

- Firstly, an almost unanimous agreement on the vulnerability and fragility of mountain areas. This point of view is clearly reflected in both the situation diagnoses and the

long-term projections. The uncertainties are such that they are reflected in fears about the future of mountain areas as places to live and as a context for activity in the value chains studied. The players concerned are aware of this great fragility, and this reinforces their desire to increase their capacity to anticipate possible medium- and long-term developments.

- A second agreement that emerges clearly from our investigations is the feeling of marginalization expressed by most of the players associated with WP6. Despite all the talk about the "ecological backbone of Europe", and the recognized functions of mountain areas, these players feel that they are not really considered when it comes to arbitrating on resources, the specific nature of the public actions to be carried out, and the financial reservations to be made. They complain of real difficulties in making use of existing tools due to a lack of dedicated engineering, which places them in unfair competition with better-endowed territories. The most assertive among them are calling for the massifs to be placed at the heart of public policies, and not as a minor declination, as seems to be the case at present. On the other hand, in view of the ineffectiveness of their current efforts and the absence of any noticeable change in direction, some of these players have come to express a fatalism in the face of the apparent impossibility of taking better account of their areas, and the feeling that there is no point in complaining about it.

Thus, the conditions for a sense of place are not self-evident and need to be brought together voluntarily to open new perspectives. We try to interpret the positions of the actors facing feelings of depletion, isolation and abandonment based on Hirschman's theory (Ossandon, 2021). Many actors complain about the lack of resources dedicated to the mountains and demand concrete improvements to their living and working conditions. Other players, among the fatalists, no longer express themselves and end up accepting the inevitable decline of their living areas. However, we can identify a strong attachment to "their" mountains on the part of many of the people we spoke to, a bond that goes beyond purely economic or rational considerations, expressing a specific loyalty to these areas. This is an important observation, as it provides grounds for relying on a widely shared desire to make the mountains shine by giving a future to the value chains and, more generally, to the territories concerned.

What needs for change were expressed by participants in the foresight studies?

Strong contrasts can be observed in the "theories of change" we have collected. In some cases, the future of value chains may become the top priority, to the detriment of the future of the region itself. In such cases, long-term actions end up looking a lot like short-term actions aimed at resilience and maintenance, in a kind of resistance to decline. So much so, in fact, that for these situations, mainly oriented by the "economy-driven" archetype (half of the 22 cases), there is no real need for profound change, but rather for a simple extension of current adaptation efforts. The hope implicit in these limited needs for change (and the consequent illusion) is that short-term solutions will also be those required by the long term, without the need to devise forks in the road and new trajectories.

For all that, we can't consider that "surviving is a real project", that can mobilize energies and provoke global reflection. Looking ahead to 2050 can and must lead us to look beyond the value chain alone and take an interest in the catchment area. This is what emerges strongly from the other archetypes, with different variations (the other half of the 22 cases), but always linked to local society and its aspirations. Thus, the survival of mountain areas may depend on the ability of stakeholders not to make them too dependent on the future of the value chain, opening the possibility of breakthrough changes. With the prospect of food sovereignty for these territories, or the challenges of the relationship between human activities and eco-systems and biodiversity. Finally, knowledge and techniques represent a means of widening

the field of possibilities through innovations appropriated by local players to increase, over the long term, the viability of their activities and the livability of their living environment.

A single policy encompassing all needs, or a framework within which initiatives can fit?
A complete analysis of the corpus compiled by WP6 leads us to answer the question of a "one size fits all" policy in the negative. Clearly, public policies for mountain areas cannot be organized along a single line covering all the situations identified. However, is it not possible to conceive of a policy direction explicitly dedicated to mountain areas, and which guarantees that the players in these areas are considered in their rightful place? This need emerges from our foresight work in symbolic and political terms, with the corollary of making visible a form of "spatial justice". By placing actions and resources aimed at today's marginalized areas within a specific framework, we can ensure that public authorities make them one of their priorities.
According to our results, the framework thus created could be nourished by the directory of Strategic Options that we have begun to build up. This repertoire, which will benefit from ongoing enrichment through an open system, should be seen as a pool of local initiatives that have been put to the test in a variety of situations and can be capitalized on to inspire other territories. This capital of possible trajectories and the conditions required to make them effective is both constituted by and benefits local players, through a procedure of insertion in the directory. Instead of imagining pre-established axes in a top-down vision, we feed the living areas in their respective trajectories based on their own projections.

The foresight groups have unanimously expressed a collective aspiration to expedite significant adaptations necessary for addressing the challenges posed by climate change, recognizing the initiatives already underway. Across the regions examined within the MOVING project, the predominant need is to steer away from a primarily economically driven trajectory for products (such as food or tourism) towards one characterized by strong alignment with natural ecosystems, fostering a new equilibrium in the socio-ecological system.
While adaptation efforts are evident across all regions, it's important to acknowledge that in some cases, these changes are driven more by choice rather than immediate necessity. Notably, certain case studies have spotlighted innovative endeavors centered on nature conservation and ecosystem services, complemented by an emphasis on sustainable tourism, traditional products, or niche offerings.

In that sense, mountains and their communities could become role-models, at front of climate adaptation. These living labs could exemplarily show case how to innovate in creating and piloting many strategic options, especially around quality, with excellence conveying traditions, identity marked by magnificent landscapes and nature.

Finally, if the public authorities match the will of local players, it is the conditions of the Agency that need to be brought together. In our view, "Agency" is the key word for the future of mountain areas in all their diversity. The real innovation to be promoted at European level is to design a political agenda dedicated to mountain areas, based jointly on multi-level governance and a stakeholders' empowerment dynamic, likely to mobilize and involve local societies in a renewed relationship with the future of their activities and their territories, what a group at the participatory foresight exercise at European level called "**Mountain Rural Renaissance**".

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11 Annexes

11.1 Case studies and related archetypes

Nbr	Region	Archetype
5	Drome	Economy
12	Cordilhera central	Economy
15	Dinaric mountains	Economy
17	Betic Systems	Economy
18	Sierra Morena	Economy
19	Spanish Pyrenees	Economy
21	Swiss Jura	Economy
22	Beydaglari	Economy
23	Highlands and Islands	Economy
9	*Trento – Eastern Alps*	Economy
13	*Maciço Noroeste*	Economy
8	C. Apennins	Knowledge&Innovation
7	Transdunabian Mountains	Knowledge&Innovation
1	Austrian alps	Nature
3	Sumava	Nature
16	Slovak carpathians mountains	Nature
4	Corsica	Niche / Nature
6	Creta	Niche / Nature
10	N. Apennins	Niche / Nature
11	Maleshevski Mountains	Niche & Diversification
14	S. Romanian Carpathian	Niche & Diversification
20	Swiss Alps	Niche & Diversification

11.2 Theories of Change of the 22 case-studies, as formulated by the MOVING Research Teams

#	Archetype	Region	Theory of change
5	Economy	Drome	IF the climate is changing dramatically IF the socio-economic context is still uncertain, and IF policy framework and enabling context are established, THEN the region and its meat and cheese sheep value chains will become resilient THROUGH sustainable food systems, sustainable climate-friendly consumption, vibrant sustainable rural environment, and carbon neutrality by 2050.
9	Economy	Trento - Eastern Alps	IF the climate is changing dramatically IF the socio-economic context is still uncertain, and IF policies are adapted THEN the region and its wine value chain will become resilient THROUGH local, agroecological food systems, new generation of professionals and innovative rural development
12	Economy	Cordilhera central	IF the connection between the PDO cheese and the mountain territory is changing IF society willingness to pay for ecosystem services is a possibility, and IF the policy framework and enabling context are established, THEN the region will become resilient THROUGH integrated landscape management that sees agriculture, forestry and tourism as complementary, reckons people as landscape shapers
13	Economy	Maciço Noroeste	IF depopulation is halted and reverted through public policies and private initiatives IF a share of water remains available for viticulture IF viticulture management becomes more environmentally friendly THEN the region will regain vitality and appeal THROUGH the combination of viticulture, other farming activities and tourism.
15	Economy	Dinaric mountains	IF the climate is moderately changing IF the market forces contribute to the improvement and consolidation of the Sjenica meat and cheese sheep value chains IF policy framework and enabling context are established, THEN the region will become resilient THROUGH sustainable and innovative agri-food systems of high adaptability, tailored marketing strategies for high quality and eco-friendly products consumption and holistic rural development.

17	Economy	Betic Systems	IF public policies have a high incidence IF markets become more decentralised IF policy framework and enabling context are established, THEN the region will become resilient THROUGH sustainable and innovative farming, quality support schemes, social mobilization and networking and unity in mountain olive oil sector
18	Economy	Sierra Morena	IF the climate is changing dramatically IF the socio-economic context is still uncertain, and IF policies are adapted THEN the region and the Iberian ham PDO Los Pedroches will become resilient THROUGH a renovated vision on the role of the provision of goods and services by mountain areas and the recognition of the value of traditional knowledge and management practices, reflected in the willingness to pay fair prices for the sustainable products they deliver and for the maintenance of these territories
19	Economy	Spanish Pyrenees	IF the climate is changing dramatically IF the socio-economic context is still uncertain, and IF policies are adapted THEN the region and the mountain wine value chain will become resilient THROUGH targeted subsidies, producers' synergy, and infrastructure development in mountain rural area
21	Economy	Swiss Jura	IF the climate is changing dramatically IF the socio-economic context is still uncertain, and IF policy framework and enabling context are established, THEN the region and the PDO cheese Tête de Moine value chain will become resilient THROUGH sustainable food systems, sustainable climate-friendly consumption, vibrant sustainable rural environment, and carbon neutrality by 2050.
22	Economy	Beydaglari	IF the impact of climate change decreases, IF the economic conditions improve and stabilize, and IF policy framework is established and improved, THEN the region and the tomato value chain will become resilient THROUGH production planning, sustainable agricultural production, effective use of natural and regional resources, and stable/increase in exports and controlled input prices by 2050
23	Economy	Highlands and Islands	IF water management becomes important for land-based industries, including distilling IF international markets for whisky and tourism remain stable, and IF land reform encourages delivery of public goods THEN the region will become resilient THROUGH continued exports of whisky, sustainable tourism to the region, carbon offsetting through land management practices and sustainable rural services by 2050.

