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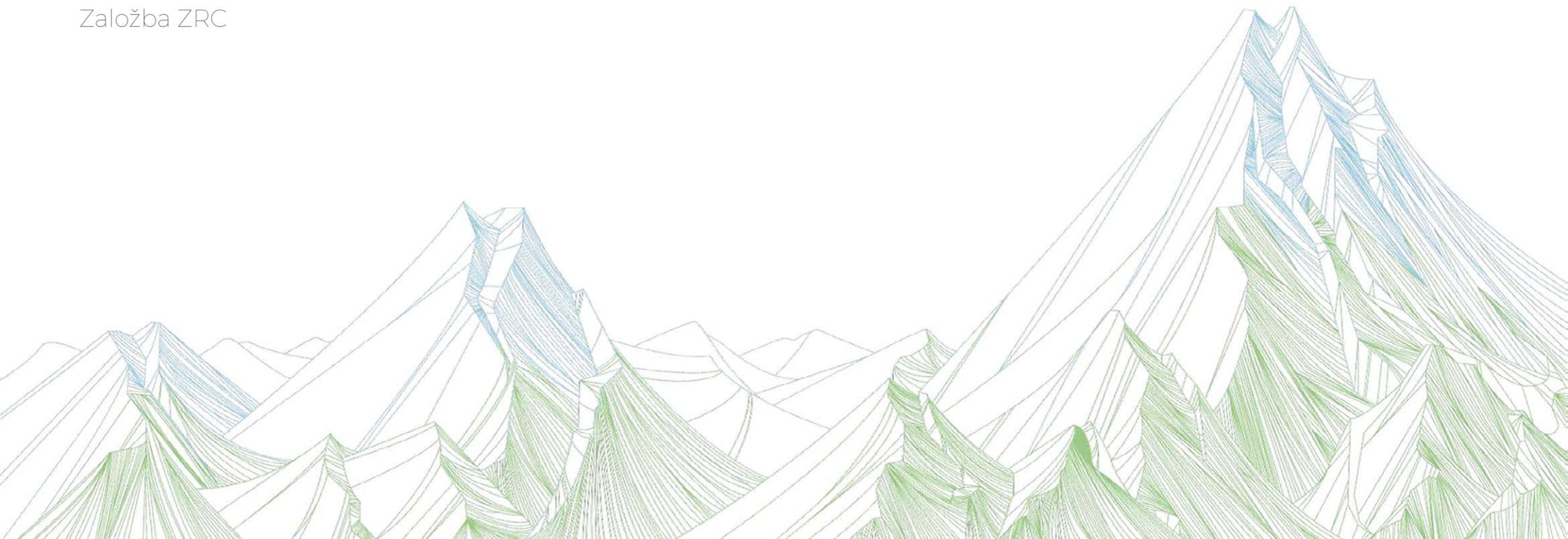
TranStat

ALPINE MOUNTAIN RESORTS IN TRANSITION

TRANSTAT CATALOGUE OF GOOD PRACTICES

Research Centre of the Slovenian Academy of Sciences
and Arts, Anton Melik Geographical Institute

Založba ZRC



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Editor: Maruša Goluža

Text: Maruša Goluža, Janez Nared, Primož Pipan, Katarina Polajnar Horvat, Aleš Smrekar, Anja Trobec, Emmanuelle George, Raffaella Balzarini, Mathieu Schoendoerffer, Jan Mosedale, Miriam Stuhlmüller, Stefano Sala, Laura Pasinetti, Annamaria Giorgi, Andreas Haller, Leonie Hasenauer, Kathrin Schwab, Jakob Zeh

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Project Partners

INRAE National Research Institute for Agriculture,
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AlpS GmbH

ecoplus Alpin

FHGR-Fachhochschule Graubünden

Austrian Academy of Sciences

RAGOR Development Agency for Upper Gorenjska

REGION AURA Regional Council Auvergne-Rhone-Alpes

RL Lombardy Region

UGA Grenoble Alps University

UMIL University of Milan

Summary

Alpine mountain resorts face a range of interconnected challenges, including climate change, demographic shifts, economic dependence on winter tourism, and fragmented governance, all of which threaten their long-term sustainability. The TranStat project, ‘Transitions to Sustainable Ski Tourism in the Alps of Tomorrow’, explores how these resorts can build resilience through governance innovation, diversification, and community engagement.

Drawing on analytical work and nine Living Labs in France, Switzerland, Italy, Austria and Slovenia, the report demonstrates that successful transitions depend on robust governance, social inclusion and cross-sectoral coordination. Each Living Lab tested locally adapted approaches to overcome systemic barriers and inspire transferable solutions.

