EUSALP EU STRATEGY FOR THE ALPINE REGION

Interreg Alpine Space Co-funded by the European Union

Support EUSALP

EUSALP POLICY RECOMMENDATIONS

Co-created knowledge and perspectives
from the EUSALP Action Groups (2023-2025)

Summary

Background and Aims of the Policy Recommendations

Policy Recommendations serve as key instruments for translating EUSALP's strategic objectives into concrete policy actions across the Alpine macro-region.
This document presents a consolidated set of Policy Recommendations, developed in alignment with the triennial Work Plans (2023-2025) and the Cross-cutting Priorities endorsed by the Executive Board and the EUSALP General Assembly under the 2023 Swiss Presidency.
It reflects the concerted efforts of Action Groups Leaders and members – including public authorities, research institutions, SMEs, and other regional stakeholders – to foster a more resilient, innovative, and sustainable Alpine region.

The recommendations are structured around four strategic themes, each reflecting a core dimension of Alpine development:

1. **Research and Innovation Ecosystem**
   Strengthening the territorial fabric of research, innovation, and knowledge transfer across the Alps, fostering collaboration among academia, industry, and public authorities to support Smart Specialisation and sustainable competitiveness.
2. **Digital Transformation and Innovation**
   Promoting data-driven development, digital inclusion, and next-generation infrastructure to ensure that mountain and rural territories benefit fully from the digital transition and artificial intelligence for sustainability.
3. **Skills and Human Capital Development**
   Recognising and certifying soft skills, empowering the Alpine workforce, and fostering lifelong learning to respond to the evolving needs of digital and green transitions.
4. **Climate Adaptation, Environmental Governance, and Energy Transition**
   Advancing integrated approaches to climate resilience, biodiversity protection, sustainable water management, and decarbonisation through energy efficiency in transport and green hydrogen initiatives.

The following Policy Recommendations reflect the core values of EUSALP: cross-border cooperation, territorial innovation, and sustainable development. They are intended to support policymakers at all levels in advancing the objectives of the European Green Deal, the Digital Agenda, and Cohesion Policy.
By presenting these Recommendations, the focus shifts from past achievements to the emerging challenges and priorities that will shape the work of the Action Groups and to the overall strategy in the years ahead.

Territorial Ecosystems of Research and Innovation

Action Group 1 – Research and Innovation

Situated within the broader framework of EUSALP, Action Group 1 aims to stimulate research and innovation while promoting an integrated policy approach to address the profound socio-economic and territorial transformations currently underway. Such transformations are generated by the ongoing digital and ecological transitions, both of which are driven by technological innovations and specific European and national policies. AG1 fosters this integrated policy approach by adopting a specific spatial perspective in order to promote the development of territorial ecosystems of research and innovation — dynamic environments where physical and digital infrastructures interact with networks of public institutions, private enterprises, research centers, schools, and civil society. These territorial ecosystems should be rooted in integrated projects of socio-economic and spatial regeneration, framed by trans-scalar and cross-border territorial visions, and aimed at decreasing the growing socio-economic and territorial disparities within the Alpine space. In this perspective, by leveraging collaborative governance models and place-based planning and design methods, Action Group 1 contributes to building a future-proof Alpine macro-region, where innovation becomes a driver of socio-economic and territorial equity, shared prosperity, and anti-fragility.

Here follows an outline of Policy Recommendations, which can be categorized in three groups

1. **Territorial diagnostics, planning and design**
   - Identify demands, opportunities and requests for research and innovation at the intersection between supralocal policies and local initiatives
   - Accordingly, select topics for the development of “territorial” ecosystems of research and innovation
   - With this approach, integrate the physical hardware and the scientific software
   - Define the territorial frameworks through the development of spatial figures and visions
   - Articulate them into spatial scenarios for “territorial” ecosystems of research and innovation
   - Identify hubs in accessible sites through the reuse of abandoned spaces along existing networks of transport and green and blue infrastructures
   - Promote hubs as flexible spaces in relation to their locations, vocations, functional mix, and coalition of actors
   - When involving universities, develop such hubs according to the off-campus model, shared by multiple academic institutions around place-based teaching and research activities, and open to the local communities

2. **EUSALP Governance**
   - Support coalitions of interest between universities, schools, research institutions, firms, public institutions, and local communities

- Target efforts towards the development of "territorial" ecosystems of research and innovation by integrating the diversification and reactivation of production landscapes with the social inclusion and territorial re-naturalization
- Enhance the potential transversality of the AG1 by selecting the topics for the 'territorial' ecosystems of research and innovation in interaction with the thematic focus of the other Eusalp AGs
- Promote an integrated policy governance to drive research and innovation in the prospect of territorial cohesion in order to break down sectoral silos and prevent fragmentation
- According to the Joint Paper of Spatial Planning for the Eusalp Strategy, target the spatial planning and design approach to foster the cross-sectoral integration between multiple policies of innovation
- Establish a framework for monitoring and for impact assessment, including key performance indicators (KPIs)