7	Knowledge&Innovation	Transdunabian Mountains	IF the climate change will continue; IF the demand for alternative sustainability knowledge will be high; IF there will be a relatively positive change in the external environment and the provision of sustainable knowledge becomes networked, efficient and quality assured; THEN the Sustainable Knowledge Economy will provide financial security for traditional and new knowledge holders, ensuring reliability and diversity of knowledge for those interested in sustainable living, and driving a shift towards an ecological paradigm; THROUGH spreading reliable knowledge on sustainable livelihood, representing high quality both in cognitive, practical and ecological terms.
8	Knowledge& Innovation	C. Appennins	IF the Central Apennines' communities are more aware of climate change IF the Central and Southern Apennine communities know how to tackle the depopulation phenomenon, and IF policy is adapted, THEN the region and the cheese value chain will become resilient THROUGH local, agro-ecological food systems and more sustainable, responsible consumption.
1	Nature	Austrian alps	IF the climate is changing dramatically, IF society's acknowledgement of the value of mountainous pasture farming is certain, and IF supportive policy frameworks and enabling contexts are established, THEN the region will become resilient THROUGH less dependence on public funding systems on the long run through strengthening of a sustainable local economy with sheep value chains, soft and sustainable tourism, climate change adapted landscape management, and integrated regional development, which builds on coordinated cooperation between sectors and governance levels.
3	Nature	Sumava	IF the climate is changing dramatically IF the depopulation continues IF competition in land use remains significant, THEN the region and the extensive beef meat value chain will become resilient THROUGH strong cooperation among actors (farmers, National Park, tourists), support of both providing ecosystem services and market orientation of farmers, promotion of local food production and consumption, and investments to education and local skills.
16	Nature	Slovak carpathians mountains	IF the climate is changing dramatically IF the global biodiversity decline (directly impacting bee health) continues and IF policy framework and enabling context are established, THEN, the region will become resilient THROUGH meaningful cooperation between stakeholders (local actors, experts and policymakers), biodiversity support, support of sustainable local food production and consumption, and investments in education and new local skills.
4	Niche / Nature	Corsica	IF the climate is changing dramatically IF the socio-economic context is still uncertain, and IF policy framework and enabling context are established, THEN the region will become resilient THROUGH sustainable chestnut orchard and silvopastoral systems, sustainable and climate-friendly resource management, and a dynamic and sustainable rural environment.

6	Niche / Nature	Crete	IF the value system towards the natural and cultural capital change IF there is more inter-organisational coordination between the levels of Governance IF accurate adaptation of policies that valorise the sustainability of mountainous communities THEN the region and the carob value chain will become resilient THROUGH balanced growth and decentralized decision-making
10	Niche / Nature	N. Appenins	IF the climate is changing dramatically IF the socio-economic context is still uncertain, and IF the policies are established, THEN the region and the chesnut Value Chain will become resilient THROUGH sustainable living and responsible tourism, self-sufficiency, and active participation of local communities in the sustainable management of resources.
11	Niche & Diversification	Maleshevski Mountains	IF the climate is changing drastically IF the socio-economic context is deteriorating and remain turbulent IF the policies and practices are implemented and where possible adjusted to the needs of the rural tourism value chain, THEN the region will become resilient THROUGH protecting natural wealth and local brand, investing in green economies and human capital. In 2050 Maleshevski region will become recognised as SMART region with developed green economies and active young population engaged in the rural tourism value chain.
14	Niche & Diversification	S. Romanian Carpathian	IF the demand for land for building is decreasing, IF the socio-economic context is favorable, IF the policy framework and the enabling context are established and improved THEN the region will become resilient THROUGH sustainable forms of tourism, greening and diversifying the local economy, and building social cohesion.
20	Niche & Diversification	Swiss Alps	IF the agricultural policies will support extensive mountain farming and its various services for society and environment, IF the society will act and consume responsible and IF policy framework and enabling context are established, THEN the region and the ancient cereals value chain will become resilient THROUGH local food systems, sustainable climate-friendly consumption, innovative value chains an engaged society

11.3 Narrative of the final scenario for each case study

#	Arche-type	Region	Scenario Title	Narrative of the final scenario
5	Economy	Drôme	climate changing dramatically socio-economic context still uncertain	In 2050, the dialogue between the stakeholders in the pastoral sheep industry has been perpetuated and strengthened to guarantee the viability of the industry in the face of the strong impact of climate change, market fluctuations and predation. Despite increasingly marked climate change, new practices and knowledge relating to pastoral resources are adapted and resilient to the effects of drought and high temperatures. Farmers manage to optimize the use of the resource according to the time of year and the needs of their herds. The herds graze outside all year round, withstanding pasture resources becoming the main source of food for the animals, and the need to prepare and store fodder only affecting a small proportion of farmers. On the mountain pastures, water management and development are optimized, enabling water to be used during the summer months. The predation situation is changing. Wolf populations are being regulated and protection measures are being extended to all farmers without exception. Protecting flocks is the main challenge for livestock farming, enabling it to survive in the face of predation. In view of the state of emergency in previous years, local authorities, livestock farmers and wildlife conservationists have set up frequent forums for dialogue, enabling the parties involved to renew regulation measures depending on the number of individuals and the movement of packs. Facilitated exchanges between stakeholders also ensure that the various activities in the mountains coexist smoothly. The sheep industry is increasingly geared towards direct sales and short distribution channels to enhance the value of its products and meet the demands of a society that is less meat-hungry and more interested in quality, local produce. Innovative processing facilities help to anchor the industry's wealth in the region. As a result of the high value-added to products, the share of subsidies in farmers' incomes is falling. European subsidies are targeted at animal husbandry and agro-environmental practices, while at the same time enabling the development of mixed farming practices (on plains in orchards, on slopes in vineyards). Pastoral areas are also being reclaimed and land management is being facilitated by industry players. Simplified access to land and the good value of meat are encouraging new farmers to set up. As a result, the number of sheep farms in the region is increasing
9	Economy	Trento - Eastern Alps	Sufficient water resources and loss of active population in viticulture (adapted after the discussion outcomes)	The scenario assumes that a solution to the water shortage problem is somehow found. In this case the goal is not an abundant resource, but a sufficient amount, just enough to continue viticulture activity. On the other hand, with regards to the population active in viticulture and wine production, the scenario is based on the fact that mountain viticulture may no longer be an attractive sector to work in. Environment and climate : Climate change continues, leading to an increase in negative impacts on the vineyards (changed and erratic pathogen pressure, difficulties in managing water balance, more frequent hazards and greater variability of temperatures and rainfall, loss of soil organic matters etc.) in historical wine - growing areas in lower zones. Compared to lower areas water availability in higher slopes is on one side less impacted due to higher rainfall, but can be further hampered by shallow soils and no availability of irrigation infrastructure, besides the fact that climate change will reduce rainfall here as well. As a scenario result: water resources are sufficient to carry on viticulture and wine production in the area but they are poorly managed. There is potential risk of large scale water reservoirs, causing a negative impact on, the landscape and triggering huge conflict with the tourism sector. The challenge is to minimize landscape and environmental impact and to manage the conflict. Business models and market Small and medium producers tend to cease their activity; therefore, wine production concentrates in hands of large scale producers with an industrial approach oriented more on quantity than on quality of the product. As a result, the final product is poorly valorised and can't successfully compete on the market. The profitability of the sector is constantly decreasing. The challenge is to maintain small farms into activity and to avoid industrialization and consequent

				loss of value. Research and training: Research is not fitting the needs of the wine production sector in mountain areas, therefore the challenges connected to climate change remain without adequate solutions. Innovations are not diffused easily; the wine producing companies are mostly interested in mechanization solutions that can help to deal with labour shortage. Low attractiveness of the sector causes a decrease in demand for training courses and activities. The challenge is to keep the wine sector lively and profitable, in order to, motivate research and innovation and mutually support each other (economically and motivationally). Social context and attitudes: The attractiveness of the agricultural sector is low both for workers and for potential entrepreneurs. High entrance barriers (land cost, land fragmentation, etc.). Big companies dominating the sector are struggling to achieve economic sustainability, but overlook social and environmental aspects of it. the challenge is to keep small farming intertwined with large companies and cooperate for local rural liveliness (as it is now)
12	Economy	Cordilhera central	High willingness to pay for ES and strong link between the cheese and the mountain territory.	Integrated nature tourism practices Increased recreational tourism through activities such as cheese fair Memory and tradition are valued as tourism products Rural fires increase in intensity Support structures to medium altitude pasture - contested Concentration of the sector in multinationals and supermarket chains Strengthening of associations and greater organization of shepherds in connection with wasteland Misrepresentation and appropriation of the image and narrative of PDO cheese Emergence of other types of cheese with other forms of production and using other types of milk. Increased pressure for Rewilding Increased unpredictability
13	Economy	Maciço Noroeste	Sufficient Water, Decreasing Population	Environment and Climate: Climate change affects vineyards in lower zones. Higher slopes have water but face management challenges. Water resources are sufficient but poorly managed, favoring large companies. Minimize environmental impact, manage conflicts, and assure water for grapevines. Business Models and Market: Small producers decline, leading to concentration in large-scale, less sustainable production. Sector profitability decreases. Challenge: Maintain small farms, preventing depopulation and industrialization.Research and Training: Research inadequately addresses mountain wine production needs. Innovation diffusion is low; companies focus on mechanization for labor shortages. Challenge: Keep the sector vibrant to stimulate research, innovation, and economic support. Social Context and Attitudes: Agricultural sector lacks attractiveness for workers and entrepreneurs. Dominant companies prioritize economic sustainability over social and environmental aspects. Challenge: Foster cooperation between small and large farming, addressing migration and depopulation.
15	Economy	Dinaric mountains	Strong climate change and the uncertain socio-economic context (combination of all 4 scenarios)	Positive market forces are expected to be present, mostly connected to the following: Opening of slaughterhouses Branding (certification, organic, itd.) Highway and other infrastructure improved Open Balkan trade (agriculture products exchange and favorable conditions agreed) Reaching EU markets Increment of food demand at the global level (especially livestock production with animal welfare conditions applied like in Sjenica, GI products, mountainous products, organic, etc.) Tourism development Producer groups organization Positive subsidies policies to keep young people in the villages. Predictable (stable) local funds for agriculture (besides production to support marketing, producer organizations, certification of organic and GI production, etc.)

17	Economy	Betic Systems	There is a balance between policy and market changes that have affected both production and consumption in the mountain EVOO value chain.	This is an idyllic, recognizable scenario, but many issues can slow it down, especially pressure on resources and climate change, although mountain olive groves can adapt and resist these changes better. It is very important to incorporate the role of the composting value chain into this scenario. In the same way, if regenerative agriculture is talked about to society, its main concepts and practices should be explained and detailed. What is the olive oil sector, is it one or many? It is necessary to give visibility to the different olive groves, not something monolithic. Data from Jaén last harvest, devastating data on the percentage of lampante oil production. Consumers still do not know how to differentiate the quality of the olive oil they consume. In a tendentious way, the power groups that control this market maintain the confusing denomination of olive oil, consumed by the majority of the Spanish population, without being precisely an olive juice but a refined product. It would be positive to connect and identify mountain olive oils as those produced under recognisable quality marks such as Natural Park, thus deepening the relationship between the territory and the mountains. However, a large number of olive groves in the Subbética have changed towards countryside cultivation patterns (varieties, cultivation framework, greater mechanisation, etc.), with the associated uncertainty as to how these changes will affect the capacity to react to the effects of climate change. Communication becomes complicated when concepts and denominations (mountain olive grove, organic, regenerative...) start to be mixed up. The alliance between regenerative agriculture and extensive livestock farming, while very powerful, is also very complicated, an "adventure". Numerous associated practices aimed at soil conservation, rainwater retention, improvement of organic matter, etc., as a way of improving productivity and sustainability, as well as combating climate change, encounter difficulties in their implementation in public policies such as the CAP. The composting of olive grove and oil mill by-products is made difficult, almost impossible, as they are considered to be assimilated to waste and their corresponding legislation.
18	Economy	Sierra Morena	The participants concluded that the most viable path forward would be: an eco-territory model that emphasizes the value of small traditional farms, and a gourmet model that makes the consumption of 100% PDO Iberian ham from extensively reared pigs more exclusive.	In 2050, in Sierra Morena two models coexist: an eco-territory model that emphasises the value of small traditional farms, and a gourmet model that makes the consumption of 100% PDO Iberian ham from extensively reared pigs more exclusive. Despite recurrent droughts, producers have developed techniques to adapt to climate change, alleviating the limitation on acorn production. The grazing-based system is now recognized by CAP and other policies as a forestry and agricultural system, offering greater flexibility in permitted and promoted practices. The grazing-based system is understood as a unique productive system delivering essential ecosystem services and as such, in need of protection. Afforestation initiatives initiated in 2023 have yielded positive results, creating well-established grazing-based system with productive and healthy holm oak trees. Efforts are made not only to plant new trees but also to care for existing holm oaks. This includes promoting training courses on sustainable grazing-based system management to transmit technical and local knowledge and expertise. Areas that were less productive 50 years ago due to lower temperatures are now extensively utilized for the "montanera" (pigs' acorn-feeding period), enhancing productivity. Increased awareness through information dissemination help prevent the transmission of pathogens that can cause pests and diseases. The grazing-based system represents a balanced blend of family and business farms. While business farms bring benefits to the territory, such as improved working, traditional family farms continue to manage the territory sustainably, preserving traditional knowledge and territorial identity. Their cultural and historical value is widely recognized, and their products highly demanded in the market, and hence they hold high economic value. Family farms prioritize local and short-circuit marketing, exporting limited quantities of high-priced Iberian derivatives to ensure the long-term carrying capacity of their grazing-based system. Online sales foster direct connections between consumers and producers. Iberian ham is not solely marketed as a product; it is also presented as an immersive experience, linked to visiting grazing-based system and gaining an understanding of the traditional methods of animal feeding and the complex process involved in traditionally producing the ham. This experiential approach adds value to the product and enhances the connection between consumers and the rich cultural heritage associated with Iberian ham production. Digitalization processes are inclusive, sustainable, and supportive of traditional practices. They facilitate procedures and traceability for producers rather than replacing traditional methods.