In France, Saint-Pierre-de-Chartreuse is redefining tourism through participatory planning, and Megève is involving second-home owners in shaping local development. In Austria, Großes Walsertal integrates governance, education and local production, and Sankt Corona am Wechsel uses digital snow management to adapt to climate change. In Switzerland, Vals secures ski lifts and cable cars infrastructure through community ownership, supported by the national Second Homes Act which limits the construction of holiday residences in order to preserve liveable communities. In Italy, Chiesa in Valmalenco engages with young people, while UNIMONT in Edolo provides higher education in mountain-specific skills. In Slovenia, Rogla promotes year-round employment and the Planica Nordic Centre diversifies through sport, science and education.

Together, these examples demonstrate that resilient mountain communities emerge where governance, participation and innovation converge, offering an example of the transition of Alpine resorts towards diverse, liveable and climate-resilient futures.

KEY HIGHLIGHTS

▲ **Systemic vulnerabilities:** Alpine resorts are exposed to significant transition risks due to climate change, demographic shifts, economic dependency and fragmented governance.

▲ **Governance as a cornerstone:** Coordinated, multi-level governance and inclusive participation are key enablers of a sustainable transition.

▲ **Integrated policy responses:** Effective transitions link tourism with housing, energy, mobility, education and environmental protection.

▲ **From dependence to resilience:** TranStat shows how Alpine resorts can evolve into diverse, liveable regions driven by their communities through shared governance and innovation.



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FOREWORD

The Alpine region is undergoing profound change. Rising temperatures, unreliable snowfall, changing demographics, and reliance on winter tourism are reshaping the future of mountain resorts. Meeting these challenges requires new technologies and funding, as well as innovative governance, collaboration and locally grounded action.

This publication presents good practices developed in the TranStat Living Labs. It showcases how Alpine communities are experimenting with transition through participatory governance, economic diversification, education and social innovation.

Examples drawn from nine Living Labs across France, Switzerland, Italy, Austria and Slovenia illustrate how collaboration between residents, authorities and researchers can generate practical, transferable solutions. These initiatives demonstrate that sustainable transitions originate within communities themselves, driven by creativity, cooperation, and a shared vision for resilient Alpine futures.



1 INTRODUCTION

Alpine mountain resorts are undergoing profound changes. Unreliable snowfall, the impact of climate change, demographic change and economic dependency on winter tourism are forcing these areas to rethink their future planning. A sustainable transition therefore requires new forms of collaboration, innovation and governance that are adapted to the realities of the mountains.

The TranStat project explores how this transformation can be achieved in practice. Through nine Living Labs in France, Switzerland, Italy, Austria and Slovenia, the project tested participatory approaches that link local knowledge, governance innovation and diversification beyond tourism.

This Catalogue of Good Practices showcases the most notable examples of these efforts, ranging from community-financed infrastructure and participatory planning to educational innovation and digital snow management. Together, these examples demonstrate that sustainable transition is an ongoing, location-specific process driven by collaboration and a shared vision.

By sharing these experiences, the publication aims to inspire other mountain regions to adapt and replicate these successful approaches, thereby reinforcing resilience and liveability across the Alps.

2 UNDERSTANDING CHALLENGES AND RESPONSES IN MOUNTAIN RESORTS

Alpine mountain resorts are confronted with a multitude of interconnected challenges spanning governance, the environment, society, and the economy. These challenges manifest differently across the Alps: some resorts struggle with demographic decline, others face environmental degradation, financial strain, or limited institutional capacity. This diversity shows that there is no one-size-fits-all solution.

Effective governance plays a decisive role in addressing these issues, shaping the pace and direction of the transition towards sustainability. Therefore, policy responses must be tailored to local governance capacities, socio-economic structures, and environmental conditions. The TranStat project confirms that governance systems and policies adapted to specific contexts are crucial enablers of sustainable transitions in Alpine regions.



Governance-related challenges and responses

Weak governance remains one of the most significant barriers to a sustainable transition. The limited legal recognition of mountain areas, the fragmented responsibilities across sectors and administrative levels, and the inadequate institutional capacity in small municipalities all hinder coherent policymaking. Political cycles often undermine long-term continuity, while limited participation and

weak knowledge exchange reduce legitimacy and slow innovation. Therefore, strengthening governance structures and coordination mechanisms is essential to improving institutional continuity, stakeholder inclusion and policy coherence across the Alpine region.

Good practices illustrate how participatory and integrated governance can overcome these barriers.