				A quality standard is established, placing significant emphasis on product differentiation and accurate labelling to prevent fraud and misuse of the Iberian brand. Consumers have a high level of knowledge regarding different labeling criteria and are eager to pay higher prices in order to maintain grazing-based system and traditional production methods. Improved infrastructure enables small farms to effectively process and sell their products, closing the production chain. Efforts are made to highlight and promote the multifunctional nature of the Sierra Morena grazing-based system, establishing connections with other value chains within the territory. Policies support this approach and farmers and processors have access to assistance programs. Institutional initiatives aimed at facilitating generational renewal and the entry of young people into the sector have been successful, including the creation of short market channels and practical management courses. This has resulted in a return of trained young individuals that take over family farms. Both society and public institutions recognize the importance of the rural environment, guaranteeing access to basic services, education, healthcare, and opportunities for access to culture and leisure.
19	Economy	Spanish Pyrenees	The chosen scenario is represented by a favorable economic context but with little active population dedicated to viticulture, where the most current factors are defined by a positive economic situation:	There are economic resources, but not optimally used to push the population forward in the correct direction, especially the young people linked to the territory, guided and stimulated by the mountain viticulture and rural habitat. It is necessary then to create all kinds of attractive concepts to attract the population, especially the youngest, to link with the creation of mountain viticulture as a value chain, being the vineyard always a crop projected for a very long term. Technological innovation (mechanization adapted to the mountain and its difficulties, etc.) Production concentration, is more an "industrial" or a "large" model rather than a "family" farm. The final product is no longer considered a high economic value by consumers. Attention to sustainability concept in general. Lack of young people linked to rural mountain territory. There is little attractiveness of agricultural work for the general population, especially for young people. Family viticulture in abandoned due to the fragmentation of the territory when it passes from generation to generation. Viticulture that rises in height to contrast climate change, looking for cooler and rainier territories. There is little diffusion and adoption of technological innovations. A massive abandoned agricultural lands, especially in the mountain area
21	Economy	Swiss Jura	Strong climate change & Uncertain socio-economic context	Nature is under great pressure from extreme weather events and declining biodiversity. Fodder production decreases which affects milk production irregularly. Water availability is decreasing, and landscapes are changing, leading to a decrease in wooded pastures. Cheese makers' and farmers' incomes are under pressure, which can negatively affect their quality of life. Milk production is unstable, which leads to an uncertain production of Tête de Moine cheese. The attractiveness of the farming profession is decreasing over time due to the arduousness of the workload and the low income. This is challenged by the emergence of mechanization, such as the use of robots, which can positively affect the attractiveness of processing occupations and the extensiveness of farms. With climate change, pests and diseases are increasing. The availability of energy with rising prices, is also uncertain. Society's view of agriculture is described by the lack of knowledge and distance affecting consumption. Market adaptability to changes, in quantity and price, and being open to uncertainty requires a good marketing strategy and effective management. Here we talk about agility. Small adaptations in the tête de Moine sector with all the uncertainties of milk production, prices, energy, and availability of milk such as long vacuum maturation of the cheese

22	Economy	Beydaglari	Adverse climate change and favourable/sufficient economic conditions	Irrigation water: There is a noticeable decrease in precipitation. This decrease will lead to the emergence of drought in the region and as a result, groundwater levels will decrease. In this case, farmers' access to groundwater will become more and more difficult. This will have a negative impact on tomato yield and quality. Access and use of land: Low rainfall will cause severe water scarcity, which will affect the expansion of greenhouse areas in the medium and long term. Farmers will find it difficult to find land suitable for greenhouse vegetable production and to expand existing greenhouse plots. Diseases and pests: Climate change with high severity will trigger an increase in diseases and pests. Since unfavorable climate change will eliminate the advantages brought by the altitude difference in the region, diseases and pests will be seen more. This situation will negatively affect the yield and quality of greenhouse tomato. Smart agriculture: Despite adverse climate change, favorable developments in product prices and exports will have a significant impact on farmers' use of smart agricultural technologies in greenhouses. Greenhouse tomato producers will aim to reduce the amount of water and other inputs used in production and meet the quality demands of customers with smart agricultural technologies. However, the high amount of investment in smart agricultural technologies will make the continuity of small family enterprises with insufficient capital difficult. If the government provides incentives to small family enterprises in this context, greenhouse tomato production will be positively affected by this situation. If there is no government incentive, greenhouse tomato production will shift from small family enterprises to large modern greenhouse enterprises. In this context, the widespread use of smart agricultural technologies in greenhouses under the control of small family enterprises remains uncertain. Exports: Currently, there is a significant demand for greenhouse tomatoes from abroad, but this demand is very vulnerable to global risks such as war, high quality demands of customers, foreign market competition. Under these conditions, foreign demand for greenhouse tomatoes will continue to increase. However, it is uncertain how long the upward trend in greenhouse tomato exports will continue due to the mentioned risks. In addition, as the adverse effects of climate change will reduce production, exports are also expected to be affected. Input prices: As in other agricultural products, the continuous increase in the prices of inputs used in greenhouse tomato production causes the production cost to increase. In addition to the provision of input support to greenhouse tomato producers by the government, the cost of production will decrease when Turkey, which is dependent on imports for basic production inputs such as diesel, fertilizer, and pesticides, controls the excessive increases in the exchange rate. Moreover, the implementation of the government's plan to produce imported raw materials domestically will further reduce production costs. High inflation in input prices will become more controllable over time.
23	Economy	Highlands and Islands	Socially & environmentally responsible individual and society within highly globalized markets	In 2050 in the Cairngorms region, the Speyside malt whisky value chain is environmentally sustainable and socially responsible. Production is characterised by inclusive and effective participation of all stakeholders involved in the process. Whisky provides skilled employment opportunities and materials are sourced sustainably in Scotland and within UK for e.g. glass and packaging. Sales continue to grow, particularly to sustainable international markets whilst also developing into new markets through product development (e.g. alcohol free products). Limits on alcohol advertising are widespread by 2050 and the appeal of whisky as a premium product with links to heritage and environmental values enables sales to withstand the advertising ban. Tourism expands with international and UK - based visitors. International flights have less environmental impacts through widespread uptake of sustainable biofuels. Even with increased visitor numbers, the environmental impacts of tourism are minimised within the region, with successful environmental awareness and outreach campaigns linked to the natural capital of the region. The local working population begins to increase with investment in affordable housing, local facilities, and wages.
7	Knowledge&Innovation	Transdunabian Mountains	REALISTIC POSITIVE VISION (REALIA) (High demand, relatively positive change in external environment + efficient, networked, resistant AKE)	Ecological crisis and demand for knowledge. Gradual increase in the demand for sustainable knowledge driven by recent crises. Target audience: Broader segments, including the poorer sections, turn to alternative knowledge due to the growth of poverty and other problems. Behavior of business actors: Business actors align with the quality requirements of the SKE, and the ecological paradigm shift remains a primary goal. Nature-based regenerative solutions are favoured over artificial intelligence and technological solutions. Urbanization pressure, land use: Urbanization pressure decreases, and the value of production and living soil regains significance.

				Policy, central control: Centralization may strengthen due to the problems, but alternative movements successfully resist it and gain strength. Quality, quantity, and diversity of available training in SKE: The SKE experiences significant growth in knowledge providers, education levels, and training quantity and diversity. Revenues, stability, and resilience of SKE actors: The SKE ensures sufficient financial income for most actors, enabling individuals and families to sustain themselves. Communities and the entire knowledge economy sector become resilient and crisis-resistant. Image, appearance, and marketing of SKE: The offerings of SKE are transparent, reliable, and attractive to knowledge seekers. Collaboration, organization, trust/rivalry within SKE: Trust and the level of collaboration significantly increase among SKE actors, making collaboration and shared systems predominant over rivalry. Resources, lobbying power in SKE: The organization and available resources (human, community, financial, relational) in SKE reach a high level, allowing for the growth of the system's lobbying power and autonomy. Services supporting SKE actors: Capacity building, methodological support, communication tools, and other professional services become accessible to SKE actors, along with institutional and business models supporting them. Social impact of SKE, reached "consumers": SKE has significant social impact, making sustainable knowledge production, sharing, and consumption widely accessible to all social strata. Impact on the knowledge economy: The principles, goals, and quality requirements of SKE become widespread, and both business actors and the traditional agricultural knowledge system adopt or at least respect them.
8	Knowledge&Innovation	c. Appennins	Integrated Smart Agri-Ecological Systems	From the first comes the inevitability of using advanced technological innovations, such as digital innovations, to ensure that farms (especially livestock farms) have the necessary generational turnover, through the mitigation of the distress caused by lack of and/or distance from essential services. This solution would continue to ensure a significant availability of local raw material, which processors could further enhance on national and international markets, emphasising the strong link between their products and their territory of origin. Smaller and less structured farms could also benefit from this reputation, if accompanied by a conscious and strategic adoption of organic and/or agro-eco logical models (hypothesised for scenario 4) as part of broader circular economy projects, including neo-pastoral and/or neorural initiatives oriented towards the protection of natural resources and the integrated development of rural tourism. VC companies will be arranged along a technological gradient that will continue to change until 2050, by reason of the parallel smart growth of other sectors (ICT, cultural and creative sectors, tourism, automotive), to which they will be increasingly permeable to be integrated into more dynamic and broader economic contexts
1	Nature	Austrian alps	Moderate climate change and high policy support	Extreme weather conditions get more frequent like droughts, heavy rains, storms and hail. Fodder production is unstable in quantity and quality and additional grassland and pastures need to be rented. Landscape is only slightly changed due to adapted vegetation. Funding supports cooperative efforts of farmers, e. g. regarding shared fodder storages, forest management, and hummus development. ÖPUL is further developed, especially in terms of climate mitigation measures and protection measures against big predators are supported Workload is increasing but compensated with monetary incentives and emigration of farmers is neglectable. Politically supported campaigns raise awareness for sustainable production processes and strengthen the role of sustainably produced products. Soft tourism is flourishing and sustainable modes of transport are further developed.

3	Nature	Sumava	High nature value agriculture	Continued support for farmers in landscape maintenance Emphasis on the production of public goods (landscaping) Direct subsidies and remuneration for ecosystem services are the main source of income Production relatively less important Relatively low proportion of employees in agriculture Lower importance of training and experience in agriculture Problem of ageing farmer population not addressed Strong emphasis on natural resource conservation (National Park) Lower share of processing of local products Lower value added of production, emphasis on export Little room for innovation from below Farmers only adapt to demand (consumers, government) Resilient ecosystems Greater cooperation with National Park Emphasis on the protection of natural resources by the National Park Importance of skills (processing, marketing, logistics, etc.) Importance of food quality Support of local food production Support cooperation of farmers with actors from tourism industry
16	Nature	Slovak carpathians mountains	Poor bee health and extreme climate changes	Extreme climate change will bring annual droughts and frequent weather extremes (severe storms, heat waves, forest fires), causing soil erosion and significantly reducing biodiversity. These extreme changes may also trigger a cascade of social risks, such as threats to human health, migration, economic crises, etc. Land management in the mountains will not focus on the maintenance of pastures due to a lack of water and human resources. Bee pasture will suffer from biodiversity loss, weakening bee health, low resistance to pests and diseases, and the need for intensive and frequent treatment interventions. he attractiveness of beekeeping activity is decreasing due to difficulties keeping honeybee colonies alive and low profitability from uncertain honey productivity. All the changes mentioned above will negatively impact economic revenue for local communities
4	Nature	Corsica	For participants, the desirable scenario consists of assembling parts of the 4 scenarios.	A sustainable management characterizes the chestnut sector in Corsica, in multi-activity and multi-functionality of chestnut production. Small harvesting producers have been maintained and integrated into a diversity of producers. Land use criteria taken into account The statutory enlargement of the profession has integrated professional and non-professional representation within the DPO, which has maintained and secured the markets for chestnut flour through traceability, the guarantee of origin and the products promotion to consumers. The flow and sale of chestnut flour have increased thanks to increased product diversification, an increase in size and diversity of the market and increased awareness plus recognition of the PDO. Technical skills of producers have been improved thanks to an increase in the quantity and quality of the flour, an increase in the profitability of the operating chain for the production and processing of chestnut flour, as well as a development of the devices for improving resilience to climate change. Training and capacity building, as well as supervision of chestnut professionals ensured the increase in chestnut performance within a multi-active farming system. The multi-active and heterogeneous status has been adjusted and the choice of criteria for election to public subsidies has been reviewed. Funding linked to production are controlled and monitored to maintain small producers and small productions for the conservation of genetic variability. Two different strategies have been put in place to manage the chestnut groves along the trajectory. The chestnut groves outside the climate station have been managed with a strategy of maintaining biodiversity, with the installation of a natural dynamic, minimal management and a strategy for chestnut areas to be abandoned. The non-productive areas have been maintained for firefighting, tourist reception, heritage pace and the labelling of chestnut tree as a "tree of regional interest". The chestnut groves in the resort have been renovated, planted with a diversification of varieties and managed privately and publicly, with a strategy of renovation of permanent spaces and new planting at altitude. Oriented biodiversity has been taken into account. A diagnosis and a cartography of the chestnut groves were carried out, with a projection and a modeling of the impacts of climate change on the Castanea Sativa. Multi-activity has been maintained and strengthened, taking into account the multi-activity of chestnut farms and the multifunctionality of chestnut areas.

				Varietal diversity was increased by identifying and listing landraces, as well as identifying local landraces that are resistant to pathogens and resilient to change. Policies are oriented towards increasing rural demography, rural taxation, rural employment and rural agriculture
6	Nature	Crete	Globalisation and Coastal Growth	Only a few farmers and herdsmen remain in the highlands. Young people are directed towards professions and work related to tourism services. State agencies as well as state control have been declined in mountainous regions. The cultural identity of Cretan people as a mountainous population is lost. The agricultural collectives have disbanded, and residents are hostile towards such modes of collaboration. Tourism development monopolizes economic life in lowland/coastal Crete and interest in climate change and extreme weather phenomena is limited to the impact that the depletion of natural resources will have on tourism. Mountainous areas are systematically neglected as the relevant policies continue to be ineffective and unsustainable, unlike those for coastal areas. EU agricultural and stockbreeding subsidies lead to disorientation and economic deadlock for crop and livestock farmers. The availability of energy with rising prices is also uncertain. Society's view of agriculture described by the lack of knowledge and distance affecting consumption. The fragmentation of land in mountainous areas leads to problems and unsustainable activities. The phenomenon of land abandonment prevails. Land ownership and land use issues are not resolved. Infrastructure development goes unused by the few inhabitants of mountainous areas and is often met with suspicion and hostility.
10	Nature	N. Appenins	Market Utopia (return to mountain areas + influx in new residents) & Wild Land (natural consequences of the abandonment + depopulation)	The final scenario envisions a well-balanced coexistence of new inhabitants and wild nature in the mountainous areas of northern Tuscany. New residents are drawn to the area due to the deteriorating quality of life in urban centers caused by rising temperatures and persistent air pollution. This influx of new residents leads to an increase in tourism, with a strong emphasis on sustainable tourism practices that do not harm the natural environment The locals work with the new residents to create infrastructure and activities that showcase the natural beauty of the area without causing damage and valorizing local resources The forest and other common resources are protected and preserved for future generations. The new residents actively participate in the management and recovery of chestnut groves and forests for both productive and recreational purposes. The local traditional practices of the chestnut flour production are embraced and transferred to others The area becomes a model for sustainable living, with a focus on self-sufficiency and low environmental impacts. As a result of the emphasis on sustainability, the area attracts a different kind of tourist who appreciates the natural beauty of the land and wants to support the local community's efforts to preserve it. The wild but harmonious land slowly regenerates, creating an even more attractive destination for those seeking a sustainable tourism experience
11	Niche & Diversification	Maleshevski Mountains	Extreme climate change, rapid declining socio-economic context	The temperature rapidly increases, and it is causing droughts, wildfires, and extreme damage of the forests and pastures. Polluted water, soils, and nature: Due to lack of funds the municipality cannot protect the forest from pests and illness of the trees. Exotic species are attacking nature and damaging biodiversity. Due to the decrease of pastures there is a rapid decrease of livestock. Dairy products are losing their quality. Farmers cannot respond to the needs of the market. The tourism sector is at the edge of its survival. The Maleshevski region is losing attractiveness rapidly. All sectors in the tourism value chain are barely surviving. Not able to respond to the needs of the market. Products are rapidly losing quality. The honey from the municipality of Berovo is no longer the top-brand product Due to lack of funding the biking and hiking trails are abandoned and dangerous. There are no investments in active tourism offer The Municipality did not manage to establish the Maleshevski Brand in cooperation with the local fruit/ vegetable producers, beekeepers, and farmers. The access to funding has decreased, and they do not have the capacity to support the tourism sector

14	Niche & Diversification	S. Romanian Carpathian	Positive scenario for the sustainable development of Țara Făgărașului mountain area: low increasing demand for land for building and favourable socio-demographic context	Community: Some of the young people who have migrated return to the area with financial resources, new experiences, and ideas for the sustainable development of the area and the maintenance of community spirit. Red tape in accessing funds is reduced and the whole process is streamlined and communicated to residents who will access them for the development of the area. There will be 'islands' representing the cultural heritage of the area, which will continue to be promoted (e.g. through events). Building development: There is harmonization between regulations at county level in the Țara Făgărașului area. There is harmonisation between PUG (general urban planning) and PUZ (are urban planning). The bureaucracy concerning the registration of an accommodation unit is streamlined and the procedure is simplified and correctly communicated to those interested. Craft activities are encouraged and promoted, and there are specific funding sources for them. Landlords who choose to respect the traditional architectural style receive a benefit from the local authorities (e.g. a tax deduction or help to cover costs). The mountain huts are managed by the unit of destination management and therefore no longer pose a danger to tourists. Tourism: A Unit of Destination Management exists in the area, comprising a diversity of stakeholders, who through collaboration and partnerships create the vision and strategy for the area and monitor its implementation. Through cooperation between the various stakeholders, private investors can be attracted to the area to set an example of good practice. The area becomes attractive all year round, and through collaboration and partnership between municipalities, tourists are no longer concentrated in just a few key spots. There are trained ancillary staff in tourist activities to ensure an authentic tourist experience. Local Gastronomic Points are integrated into a network and bring real socio-economic benefits to small producers and are promoted accordingly. Agricultural activities: Small producers are encouraged and supported to continue their activity. Local products are integrated into tourism, and more and more are certified (mountain product, traditional product), bringing economic benefits to small producers. Traditional agricultural activities are supported (financially) to continue. Pollution: There is funding for micro water treatment and purification plants (especially for accommodation units). Waste is sorted by fractions and composting is an existing habit in every household.
20	Niche & Diversification	Swiss Alps	Cooperation and diversity with a responsible society and an agricultural policy that supports the conservation of resources	Plant and agricultural production: The plant production is diversified with site-adapted varieties. Wherever it is possible, plant production for food is implemented. In steep areas, some animals are held, e.g. goats, sheep, or small cows. The farmers are responsible for the planning of their agricultural production with support from the government. The farms are more likely small-scale structured with one farm per village or community. However, due to physical help from the community and modern technology, the farms can cultivate larger areas in an efficient and resource-conserving way. Social and demographic changes: The feeling of connection with fellow human beings and nature is the main aspect of this scenario. Villages are communities, where people care for each other, and discrimination of any form doesn't exist. Society shows great respect and responsibility for agricultural production and land use in general. Working and helping out on a farm is part of the whole community. The happiness of farmers and people is high. Due to this attractive form of living, many people want to live in these communities. There are jobs for young people on-site as well as remote working possibilities. Economic and tourism changes: Cooperation and transdisciplinarity with circular economy and innovative thinking are key aspects for successful economic development. Due to societal responsibility, people are willing to pay a high price for food. This brings greater value to agricultural goods. The economy is highly local with imports when necessary. Big retail companies went bankrupt. Tourism is successful, especially agrotourism is flourshing, since people want to contribute and connect to food production. Climate Change and landscape changes: Biodiversity is increasing due to effective measures. Natural resources are used responsibly with water management

				systems, soil health measures, or renewable energies. Due to temperature increase, the growing season is longer and new varieties can be cultivated. However, protection measures for weather extremes are considered. The Alpine pastures have decreased drastically due to less animal farming, and bush encroachment in high altitudes is advanced.