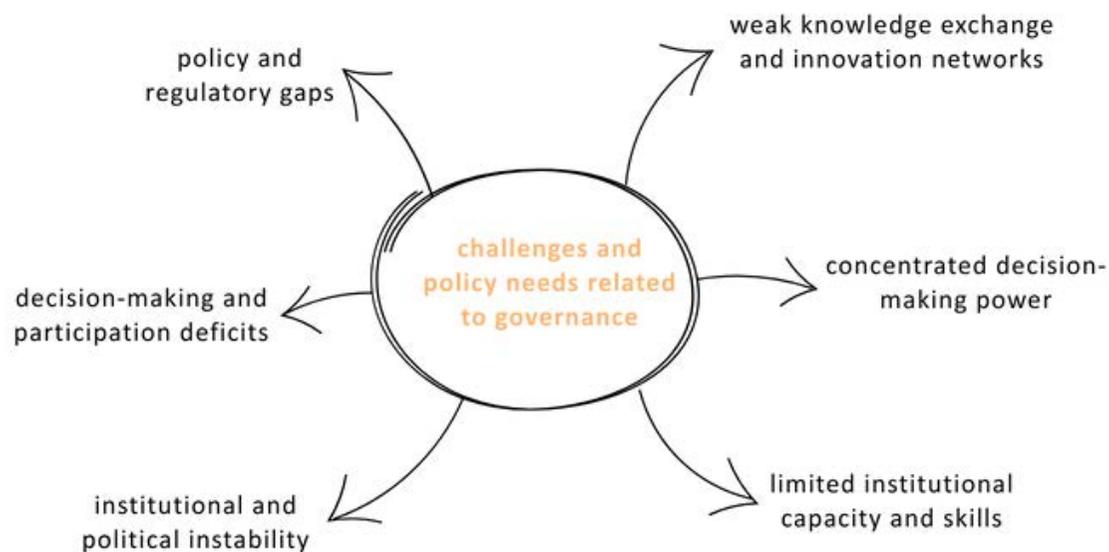


Figure 1: Governance as a cross-cutting challenge in Alpine mountain resorts (TranStat project, own elaboration).



A structured, participatory process for rethinking the future together: The Living Lab in Saint-Pierre-de-Chartreuse, France.

The Saint-Pierre-de-Chartreuse – Le Planolet ski resort in France has faced significant challenges due to a lack of snow and economic pressures. In 2020, local authorities and stakeholders began rethinking the ski area’s future and questioned its continued viability.

This evolved into Montagne Autrement 2030 (‘Mountains Differently 2030’), a structured, participatory process that brings together local authorities, professionals, and residents to collectively design a sustainable future for tourism and the wider area.

Formalised in January 2024, the process operates through three governance circles:

- ▲ a coordination group responsible for steering the process;
- ▲ an allies group of active contributors; and
- ▲ a public group that is regularly informed and consulted.

Supported by the TranStat project, the initiative combines knowledge co-production with open dialogue to establish a shared basis for long-term decision-making. This approach has already influenced the decision to reduce the size of the ski area and develop alternative, year-round tourism projects. The next step is to extend this participatory approach beyond tourism in order to support a broader territorial transition in the Chartreuse region.



Figure 2: Saint-Pierre-de-Chartreuse – Le Planolet Living Lab, France (photo INRAE).

Multifunctional governance and community hub: The Living Lab Großes Walsertal, Austria

Situated within the UNESCO Biosphere Reserve of Großes Walsertal, the Biosphärenpark.haus is a multifunctional hub that integrates governance, education, the economy and culture. It acts as a meeting place for residents and visitors alike and hosts workshops and exhibitions, including the KlimaGuides school programme. The building also provides a platform for the direct marketing of local agricultural produce and handicrafts. The building houses the Biosphere Reserve's management office and is an example of sustainable architecture.

By creating new sales channels and raising awareness, the Biosphärenpark.haus supports local farmers and artisans, helps preserve the traditional cultural landscape of alpine meadows, and ensures that agriculture remains a viable livelihood. The centre is managed collaboratively by the Biosphere Reserve team, municipalities, schools, farmers, artisans and civil society organisations. It continually evolves by developing new programmes and partnerships.

This collaborative approach has strengthened regional identity, fostered cooperation between municipalities, tourism and the Biosphere Reserve, and built bridges between governance, the economy, society and the environment. Funded by public grants and local partnerships, the Biosphärenpark.haus remains the official centre of the Biosphere Reserve and offers a model that can be adopted by other mountain regions seeking to combine community engagement, local production, and sustainable regional development.