11.4 Quantitative survey: Participants per country

In which country do you currently live?	Freq.	Percent
Spain	81	13,99
Switzerland	69	11,92
Italy	62	10,71
Greece	57	9,84
France	48	8,29
Turkey	43	7,43
North Macedonia	38	6,56
Austria	36	6,22
Czechia	32	5,53
Hungary	30	5,18
Slovakia	28	4,84
Serbia	23	3,97
Portugal	17	2,94
Romania	9	1,55
Bulgaria	4	0,69
Scotland	2	0,35
Total	579	100,00

11.5 Short report of the European foresight workshop

Shaping the future: European Foresight Workshop for Resilient Mountain Areas

January 11th, 2024

Short Report (Isabella Maglietti-Smith and AEIDL)

Mountain areas are crucial to delivering Europe's green transition without leaving "no one behind". Mountain areas cover 29% of the European Union's surface and represent 13% of its population. They are the ecological skeleton of Europe providing essential environmental, social and economic goods and services.

In 2023, MOVING organized 23 local foresight workshops. The scenarios and policy options identified at the local level were described around four archetypes (market-driven, nature-driven, knowledge and innovation-driven and niche products and activities-driven) with representatives of local multi-stakeholder platforms (MAP), researchers of the MOVING consortium, and members of the European MAP.

MOVING's 23 local foresight workshops explored scenarios and policy options, culminating in a European foresight workshop emphasizing collective conclusions and innovative approaches for sustainable development. This event, organized by ORIGIN, AEIDL, AREPO, and the University of Córdoba, convened stakeholders to address the future of mountain regions in the European landscape.

The European foresight workshop brought together selected MOVING EU MAP members, invited experts and regional innovators. The workshop was organised by ORIGIN (Origin for Sustainability), AEIDL (European Association for Information on Local Development), AREPO (Association of European Regions for Products of Origin) and the University of Córdoba.

The European Foresight workshops aim to propose and discuss "Strategic Options" for mountain regions. Each option addresses challenges, governance, funding, and interventions, aiming to identify policy recommendations for scaling them up at national and EU levels.

Hosted collaboratively by the representation offices of Region Tuscany and Pays de la Loire, the event kicked off with a warm welcome from Roberto Scalacci, Director of Agricultural and Rural Development at Tuscany Region.

Mar Delgado, Professor at the University of Cordoba and MOVING Coordinator, set the stage by reflecting on the progress made in integrating research, policy, and society in our value chain efforts.

The workshop, enriched by participatory sessions based on recent foresight studies, aimed at setting out strategic pathways for mountain regions up to 2030. Focusing on four key archetypes – **Economy, Nature, Knowledge and Innovation, and Niche and Diversification** –, high-level experts from across Europe worked towards developing scalable strategic options for these vital areas.

Isabel Carvalhais, Member of the European Parliament and part of the RUMRA & Smart Villages Intergroup, delved into the future prospects of mountain areas. As a key advocate for rural areas and rapporteur on Long-Term Vision for Rural Areas and EU farms' generational renewal, she expressed a need for a paradigm shift in policymaking, stating, "for three decades, we've been reinventing the wheel. We need real empowerment for local communities in shaping policies. The in-depth, granular evidence from MOVING is set to drive effective policymaking for mountain areas."

Arianna Pasa, from European Commission's DG Agriculture and Rural Development, highlighted the EU's commitment to mountain regions. Despite the absence of a specific EU

Agenda for Mountain Areas, she pointed out that support to mountain regions is stated in Article 174 and Article 175 of the Treaty on the Functioning of the European Union.
Dominique Barjolle, President of the Origin, Diversity and Territories Forum, presented groundbreaking 2050 foresight scenarios outlined across the 23 MOVING mountain regions. These ambitious scenarios, offering visionary pathways for mountain areas, challenge the prevailing pessimism and set a course for positive change. "Local communities are key to transforming their future. MOVING is pivotal in changing perceptions and empowering them to be the architects of their own destiny through empowerment, collective action, and improved governance", Ms. Barjolle emphasised.
The afternoon discussions delved into policies to scale up Strategic Options for mountain value chains, with a focus on global perspectives and specific insights from France and Catalonia, Spain.
Rosalaura Romeo, Coordinator of the UN FAO's Mountain Partnership Secretariat, emphasised the necessity of collaborative efforts for sustainable mountain development, highlighting initiatives such as the Business Incubator and Accelerator and a certification scheme for eco-friendly mountain products, impacting over 140 producer organisations.
Thomas Bunel, from the French National Agency for Territorial Cohesion (ANCT) delved into the nuances of the French Mountain Policies. He identified three core elements – Empowerment, Collective Action, and Governance – as the pillars of France's approach to mountain policy.
Bernat Claramunt, from the Ecological and Forestry Applications Research Centre (CREAF), shed light on the recent updates to the Catalan High Mountain Law. This law aims to balance the wellbeing of mountain residents with a renewed focus on People and Governance.
In a final round table moderated by Professor **Gianluca Brunori** from the University of Pisa, the Euromontana's Director **Guillaume Corradino** – underscored the importance of in-depth analyses provided by projects like MOVING, which offer detailed insights on the added value of mountain value chains beyond their economic value.

Recommendations from the panel discussion

The main points of conclusion given in the last round table of the European foresight workshop were the following:

1. Emphasize the **vital nature of mountains as places to live**, not just as providers of natural areas, and the need for effective communication to raise awareness and enhance the value of these regions.

2. Consideration of mountain resources as a **common good**, with the need for recognition of community ownership and governance adapted to the diversity of needs and perspectives.

3. Using **mountains as connectors between people and nature**, highlighting the need to raise awareness of the importance of living with nature and to prevent the growing disconnection between people and their environment.

4. Need for a change in mindset among policymakers to integrate long-term sustainability into policies and decisions, with awareness of the value of mountain areas and their role in society.

5. Need for both specifications and diversification in the development of mountain policies and initiatives.

6. Creation of a **research platform** to make accessible all the results of scientific research already available through numerous projects funded by the EU and others, to facilitate their subsequent use.

7. Put a focus on **capacity building** for elected representatives and professionals, particularly at local and regional levels. Examine for example the concept of an **"Erasmus Altitude"** to enable mountain professionals and elected representatives to learn from the experiences of other mountains, using Erasmus structures and funding.

8. Establishing a **"triple helix of capacity building"** for mountain nature-based businesses, focusing on learning to establish mountain green businesses using both traditional knowledge and modern technologies.

9. **Adapting governance in mountain areas** to take account of the diversity of people and nature, giving a voice to marginalised populations and promoting more inclusive and flexible governance.

10. Importance of **recognising and quantifying the non-economic benefits of value chains,** as well as sharing failures and challenges encountered to foster learning and innovation.

Participants

The workshop involved a total of 46 participants.
Each participant was assigned to one of four archetypal groups, engaging in discussions both in the morning and afternoon.
Details of the participants:
European Commission 2
European Parliament 2
Euromontana 1
European Committee of the Regions 1
Network on European Mountain Research (NEMOR) 1
Catalan Government 1
Mountain Research Initiative/ UNIBE 1
UNESCO/ MAB Programme 1
Agence nationale de la cohésion des territoires en France 1
HCC 2
INRAE 1
UNIMONT 1
UNIPI 1
ZHAW 1
James Hutton Institute 1
Czech University of Life Sciences 1
University of Cordoba 1
UNIPI 1
VINIDEA 1
Joint Research Centre 1
ORIGIN 6
CCVD 1
AEIDL 5
AREPO 2
UOC 1

Innovators
- Ecorys
- Agro Ecoclim
- Private led initiatives towards agroecology in the mountains (Zoltan)
-100% local Polo Poschiavo in the Swiss Alps
- LEADER Group
- Commons and territorial branding (Terra Thessalia)
- Ecotourism (herman)
- Local food planning (BIOVALLÉE

11.6 Repertoire of Strategic Options

Economy

Swiss Local Food Competition

Switzerland
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CHALLENGES

- Public visibility
- Producers Empowerment
- Agricultural and artisanal incomes

OBJECTIVES

- Promoting fairness to farmers in the market.
- Promoting local niche products.

GOVERNANCE

- Managed by the private foundation Fondation Rurale Interjurassienne
- Project-based governance.

INTERVENTIONS

- Searching for partners.
- Contacting interested producers.
- Online registration for the competition and market.
- Homologation and tastings.
- Award ceremonies (Gala).
- Swiss terroirs market featuring participating producers, with medal visibility and direct sales involving 150 producers and 15,000 visitors.

FUNDING

- Fundraising conducted biennially, with a mix of funding from private and public sponsors.

POLICY NEEDS

- National lead organization or collaboration with UNIDO.

UPSCALING

- Already established at the national level in Switzerland with 10 editions since 2005.
- Network established with all interested food competitions.

REPLICATION

- Possible on a national scale for other countries.
- Already replicated in Switzerland, Morocco, Tunisia, Egypt, and Cameroon.
- In 2024, the first International Alpine Food Contest was organized in Stans.

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Economy

Terra Thessalia

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CHALLENGES

- Climate Change
- Market dynamics
- Cultural Preservation
- Youth Engagement

OBJECTIVES

- Adapting to Climate Change
- Establishing the Value Chain governance that allows transparency and fairness (Terra Thessalia Association)
- Developing a specific branding and certification to distinguish the Thessaly Mountain dairy product (Territorial Participative Guarantee System)
- Governance: A territorial dairy cluster, governed by the Assembly (all stakeholders involved) and a territorial charter (Terra Thessalia)
- Funding: European funds (LACTIMED EU program); some private funds (grants for small investments and outreach) and self-financing (cheese makers)

GOVERNANCE

- A territorial dairy cluster, governed by the Assembly (all stakeholders involved) and a territorial charter (Terra Thessalia)

INTERVENTIONS

- Terra Thessalia Association proved to be both a Living Learning Lab and a Hub networking local actors
- Support services to ENIPEAS agricultural cooperative of Farsala territory.
- Implementation of a Regenerative Agriculture pilot program for cotton (2021)
- Labeling by territorial quality mark for cotton and chickpeas (in progress)
- On-site sales of packaged cooperative products and collaboration with other cooperatives in Greece
- Trading contracts with large Greek agri-food companies at preferential prices

FUNDING

- European funds (LACTIMED EU program); some private funds (grants for small investments and outreach) and self-financing (cheese makers)

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	POLICY NEEDS	• To have a policy of welcoming young people and enabling the establishment of young farmers in the mountainous and rural areas.
	UPSCALING	• Value Chain to be integrated into a territorial project from an agro-ecological perspective. • Value Chain to be integrated and solidified into a territorial social and solidarity ecosystem
	REPLICATION	• To have a regulatory institutional framework at all administrative top-down scales, making and creating an environment conducive to changes and transition (decentralized decision making).

Economy

Global Competence Centre for Whisky

UK
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CHALLENGES

- Developing standards
- Strict regulations on alcohol
- Public visibility

OBJECTIVES

- Attractiveness for the territory (attract and retain young people in rural areas)
- Support market demand internationally
- Protect /defend and develop the cultural heritage (including skills, respect for landscape and environmental limits, working on human scale)
- Increase the knowledge of VC, including interaction with the territory
- Developing and marketing associated products / biobased products coming from the region

GOVERNANCE

- Need to develop collaboration between research and industry
- Support from local authorities
- Local community acceptance

INTERVENTIONS

- Identify an education centre that could host it and work with the industry (see example of Belgian beer)
- Creating the centre
- Developing culture around the whisky (i.e festivals at the national level)
- Raising awareness on the potential and benefit of this centre (for industry, territory and environment)
- Peer-to-peer exchange with similar initiatives (beer in BE, wine in FR)
- Feasibility study to establish competence centre + business modelling.