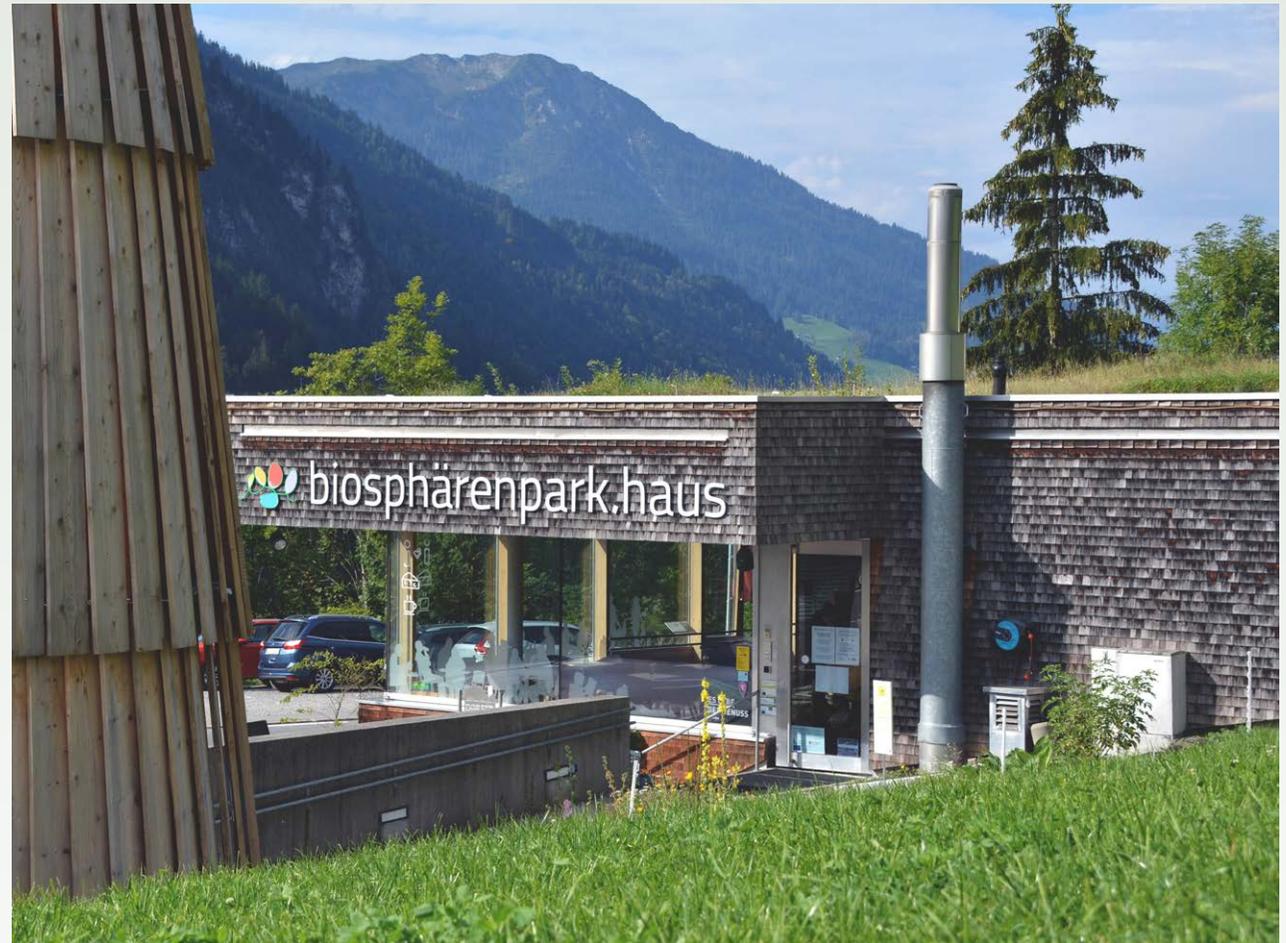


Figure 3: Biosphärenpark.haus in the Living Lab Großes Walsertal, Austria (photo: Biosphärenpark Großes Walsertal).

Environmental challenges and responses

Climate change is putting increasing pressure on the environment in the Alps. Rising temperatures, unreliable snowfall and more frequent natural hazards pose a threat to both tourism and local communities. Biodiversity loss, ecosystem degradation and the energy-intensive process of snowmaking further exacerbate these

vulnerabilities. Addressing these challenges requires an integrated approach involving adaptation, ecosystem restoration and a transition to low-carbon practices.

Good practice examples show how innovation and technology can reduce environmental impact.

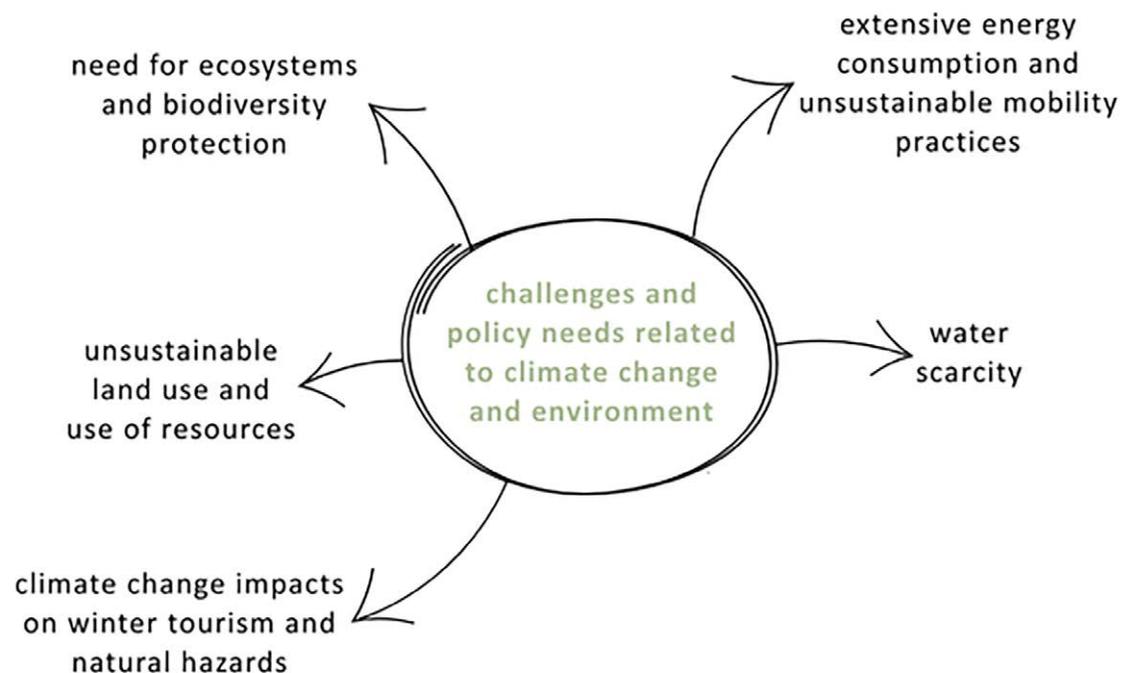


Figure 4: Environmental pressures and the need for integrated adaptation (TranStat project, own elaboration).



Digital snow management system Arena for optimising water and energy consumption, the Living Lab in Sankt Corona am Wechsel, Austria

In response to the increasingly variable conditions of the snowpack due to climate change, the St. Corona am Wechsel ski resort has introduced a digital snow management system to optimise the production of artificial snow. By precisely measuring snow depth across the terrain, snow production is now limited to areas where it is necessary. This targeted approach significantly reduces water and energy consumption, thereby contributing to the ecological sustainability of slope operations.

Digital snow management enables centimetre-accurate data collection, allowing snow guns and grooming equipment to be used efficiently. The system supports predictive planning and operational transparency, thereby enhancing environmental performance and slope quality.

Although artificial snowmaking does not offer a long-term solution to climate change, combining it with digital management tools allows for more sustainable practices in areas where snowmaking is already in use. In the case of St. Corona am Wechsel, for instance, this strategy complements wider climate adaptation initiatives, such as the development of year-round tourism offerings.

Ultimately, digital slope management is a pragmatic step towards reducing the environmental impact of ski tourism and preserving alpine ecosystems in a warming climate.



Figure 5: The Wexl Arena in the Living Lab Sankt Corona am Wechsel, Austria (photo: ecoplus Alpin).

Social challenges and responses

Social issues, ranging from demographic decline and ageing populations to housing shortages and seasonal employment, can weaken community resilience. High numbers of second homes push up prices, while limited services and youth emigration reduce liveability. Inclusive mountain

communities require strengthened participation, preservation of cultural heritage and promotion of environmental awareness.

Good practices show how social innovation and participation can strengthen cohesion.