FUNDING

- Industry investments (some individual distilleries are still really big) & public support from the Scottish government (since whisky represents a big share of food and drink export from Scotland it contributes to promoting Scotland's image abroad, as a consequence such a centre would by of public interest)

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	POLICY NEEDS	• Policy efforts aim to distinguish the value of mountain products from those of lowland areas. This includes initiatives such as labelling nutritional value to highlight the cultural significance and contribution to local economies. • It's crucial not to lump these products with industrialized ones.
	UPSCALING	•
	REPLICATION	• This competence centre could be replicated for other groups of VC wine, cheese, ham/meat to develop high standards for these VCs. • It could be applied also to non-food products.

Economy

Integrated territorial project

CHALLENGES

- Community Empowerment
- Social Integration
- Land use

OBJECTIVES

- Keep the production attractive to keep young people in the rural areas
- Facilitate access to land.
- Technical and knowledge support.

GOVERNANCE

- Local, inclusive and democratic
- Open tool where people are free to participate (living lab)
- Multi-actor and multi-sectorial governance.

INTERVENTIONS

- Set-up and manage the living lab
- Management of land: re-allocation/ access/distribution public authorities could manage the reallocation of lands, think how to make it more accessible to people.
- Facilitation of living lab defined from territorial context How to facilitate these leaving lab? How to make them evolve on time?.

FUNDING	• Long term funding (i.e. 10 years) • Independent source of funding (circular economy; cooperative banks) • Solidarity economy to have more flexibility on resources prices.
POLICY NEEDS	• Implement community land-use tools, e.g., AFP in France. • Shift towards managing land as a right of use, not just as property. • Introduce subsidies to facilitate the upscaling and implementation of living labs, as seen in rural pacts.
UPSCALING	• Living labs exhibit adaptability across various contexts. • Scaling up emphasizes multiplication, not mere size.
REPLICATION	• Emphasize the importance of community land-use models like Terre de Liens and Banca della Terra. • Highlight the potential for replication in diverse settings for effective outcomes.

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Economy

Wine as a key product for an integrated territorial project

Europe
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CHALLENGES

- Demographic dynamics
- Economic development
- Nature Conservation
- Climate change

OBJECTIVES

- Mitigate competition among sectors and actors and transform it in cooperation;
- Guide investments into sustainable production systems;
- Technical and knowledge support to innovation and adaptation.

GOVERNANCE

- Local but linked and synergic with National (especially for migrants integration), inclusive;
- Dynamic and able to adapt to the process evolution. It is essential to keep the commitment obtaining results progressively and sharing them with all the actors;
- Multi-actor and multi-sectorial governance.

INTERVENTIONS

- Set-up and manage a multi-actor governing body able to define and implement an integrated strategy;
- For area like Alto Douro and Pyrenees (less for Trento) a manpower strategy involving migrants and commuters, trying to transform them into residents;
- Improvement of infrastructures for local communities, able to offer fear living conditions to residents (hospitals, schools, internet..);
- support family farming and multi-functional farming;
- secure high-skill advisory and innovation support system.

FUNDING

- Long term funding;
- Mix of public and private funding, but probably it is mainly matter of using the same funds as today but with a clear common strategy;
- Major contribution by industry (wine, tourism etc) and less from farming.

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POLICY NEEDS	• Coherence between National, Regional, Local policy implementation, long term and progressive; • Rural pact concept can perfectly fit the scope • Invest in knowledge (practical and scientific).
UPSCALING	• Not scaling up but multiplication in other areas. A successful example may serve to start similar processes in other areas. In any case, it needs site-specific adaptation.
REPLICATION	• As above, it can be multiplied and adapted in other areas but always considering site specific needs and potentials. • A good, successful example is an excellent tool to facilitate multiplication.

Economy

Towards a triple sustainability, economic, environmental and social.

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CHALLENGES

- Producers Empowerment
- Climate change

OBJECTIVES

- Recognize specific characteristics to ecological mountain EVOO
- Develop a specific certification for ecological mountain EVOO increasing local producers' income
- Foster good practices to adapt to to harsher climate conditions

GOVERNANCE

- VC actors
- Board of PDOs of Baena and Priego de Córdoba
- Certification of organic production
- Andalusian's government
- National Park authorities

INTERVENTIONS

- True certification of ecological mountain EVOO
- Fair trade for local farmers and producers through certification of ecological mountain EVOO
- Special training for good practices concerning mitigation of climate change for local producers to foster and expand the use of environmental-friendly practices
- - Water savings and permaculture focused training in order to be able to save more water and preserve the vegetal layer helping to increase sustainability and resilience of the environment

FUNDING

- Public funds (EU subsidies: FEDER, LEADER and CAP funds, government's funds, Andalusian funds)
- Own funds
- Corporate income tax
- VAT
-

POLICY NEEDS

-

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	UPSCALING	• European certification for mountain ecological products on national/european scale • Increase of the mountain ecological olive grove culture
	REPLICATION	•

Economy

Community interests: Tomato Festival

Turkey
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CHALLENGES

- Market Dynamics
- Community empowerment
- Cultural Preservation

OBJECTIVES

- Promoting the region's agricultural products
- Promoting the rich agricultural heritage and cultural values of the region
- Protecting the local agricultural products and to pass them on to future generations.
- Informing and raising public awareness about agriculture and tomato farming
- Encourage young people to tomato farming
- Informing consumers about local food culture
- Introducing new technologies to farmers

GOVERNANCE

- Ministry of Agriculture and Forestry, Local Municipalities, District Governorate, NGOs

INTERVENTIONS

- Increasing national and international recognition of products
- Companies presenting the latest developments
- Providing information with seminars
- Competitions with prizes and a cookery competition

FUNDING

- Private and public sponsors; Private companies, Agricultural Cooperatives, Local Municipalities, Chamber of Farmers

POLICY NEEDS

- It is important to bring together the private sector, public sector and researchers to accelerate extension activities in rural areas and to provide information. For this reason, it is important to increase the number of events such as festivals and to support the institutions and organisations that will organise these events.

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	UPSCALING	• It was organised for the first time in the region in 2023. In order to ensure national recognition of the organisation, the scope needs to be expanded and the amount of funding needs to be increased.
	REPLICATION	• Similar events are organised every year at national level in different districts (e.g. Söğüt). It is possible to replicated in different regions.

Economy

Place-based and Thematic Partnerships

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CHALLENGES

- Market Dynamics
- Community Empowerment
- Social Integration
- Climate change
- Nature Conservation

OBJECTIVES

- Economic diversification – new income streams from community-led innovation (including community / business partnership on a distillery)

GOVERNANCE

- Adoption of the Place Principle, developing partnership working of citizens, businesses, civil society and policy for a territory

INTERVENTIONS

- Innovation hubs focusing on natural capital, digitalisation and value chains relevant to territorial themes; Community Wealth Building and social enterprise initiatives to support regional regeneration and the wealth of local communities and emergence of social innovations.

FUNDING

- Levies on large scale renewable energy developments (onshore and offshore) funding a national territorial fund, augmented by impact investing and crowdfunding.
- Aims are to stimulate action and give greater prioritisation to regional and community led activities.

POLICY NEEDS

- Scottish Government 3 rd Land Use Strategy, 2021 to 2026; Climate Change Plan; Scottish Government Community Wealth Building

UPSCALING

- Regional economic partnerships provide a territorial framework within which partnerships could be developed.
- Current pilots of Regional Land Use Partnerships, established in February 2021, using different models of governance.
- The pilots are being evaluated with a view to defining more such partnerships, and the futures of those

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		established. Lessons should be learnt from these pilots to design Place-based and Thematic Partnerships
	REPLICATION	• Models of governance and interventions replicable across territories of Scotland and more widely.

Knowledge & Innovation

AGRO-ECOCLIM Project CEDD

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CHALLENGES

- Climate Change
- Market dynamics
- Agricultural succession
- Producers Empowerment

OBJECTIVES

- Adapting to Climate Change
- Establishing the Value Chain governance that allows transparency and fairness
- Attracting young farmers and solidarity between farmers

GOVERNANCE

- Adapting to Climate Change
- Establishing the Value Chain governance that allows transparency and fairness
- Attracting young farmers and solidarity between farmers

INTERVENTIONS

- Establishing a new research center dedicated to the challenge.
- Incorporating social sciences into research leadership roles for their transdisciplinary approach.
- Raising any kind of new funding for getting more external funding to establish a Long-Term Perspective of the PPP.

FUNDING	• Public-Private
POLICY NEEDS	• Support of local authorities and farmer organisation
UPSCALING	• Open to collaboration with other initiatives
REPLICATION	• In similar contexts it could be replicated

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Knowledge & Innovation

Ecorys

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CHALLENGES

- Community Empowerment

OBJECTIVES

- Present discussion papers
- Uploaded papers to a database
- Empower the actors for growth

GOVERNANCE

- Multilevel governance in the rural area

INTERVENTIONS

- Creation of a more accessible format for delivering bottom-up messages (notes and fiches)
- Discussions at local level in 20 European countries
- Translation to local languages
- Contribution to EU policy debate
- Initiative now is to continue communication in this network.

FUNDING

- EU funded

POLICY NEEDS

- Ecosystem of the Mountain region must be considered
- Certain regions are not allowing bottom up organizations to express interest Digital planning tool
- Governance specific to the Mountain region is necessary

UPSCALING

- Does this SO concern day-to-day life more than major political reform?
- How to define the needs of the community so that they can be awarded funding?

REPLICATION

- Collaboration with Universities; they will utilize their cooperative advantage to attain amenities.
- Member state - need to be educated on Program Funding options

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Knowledge & Innovation

Seeds' Valley Ecological Farm at Terény

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CHALLENGES

- Economic Development
- Land use
- Nature Conservation
- Producers Empowerment
- Demographic Dynamics

OBJECTIVES

- Bridge the urban-rural divide
- Empower the local community
- Inspiring other farmers and bring change
- Spread ecological food production patterns

GOVERNANCE

- Private initiation of a small-scale organic farm which has been developed as a demonstration center

INTERVENTIONS

- Regenerative Community Driven Food System - farm operates a 150 member share model community supported agriculture scheme, most members live in Budapest
- Organise the Paradise Community Place - core group of CSA members formed an Association which purchased the old pub building in the village center which had been closed for years. The Association applied for a national microgrant, made minor renovations on the building and now runs it as a community place.
- Education site for other new entrants - one day farm tours and multiple day long workshops are organised on farm yearly.
- Attract young, motivated, educated people from urban areas to move into the village. (empowerment).

FUNDING

- Private, EU young farmer's grant, minimal national support, farms return into investment

POLICY NEEDS

- Grants able to support complex, multidisciplinary development projects are required.

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	UPSCALING	• It is an example that a viable, local agriculture related small business can have a significant effect on the local economy. However it is a really long way to go, 10 years is a short timespan to reach objectives.
	REPLICATION	• Upscaling is not, multiplication and cross-pollination and networking effects are rather feasible.