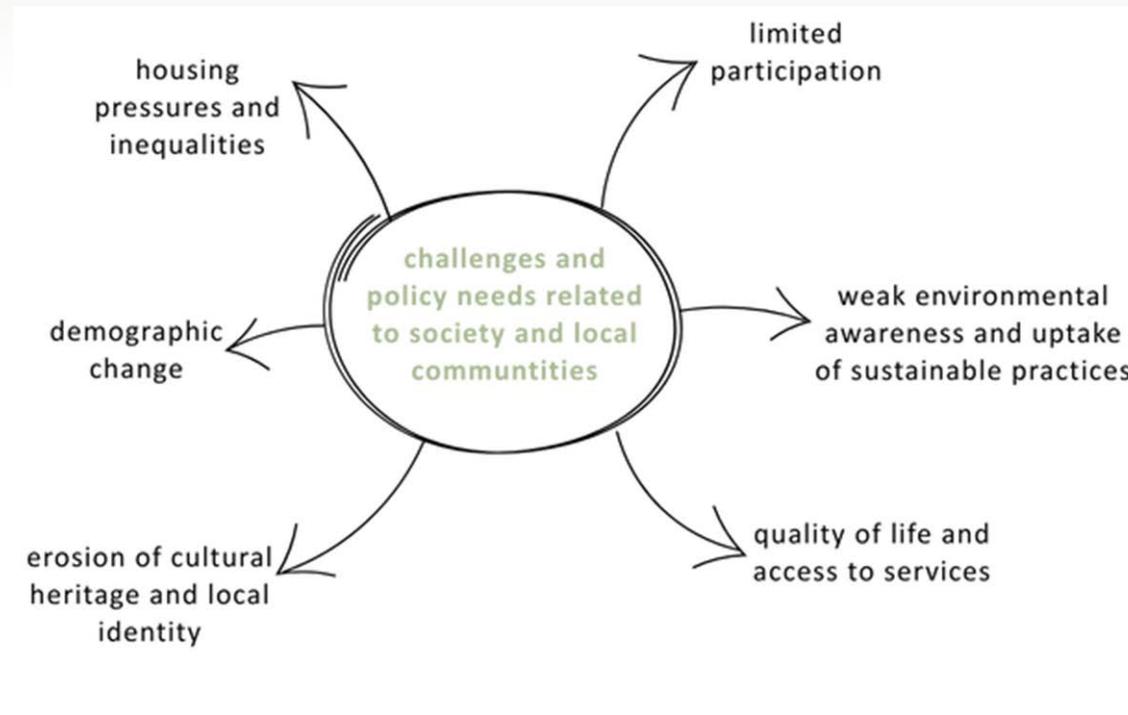


Figure 6: Social challenges affecting liveability and cohesion (TranStat project, own elaboration).



The Second Homes Act – Regulating the number of holiday homes, Switzerland

The Act, which was adopted at the federal level and implemented by municipalities, limits the proportion of second homes in each municipality to 20 per cent. Once this threshold is reached, the construction of new holiday homes is only permitted under specific conditions. The law aims to balance the housing demand driven by tourism with the needs of local residents, thereby preventing overdevelopment and preserving vibrant communities.

Introduced to address housing shortages and inflated prices in Alpine resorts, where many homes remained unoccupied for much of the year, the Act requires municipalities to monitor compliance through building permits. Existing second homes may be maintained or modestly expanded, but not subdivided. New construction beyond the limit is only permitted for tourism or heritage projects.

The success of the Act lies in its clear federal guidelines, local enforcement and transparent cadastral data. Transitional measures for existing owners have ensured the policy's broad acceptance. It has curbed speculative construction, slowed the growth of second homes, and encouraged more sustainable land use. It offers a transferable model for other tourist regions facing similar housing pressures.



Figure 7: Switzerland has introduced restrictions on the number of second homes in municipalities in order to counteract housing shortages and rising property prices (Vals Summercampain, photo: Visit Vals AG).

Engaging second-home owners in shaping the future, Living Lab Megève, France

Like many other major ski resorts, Megève has experienced a decline in its permanent population, with many residents owning second homes. A joint survey by the TranStat team and the local tourist office has provided a better understanding of these residents. While skiing is important to them, their willingness to visit outside the winter season highlights the area's other tourist attractions. Their strong attachment to the area is a key factor in understanding their relationship with the village, and could inform future planning despite the vulnerabilities facing the territory. These residents have also expressed a desire to participate in decision-making processes concerning Megève's future, reflecting the broader challenge of involving inhabitants in territorial transition processes. To this end, the second-home owners have formed an association to present their vision for Megève and influence the area's development.



Figure 8: Second-home owners are an important social group to consider in local decision-making in Megève (photo: A. Chandellier).

Involving young people in the process of future visioning: The Living Lab in Chiesa in Valmalenco, Italy

During the TranStat project, a participatory workshop was held in Chiesa in Valmalenco, engaging young members of the local community in shaping the future of the valley. The aim of this initiative was to encourage young people to participate in local development processes, recognising that they will be most affected by climate and socio-economic changes and will ultimately have to deal with the consequences.

During the workshop, participants reviewed ideas from previous meetings and proposed new ones to improve the area. Discussions focused on the future of the ski resort, tourism accessibility, youth services, and depopulation. Key ideas included promoting summer tourism, improving transport links to the valley for tourists and residents alike, and coordinating cultural initiatives to showcase the area's geological heritage.

The workshop emphasised the need to move beyond individual initiatives and foster collaboration among public institutions, private stakeholders, and the local community. It demonstrated that actively involving young people in developing a vision for the future generates innovative ideas and strengthens collective responsibility for the sustainable development of mountain regions.



Figure 9: Youth workshop carried out in Chiesa in Valmalenco in March 2025 (photo: Leonardo La Rocca).

Higher education for sustainable mountain development: Article 10 of Italy's Mountain Law

This article highlights the importance of specialised education for mountain development and states that secondary and tertiary educational programmes should incorporate curricula tailored to the specific needs of mountain areas. These programmes should cover subjects such as environmental management, agro-forestry, rural development, sustainable tourism, climate adaptation and mountain professions. The article stipulates that these programmes should incorporate mountain-specific subjects into their curricula, such as environmental management, agro-forestry, rural development, sustainable tourism, climate adaptation, and mountain professions.

The dual objective is to train professionals who can design and manage services, infrastructure, and economic activities adapted to mountain conditions, while also strengthening local human capital. This enables communities to drive their own development, rather than relying on external interventions.

A leading example of this approach is UNIMONT, the Mountain University Campus of the University of Milan in Edolo. Its master's programme, 'Valorisation and Sustainable Development of Mountain Areas', offers an interdisciplinary curriculum combining environmental science, law, communication, agroforestry, and socio-economic studies — all within a mountain setting. By exposing students to local ecosystems and socio-economic issues such as depopulation and limited access to services, the programme shows how higher education can encourage innovation and resilience in mountain regions.



Figure 10: A master's student conducting research for their thesis on the impact of climate change on mountain trails in Lombardy during a field trip to Conca del Baitone in August 2025 (photo: Chiara Sesti).

Economic challenges and responses

Dependence on snow-based tourism makes the economy vulnerable. Many resorts are experiencing a decline in visitor numbers, labour shortages and limited capacity for innovation. To ensure long-term resilience, mountain regions must diversify their economies, create year-round

employment opportunities and promote green and circular business models.

Good practices highlight how economic diversification and innovation can create new opportunities.

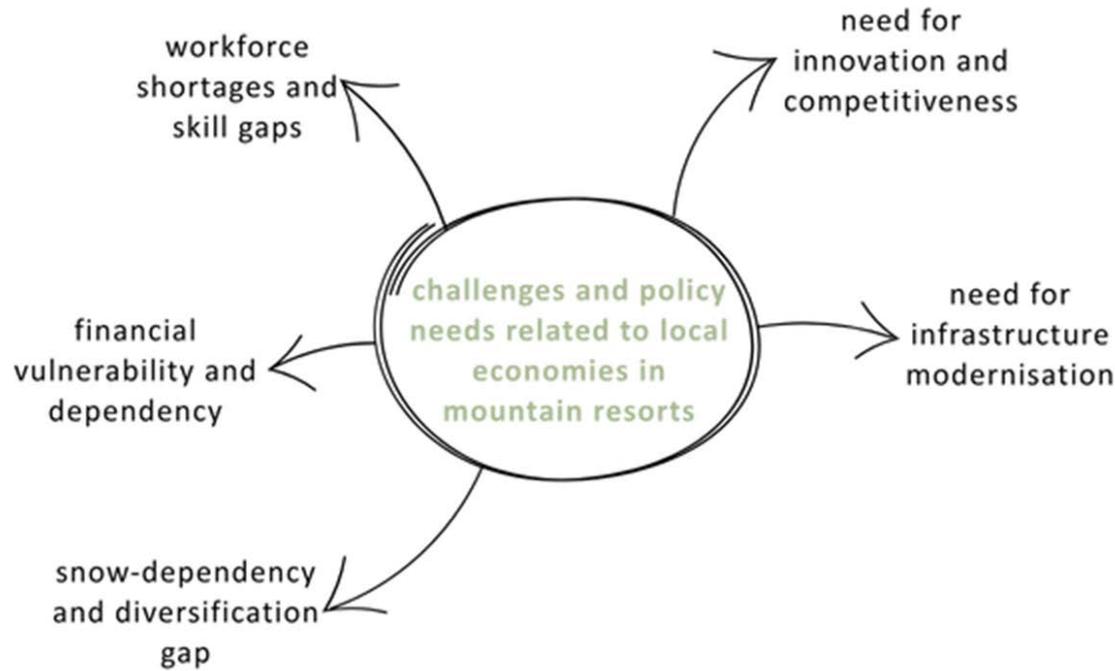


Figure 11: Economic dependence and the need for diversification (TranStat project, own elaboration).



Strengthening workforce stability, the Living Lab in Rogla, Slovenia

Unitur is one of Slovenia's leading tourism companies, managing the Rogla mountain resort and the Terme Zreče thermal spa. A key challenge for the company is recruiting staff, given the shortage of people in hospitality and tourism professions. The seasonal nature of work, particularly at Rogla, makes long-term stability challenging, so the company adapts its recruitment strategy by engaging students, retirees, and foreign workers, as well as utilising all forms of legal cooperation. Unitur also employs motivated candidates who may not fully meet the requirements, providing them with on-the-job training.

The combination of the Rogla ski resort and the Terme Zreče spa resort enables staff to be relocated between centres outside peak seasons, helping Unitur retain employees beyond winter and summer. The company invests in employee well-being through leadership and skills training, health promotion, and leisure benefits such as swimming, saunas, skiing, and workshops (e.g. yoga, Nordic walking, and spine training). Social events support work–life balance and are reinforced by the Family-Friendly Company certificate, which outlines thirteen implemented measures.

The aim is to create an environment in which employees are motivated, skilled and satisfied because their commitment is essential for Unitur's success and for providing guests with an excellent experience.



Figure 12: Addressing the workforce challenge in the Living Lab Rogla: Unitur's sports day (photo: Unitur).