Knowledge & Innovation

COZZANO, Smart Village

FR

Cozzano, Corsica

CHALLENGES

- Community Empowerment
- Digital inclusion
- Demographic Dynamics
- Economic Development

OBJECTIVES

- Technological Solutions and Connectivity
- Environmental monitoring, energy efficiency, water and waste management
- Integration of Smart City Concepts into Rural Context to enhance life quality
- Collective control of the activities.

GOVERNANCE

- Multi-level and multi-actor

INTERVENTIONS

- Implementation of Sensors: Cozzano has implemented sensors throughout the village to monitor various aspects such as air pollution.
- Digital Connectivity
- Youth Engagement
- Development of Solutions: The students and researchers are working on projects related to the Internet of Things (IoT) to address specific challenges, such as supporting the elderly population to live independently in the village.
- Diversified Economic Activities: such as cultivating saffron by a local farmer and operating a restaurant open year-round, providing an alternative to a solely tourism-dependent economy.

FUNDING

- Project largely funded by the European Union €500,000 grant.

POLICY NEEDS

- Regional or national initiatives to fund and encourage similar smart village projects. Policies should be designed to facilitate the integration of technology into rural areas, support community engagement, and incentivize economic diversification.

UPSCALING

- The deployment of sensors, engagement with the community, and development of technology-driven solutions, could serve as a

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		model for other villages or small towns facing similar challenges.
	REPLICATION	• Cozzano's approach to becoming a Smart Village involves a mix of technological innovation, community participation, and diversified economic activities. • These elements could be appealing to other communities, especially those seeking sustainable developme

Knowledge & Innovation

Alternative Knowledge System of Sustainable Living

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Knowledge transfer
- Community Empowerment

OBJECTIVES

- Create a platform for discourse
- Preserve diversity but add quality

GOVERNANCE

- Public and Private partnerships

INTERVENTIONS

- Creating a collaborative platform
- Outreach expertise service support (make their knowledge a product/market it/package it)

FUNDING

- Public funding to start
- Funding through research funds
- Fund-raising

POLICY NEEDS

- The ecosystem of the Mountain region must be considered when programs are being created and implemented

UPSCALING

- This SO should take into concern day-to-day life more than major political reform

REPLICATION

- Governance specific to a specific Mountain region is necessary

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Knowledge & Innovation

Open Platform/ AI & New Technologies	Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Digital inclusion
- Community Empowerment
- Knowledge Transfer

OBJECTIVES

- To make the information accessible to the younger audience
- To promote inclusiveness

GOVERNANCE

- Funds
- Copyrights protection

INTERVENTIONS

- Bottom-up approach.
- Utilizing the social science
- Build skills to operate the platform

FUNDING

- Public and Private

POLICY NEEDS

-

UPSCALING

- Replication Potential: Certain regions are not allowing bottom-up organizations to express their interest in having a say in how change is carried out in their industry.

REPLICATION

-

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Knowledge & Innovation

Local Innovation Partnership

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Community Empowerment
- Regional Collaboration
- Producers Empowerment
- Knowledge Transfer

OBJECTIVES

- Formal agreement
- Make it operational at a regional level

GOVERNANCE

- Public-private partnership
- Techno-structure (in-kind contribution)

INTERVENTIONS

- Tailor-made curriculum
- Strategic agenda based on local needs

FUNDING

- CAP
- Cohesion Policy
- Regional Programs
- National/Regional funding for member states
- Seed funding
- Erasmus for young farmers,
- Private foundations
- In-kind contributions

POLICY NEEDS

-

UPSCALING

- Collaboration with Universities; they will utilize their cooperative advantage to attain amenities.

REPLICATION

- Digital planning tool, that helps you pinpoint the type of research that exists on your topic.

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MOVING Rural Renaissance

Local community revitalization

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Demographic Dynamics
- Community Empowerment
- Nature Conservation
- Knowledge Transfer
- Cultural Preservation
- Social Integration
- Market Dynamics

OBJECTIVES

- Improve social capital and networking at the local level by fostering partnerships between government agencies, private sector, NGOs, local communities to leverage resources, expertise, and networks for more effective implementation of regeneration initiatives. Such initiatives involve participatory design processes aimed at enhancing common assets and creating goods and services considered essential for improving the quality of life in rural areas.

GOVERNANCE

- Local but linked and synergic with Regional and European policies (LEADER programme);
- Public-Private partnerships must be formally established through signed “community agreements”

INTERVENTIONS

- (i) Encourage economic diversification: Involvement of the National Geopark to foster the assemblage with the eco-tourism, and hospitality value chain.
- (ii) Establish training programs and education initiatives tailored to community needs, involving youth and highschools.
- (iii) Preserve local cultural heritage: creation of a field for “mother plants” to safeguard local chestnut varieties, establishment of an eco-museum of chestnut culture

FUNDING

- LEADER programme

POLICY NEEDS

-

UPSCALING

-

REPLICATION

- The SO can potentially be upscaled to all areas under the LEADER program

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Nature

Valposchiavo

Switzerland
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CHALLENGES

- Demography dynamics
- Climate Change
- Tourism seasonality and short stays

OBJECTIVES

- Preserving and valorizing the landscape, seen as a manifestation of the valley's cultural heritage
- Developing a branding strategy to valorize locally produced products and establish a close collaboration between agronomy, processing, and gastronomy.
- Increasing Valposchiavo's attractiveness as a place to live

GOVERNANCE

- Polo Poschiavo is an association that raises funds, initiates and leads projects

INTERVENTIONS

- Rhaetian Railway Albula/Bernina was recognized as a UNESCO World Heritage
- Valposchiavo "Smart Valley Bio":
- 100% bio Valposchiavo brand that aims to convert the whole village into a bioproduction.

FUNDING

- Swiss (national, cantonal, and local) and European (mostly INTERREG) public funds

POLICY NEEDS

- Bio Suisse, the organization that certifies organic products in Switzerland, currently certifies only individual companies rather than entire territories. Therefore, to legitimize the 100% BIO Valposchiavo, there would be a need for a method to certify an entire region.
- The "Regio Garantia" is the Switzerland regional brands association. It has very strict regulations that limit favorable collaborations between producers from two different neighboring regions and for this reason, Valposchiavo has decided to join it. This could potentially become a problem in the future so Regio Garantia could adapt its regulations to meet the specific needs of producers in small rural areas.

UPSCALING

- The model developed in Valposchiavo is successful in this small context where territorial dynamics can still be

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		managed quite well, but scaling it up could undermine the foundations of a local food and development system.
	REPLICATION	• The model developed in Valposchiavo can be replicated in any other rural area that has food tourism already in part developed and at least a few stakeholders interested in going beyond traditional food and investing in locally produced food. However, Swit

Nature

Bieszczady Multiactor Platform

Poland
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CHALLENGES

- Demographic Dynamics
- Tourism Management
- Nature Conservation

OBJECTIVES

- Creation of a civic engagement centre for Women and Youth
- Creation of a Tourism industry from National Parks
- A plan of how to manage this new industry

GOVERNANCE

- LEADER: Local Action Group "Green Bieszczady": Bieszczady NGO Forum and Podkarpackie Tourism Cluster

INTERVENTIONS

- "Switching" Bieszczady Initiatives Association
- Social economy enterprise - Bieszczad.Ski Wańkowa -a sustainable approach to skiing
- Workshops for local and eco-producers – impact on water, biodiversity and tourism
- "CHANCE project - new opportunities for adults" – skills and knowledge
- School of sustainable tourism – for already existing and new nature-based businesses
- Bottom-up international integration in the area of the Carpathian Mountains

FUNDING

- LEADER Funding - Local Village Fund, Regional Operational Programme, SWISS Funds, EEA/Norway Grants

POLICY NEEDS

- The working programme should not be fixed but based on objectives to be achieved. Actions at the lowest level of regional delimitation, related to the concept of local development govenrnance (part of multi-level governance) should be planned with as much autonomy as possible, but with the participation and control of local NGOs (as a guarantee of the correct course of intervention). This is how the LEADER approach was conceived, but incorporated into the RDP (CAP SP) as a regular measure, it has lost its innovation in flexibly

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		addressing local needs through 'community-led' public policy instruments. SO is advanced but innovative in its approach to communicating needs and responding to them in a multi-actor approach.
	UPSCALING	• The framework should have some specific characteristics: multi-fund approach, results-based with a continuous evaluation of results to be able to adapt the funds, locally adaptable, flexible, and inclusive. - Provide capacity building at the local level
	REPLICATION	• The issue would be how to fund it and how to change the mentality of administration around how to use funds and how to make this change of mentality scalable.

Nature

Territorial and value chain actors collaboration for the future management of natural resource (Cartography Project to support decision making)

Corsica, France

CHALLENGES

- Climate Change
- Nature Conservation (chestnut orchard)
- Cultural Preservation
- Knowledge Transfer
- Social Integration

OBJECTIVES

- Make corsican mountain area a successful example of how to preserve and develop natural resource (chestnut orchard)
- Strategic management of natural resource (chestnut orchard) for public and private action
- Enhance the productivity and resilience of the VCs agri-food who depends of chestnut resource

GOVERNANCE

- Multi-actor platforms at territorial (vs regional) and VCs levels Territorial collectivity, agricultural region instance

INTERVENTIONS

- Make a regional cartography of chestnut orchards with bio climatological data to implement projection model
- Based on cartographies results and models, implement public decision-making tools
- Promote regional and national multi-actors platforms for the management of mountain natural resource
- VC to be integrated into a territorial project from an agro-ecological perspective
- VC to be integrated and solidified into a territorial social and solidarity ecosystem

FUNDING

- National support via research funding (CASDAR)
- Regional support via “Comité MASSIF” & ODARC (Office du développement agricole et rural de Corse)
- Tourism tax

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POLICY NEEDS	• Regional or national initiatives to fund and encourage similar cartography projects. Policies should be designed to facilitate the integration of predictive models for the management of Chestnut orchard, support territorial and VC actors engagement, and incentivize economic diversification.
UPSCALING	• VC to be integrated into a territorial project from an agro-ecological perspective • VC to be integrated and solidified into a territorial social and solidarity ecosystem.
REPLICATION	• Create models tools to make cartography of chestnut orchard for food production • Create and implement public decision-making tools for the management of mountain natural resource • Create multi-actors platforms with territorial and VC partners for mountain n

Nature

Triple helix of capacity building for nature-based business in mountain areas

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Economic Development
- Nature Conservation

OBJECTIVES

- Green business using traditional knowledge together with modern technology
- Capacity building to adapt to nature and find the nature-based solution
- Capacity to innovate in response to new needs or opportunities

GOVERNANCE

- Territorial private-public partnership
- Permanent real dialogue across different levels of governance
- Management of multi-funding

INTERVENTIONS

- Sustainable and resilient entrepreneurship Responsible governance
- Change the mentality of the administration around how to use public fund

FUNDING

- Results-based funding
- More responsive and more adaptive funding schemes
- Short-term and simplified funding

POLICY NEEDS

- The working programme should not be fixed but based on objectives to be achieved and the funds could be adapted based on these objectives

UPSCALING

- This conceptual framework is testable and it might work in every context.

REPLICATION

-

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Nature

Mountains as connectors between humans and nature^

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Nature Conservation
- Knowledge Transfer
- Social Integration
- Land Use

OBJECTIVES

- Human activities integrated with natural resources
- Developing a human-nature service approach
- Developing a more nature-based education for future generations

GOVERNANCE

- Local, multilevel and inclusive.