The Planica Nordic Centre: A model of diversification beyond tourism, the Living Lab in Kranjska Gora, Slovenia

The Planica Nordic Centre demonstrates how a tourism-based economy can evolve into a broader innovation ecosystem. Once renowned as the cradle of ski jumping, Planica has transformed into a multifunctional hub combining elite sport, education, research, and innovation.

The centre offers ten altitude rooms where the oxygen concentration can be adjusted to simulate altitudes of up to 6,000 metres, supporting the ‘sleep high, train low’ method for athletes. Research and innovation lie at the heart of its mission. In collaboration with the Jožef Stefan Institute and the European Space Agency (ESA), Planica is home to the Gravitational Physiology Laboratory, which boasts a short-arm human centrifuge for conducting research in human physiology and space medicine — a unique facility in Europe. Through the Centre for School and Extracurricular Activities, Planica also provides outdoor learning opportunities for children. A wind tunnel, museum, and congress facilities extend its use to education, culture, and knowledge exchange. By integrating sport, science and tourism, Planica strengthens the region’s resilience and long-term sustainability, attracting athletes, researchers and visitors alike.



Figure 13: The TranStat project team at the location of the most recent ski flying world record (254.5 m), set by Domen Prevc on the Planica hill in 2025 (photo: Janez Nared).

Community-Financed Model for Mountain Railways – the Living Lab in Vals, Switzerland

In 2018, the alpine village of Vals in the Swiss canton of Graubünden faced the collapse of its mountain railways after years of declining revenues, unreliable snowfall and financial strain. Instead of closing them, the municipality launched a community-financed model that saved the infrastructure through local ownership and shared funding. This model shows how small mountain communities can preserve vital tourism assets while fostering solidarity and resilience.

The gondola system was transferred to municipal ownership and is now supported by a mixed funding scheme comprising a modest property tax increase, an accommodation levy for hotels and second-home owners, and municipal budget contributions. This replaced unstable private revenues with predictable, community-based financing. Residents and visitors now enjoy free year-round access to the gondolas, reduced ski passes and complimentary skiing for children under 16, thereby enhancing inclusivity and extending the tourism season beyond winter.

Strong civic engagement was crucial to the success of this initiative: over 60% of residents participated in the 2018 referendum, with two-thirds voting in favour. Transparent communication and collaboration between the municipality, hoteliers, and residents fostered trust and a sense of shared responsibility.

Today, Vals operates a stable, community-managed system that treats essential mountain infrastructure as a public good — a replicable model for small destinations seeking sustainable, locally anchored tourism management.



Figure 14: Vals introduced a community-financed model of mountain railways (Vals in the Sky, photo: Visit Vals AG).

The TranStat findings demonstrate that achieving a sustainable transition in Alpine mountain resorts necessitates coordinated action across different levels of governance and policy areas. Resilient and liveable regions are founded on strengthened institutions, diversified economies, inclusive communities and active participation.

The Living Lab experiences demonstrate that innovation emerges where challenges meet collaboration, offering tangible pathways towards resilient and sustainable Alpine futures.

Main contacts:

Maruša Goluža, Research Centre of the Slovenian Academy of Sciences and Arts,
marusa.goluza@zrc-sazu.si

Emmanuelle George, National Research Institute for Agriculture, Food and Environment,
emmanuelle.george@inrae.fr

ABOUT THE TRANSTAT PROJECT

The TranStat project addresses the challenges faced by Alpine mountain resorts and their surrounding areas in the face of climate change, demographic shifts and economic vulnerability linked to their reliance on snow-based tourism. These developments not only threaten tourism, but also the social and economic fabric of mountain communities across the Alps.

To address these issues, the TranStat project unites scientific institutions, regional and local authorities, and development agencies to enhance governance capabilities for transition. The project combines analytical research with practical, participatory work in nine Living Labs spanning five Alpine countries: France, Switzerland, Italy, Austria and Slovenia. These Living Labs co-create transition pathways by engaging local stakeholders, testing innovative approaches, and facilitating the exchange of knowledge between mountain resorts at various stages of transformation.

TranStat's strategy focuses on raising awareness, building institutional capacity, and translating scientific insights into practical action. The main activities include:

- ▲ Promoting transnational cooperation and knowledge exchange among Alpine policymakers, researchers and stakeholders.
- ▲ Implementing Living Labs as participatory spaces to design and test local transition strategies.
- ▲ Developing long-term transition strategies, policy recommendations and transferable tools to promote the sustainable diversification of mountain regions.

The project aims to strengthen governance systems, support social and environmental innovation, and enhance the resilience and liveability of mountain resorts beyond winter tourism. The project's findings are translated into transnational policy recommendations and practical guidance for decision-makers committed to the Alps' sustainable future. The full policy recommendations document is available here:



[Link to TranStat project outputs.](#)

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