INTERVENTIONS

- Knowledge-base fundings
- Capacity building
- Local cooperative
- Turism activities in real settings with local actors

FUNDING

- Local business together with community

POLICY NEEDS

- No funds without knowledge, no further funds without increasing knowledge.

UPSCALING

- Provide capacity building at local level, local people should communicate with funding bodies and develop skills and be trained to be able to access and use those funds.

REPLICATION

-

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Nature

Diversity and inclusion

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Nature Conservation
- Landscape Diversity
- Community Empowerment

OBJECTIVES

- Support local discussion and creation of local ecosystems
- Identify and understand problems and missing voices

GOVERNANCE

- Multi-level and multi-actor
- Focus groups, foresight, working tables specific on a topic

INTERVENTIONS

- More flexible funds and interventions

FUNDING

- Funds should be devoted to the stakeholder engagement process
- Funds for stakeholder involvement (EU, national) and actions at local level co-created by stakeholders

POLICY NEEDS

- The framework should have some specific characteristics: multi-fund approach, results-based with a continuous evaluation of results to be able to adapt the funds, locally adaptable, flexible, and inclusive.

UPSCALING

- Promote the development of a long-term and flexible framework for the inclusion of local stakeholders for the funding/implementation of locally envisaged project

REPLICATION

-

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Nature

Strengthening cooperation in local beef production

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Landscape Diversity
- Market Dynamics
- Community Empowerment

OBJECTIVES

- Establish new business relationships between farmers that would allow sharing processing facilities
- Increase share of locally produced and processed beef (decrease share of exported animals from the region without added values)
- Introduce a common regional label that would certify origin and quality of the beef

GOVERNANCE

- Local initiative consisting of farmers that would formalise cooperation and sharing of facilities

INTERVENTIONS

- Setting-up facilitator that would start collective initiative
- Coordination of cooperation between farmers (sharing facilities for processing)
- Development of regional marketing brand
- Promotion of local products

FUNDING

- Voluntary contributions provided by local entrepreneurs

POLICY NEEDS

- Policy measures focus on support of collective processing and marketing initiatives

UPSCALING

- In case of successful cooperation, the idea of collective initiative can be also used in other areas of local food production

REPLICATION

- The model could be replicated in other regions focused on local food production

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Niche & Diversification

Guesthouse Villa Hermani

Romania
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CHALLENGES

- Market Dynamics
- Community Empowerment
- Predation Context
- Landscape Diversification

OBJECTIVES

- Develop and promote certified ecotourism in the South Romanian Carpathians
- Engage stakeholders in the conservation of large carnivores and encourage development of more local business (ex. tour guides, local products)
- Create sustainable ecotourism tours focusing on the "wolf" and Carpathian Nature Tours

GOVERNANCE

- Established an Ecotourism Association, which evolved into a Romanian-level association in 2003

INTERVENTIONS

- Involvement of local housing/communities in remote villages
- Creation of Guesthouse Villa Hermani.
- Promotion of traditional handcrafts featuring wolf images
- Development of nature guides for flora and fauna
- Focus on hiring local people to drive economic benefits and training them/ professionalisation and encouraging them to start their own businesses

FUNDING

- Tourism tax imposed on tourists to fund rural infrastructure and housing improvement

POLICY NEEDS

- Recognition and support for ecotourism initiatives at the national and European levels. Empowerment of local people and anti-corruption measures.

UPSCALING

- Success in creating demand and diversifying ecotourism offerings indicates potential for local and regional upscaling

REPLICATION

- The model could be replicated at the national and European levels, given its success in addressing high unemployment and promoting ecotourism.

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Niche & Diversification

BioVallée

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CHALLENGES

- Youth Engagement
- Producers Empowerment
- Economic Development
- Knowledge Transfer
- Landscape Diversification
- Predation Context

OBJECTIVES

- To make the Drôme Valley a successful example of how to preserve and develop natural resources.

GOVERNANCE

- Communauté de Communes du Val de Drôme
- Communauté de Communes du Crestois et du Pays de Saillans
- Communauté de Communes du Diois

INTERVENTIONS

- Diversification of products and activities on farms
- Increase the number of short distribution channels
- Development of organic farming, with a target of 30%
- Installation of a BIO Pôle, with FiBL, Terre de Liens, AgriBioDrôme, etc.

FUNDING

- Non-for-Profit Association, as a multistakeholder platform.

POLICY NEEDS

- Allocate specific funds within rural development programs or agricultural budgets to support the salaries, training and resources needed by local development agents to boost local and collective initiatives.
- To have a policy of welcoming young people and women and enabling the establishment of young farmers in the mountainous and rural areas.
- Set up subsidy programs for collective and local initiatives.
- Governance specific to the Mountain region is necessary.

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		• Changes to the Common Agricultural Policy: a) less subsidy for areas and more for practices; b) integration of woody pasture areas. • Introduce tax incentives or subsidies for local producers to make their products more competitive on the market. • Legislation to impose a minimum quota of local produce in supermarkets and hypermarkets, thus encouraging the sale and consumption of local products.
	UPSCALING	• One of the primary challenges is securing sustainable funding that goes beyond project-based support to encompass administrative and operational costs. • Establishment of a Sustainable Funding Mechanism: Develop a funding model that provides ongoing support for administrative and operational expenses, ensuring the long-term sustainability of the initiative. • Replication of Governance Structure: Share best practices in governance structures that empower local stakeholders and promote collective decision-making, thereby fostering ownership and sustainability at the grassroots level.
	REPLICATION	• Invest in capacity building programs to equip local stakeholders with the skills and knowledge needed to replicate BioVallée's success in other regions. Additionally, facilitate knowledge sharing platforms to promote cross-learning and collaboration among

Niche & Diversification

A cross-border approach to VC development: product and production process

(INTERREG Project)

Corsica, France

CHALLENGES

- Market Dynamics
- Economic Development
- Producers Empowerment
- Community Empowerment
- Youth Engagement
- Knowledge Transfer
- Landscape Diversification

OBJECTIVES

- Make Corsican mountain area a successful example of how to preserve and develop natural resource as chestnut orchard
- Enhance the productivity and resilience of the VCs agri-food who depends of chestnut resource
- Enhance the cooperative collaboration and production link to the chestnut resource

GOVERNANCE

- VC actors : ODG (AOP & pro union)
- Multi-level and multi-actor platform for innovation and knowledge transfer (Innovation transfer transfer, piloted by VC actors): territorial collectivity actors, VC actors, Research actors, Local action group, associations

INTERVENTIONS

- Cross Border implantation: Island dimension.
- Diversification of production and activities on farm
- Increase the number of short distribution channels
- Installation of Innovation transfer center.

FUNDING

- European funding via InterREG Marittimo (FEDER)

POLICY NEEDS

- Regional or national initiatives to fund and encourage similar innovating governance and center
- Regional, national and european mobilisation for the management of mountain natural resource (chestnut, water)
- Promote formation and installation of youth

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		• Encourage local network consumption
	UPSCALING	• Mediterranean and chestut region: replication of innovation governance • Securing sustainable funding that goes beyond project based to encompass administrative and operational costs (beyond Interreg)
	REPLICATION	• Innovation transfer center

Niche & Diversification

Political bottom-up advice groups

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Infrastructure & Connectivity
- Land Use
- Tourism Management
- Landscape Diversification
- Food Authonomy
- Nature Conservation

OBJECTIVES

- Making local communities taking ownership
- Foster cooperation between local stakeholders

GOVERNANCE

-

INTERVENTIONS

- Fostering partnership agreement between civil society and local authorities.
- Education programmes for people to lead towards better local leaders (mayors) who can invest in infrastructures and basic services

FUNDING

- Public-private partnership funding mechanism

POLICY NEEDS

-

UPSCALING

-

REPLICATION

-

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Niche & Diversification

Agricultural trainings

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Knowledge transfer
- Landscape Diversification

OBJECTIVES

- To bring innovation and diversity to agricultural practices
- To train young farmers in the field of innovation

GOVERNANCE

- EU level

INTERVENTIONS

- Summer schools for young farmers to visit demo farms
- Innovation coaches for farmers
- Onboarding Farmer Associations
- Increase communication to make AKIS more common knowledge
- Demo farms and innovation Centres
- Offer learning journeys (Best practice)
- Agriculture training (including innovation)

FUNDING

- Cohesion Policy, CAP

POLICY NEEDS

-

UPSCALING

-

REPLICATION

-

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Niche & Diversification

ERASMUS ALTITUDE

Capacity building & knowledge exchange for elected people and professional technicians

Idea that has been elaborated during the MOVING European Foresight Workshop

CHALLENGES

- Infrastructure & Connectivity
- Landscape Diversification
- Community Empowerment
- Regional Collaboration

OBJECTIVES

- Capacity building for elected technicians
- Coupling local Policymakers and local technicians
- Cross-border knowledge exchange

GOVERNANCE

- Erasmus+ and CLLD/Leader Contact point

INTERVENTIONS

- Erasmus for located elected persons and professional technician

FUNDING	• Policy mix
POLICY NEEDS	• Elected people should be brought into the process for bringing further this conversation.
UPSCALING	• Staff mobility should be tailored to support a mountain-specific project or curricula
REPLICATION	• Policy mixes can be used for that. The discussion should be directed to think about post-2027 policies

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Niche & Diversification

Adopting destination management approach for strengthening rural tourism capacity and value chain

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CHALLENGES

- Demographic Dynamics
- Youth Engagement
- Community Empowerment
- Market dynamics
- Tourism Management
- Climate Change

OBJECTIVES

- Preserving and continuous valorization of natural landscape
- Develop branding strategy for the region
- Branding local traditional food and beverage
- Improve infrastructure in forests and paths towards tourism attractions
- Invest in modernization of tourism related curricula to attract youth
- Increase and modernize employment opportunities for youth (digitalization)
- Strengthen the offer for active tourism and the infrastructure

GOVERNANCE

- Local governments in the Maleshevski Region and East Plan Region must take a lead
- Experienced local NGOs working on developing tourism offers and support the local producers to be actively engaged in the entire process including fundraising

INTERVENTIONS

- The region to design joint rural tourism strategy with focus on: nature based and responsive tourism, green economy and SMART solutions
- Local producers of food and beverages to be supported in providing certifications BIO and Organic for their products- 100 % bio and organic production
- The Maleshevski Region to increase quality of accommodation and rise awareness of the private owners for the importance and the benefit from the process

FUNDING

- Diversified fundraising strategy will have to be applied: government funding (Ministry of Economy -Sector Tourism; Ministry of Agriculture; Ministry of Environment and Spatial Planning; donors funding: UN Agencies, World Bank; knowledge transfer: UNIDO

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	POLICY NEEDS	• The certification process of food and beverage is implemented by the Agency for food and veterinary, by the Ministry of Agriculture in the capital city. This represents a challenge for most of producers living in mountain areas as it is procedure that is related to several stages of production (the soil analysis, the manner the product is grown and later the process of production)
	UPSCALING	• Special attention to be given to small local producers. Uspcaling might endanger already fragile and small group of certified actors that are main contributors for attractiveness of the region
	REPLICATION	• The model to be developed in Maleshvski Region may serve as a good example for other mountainous regions in North Macedonia as destination management is an option that is point of discussion for long time. This is especially of high importance for the pop