3. **Social Innovation**
   - Promote laboratories of participation and co-creation to develop territorial figures, spatial visions, and related scenario framing the territorial ecosystems of research and innovation
   - Enhance the role of universities as drivers for the interaction between institutional, economic and social actors, as well as for the promotion of the above-mentioned laboratories of participation and co-creation
   - Support alliances of different interests in relation to both supralocal trajectories and local needs for the development of 'territorial' ecosystems of research and innovation by strengthening cooperations among different regions of the Alpine space
   - Enhance the role of education as a driver for interaction between young generations, and multiple economic and social stakeholders
   - Promote laboratories of participation and co-creation to develop such interaction in relation to long-term thematic visions and scenarios
   - Develop facilities and activities of research and innovation able to intersect economic diversification and reactivations with social inclusion and territorial re-naturalization

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Data Spaces for a Resilient and Competitive Alpine Region

Action Group 2 – Economic Development

These Policy Recommendations aim to accelerate digital transformation in the alpine region by enabling SMEs and small public authorities to participate in cross-border data spaces.
They focus on boosting digital skills, harmonizing practices with EU standards, and providing practical support to overcome technical, legal, and operational barriers.

Targeted investments in infrastructure and pilot projects – particularly in manufacturing and water management – will foster secure, interoperable, and scalable data ecosystems.
Coordinated action across regional, national, and EU levels will maximize impact, enhance innovation, and strengthen economic competitiveness across the alpine macro-region.

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Fostering Digital Transformation in Alpine Rural and Mountain Territories

Action Group 5 – Connectivity and Accessibility

This policy document presents a strategic framework to accelerate digital transformation in Alpine rural and mountain territories. Its main objective is to create a supportive environment for innovation, economic growth, and social development by leveraging digital solutions and community-led approaches.

The document identifies persistent gaps in digital capacity, skills, and enabling policies, as well as administrative and infrastructural barriers that hinder the adoption of new technologies. Drawing on pilot experiences and cross-regional collaboration of the SmartCommUnity project, the recommendations focus on empowering local actors, investing in reliable connectivity and digital literacy, establishing networks of Smart Region hubs, and promoting responsible data use.
The expected impacts include stronger local economies, more sustainable resource management, and greater social inclusion and community resilience. Implementation relies on coordinated action across European, national, regional, and local levels, with an emphasis on bottom-up engagement, multi-stakeholder collaboration, and dedicated resources for infrastructure, training, and long-term maintenance. The document positions Alpine territories to benefit from shared knowledge, innovative practices, and improved digital services, ensuring their competitiveness and vitality in the digital age.

The following is a summary list of the proposed policy recommendations:
P1. Recognise and Scale Community-Led Smart Transformation
P2. Build Foundational Infrastructure and Skills
P3. Strengthen Smart Region Hubs and Simplify Access to Innovation
P4. Ensure Responsible Data Use and Shared Learning

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Harnessing Artificial Intelligence for Sustainable Alpine Development

Action Group 5 – Connectivity and Accessibility

This policy document outlines a strategic vision for harnessing artificial intelligence to support sustainable development in the Alpine region, which faces unique challenges due to its complex terrain, transboundary dynamics, and fragile ecosystems. Developed by Action Group 5 in collaboration with the University of Udine, the recommendations focus on building a robust technological and data infrastructure, fostering innovation, and promoting education tailored to Alpine needs.

The document calls for the creation of virtual replicas of critical infrastructure and ecosystems to enable predictive maintenance and hazard forecasting (digital twins), harmonization of data standards and deployment of sensor networks for real-time environmental monitoring, and the development of practical AI applications through targeted pilot projects in areas such as water management, tourism, and hazard monitoring. It emphasizes the importance of multilingual, cross-border education and transparent assessment systems to build trust and accountability.
The anticipated impacts include cost savings, improved resource efficiency, enhanced safety, and greater resilience for Alpine communities, as well as stronger environmental protection and social inclusion. Implementation relies on coordinated action across European, national, regional, and local levels, leveraging existing frameworks, partnerships, and dedicated resources for infrastructure, training, and ethical AI governance.
The document positions the Alpine region to become a leader in digital welfare and economic development through the responsible and innovative use of artificial intelligence.

The following is a summary list of the proposed policy recommendations:
P1: Create a High-Level Technological Framework
P2: Build a Cohesive Data and Infrastructures Ecosystem
P3: Encourage Applications and Use Cases (Digital Twins)
P4: Promote Innovation and Education

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Promoting Future-Proof Digital Infrastructures

Action Group 5 – Connectivity and Accessibility

This policy document sets out a comprehensive strategy for advancing future-proof digital infrastructures across the Alpine region, with a particular focus on rural and mountain areas. The objective is to ensure reliable, secure, and inclusive high-speed connectivity, modern computing capacity, and trusted data use for citizens, businesses, and public services.

The document addresses the unique challenges faced by these territories, such as high costs for last-mile coverage, exposure to natural hazards, skills shortages, and cybersecurity risks. It emphasizes the need for cross-border backbone redundancy, municipal ownership models, resilient and low-carbon data centers and edge computing facilities, and secure communications tailored to the Alpine context. The recommendations include reinforcing fiber optic and 5G corridors, establishing smart region hubs, adopting resilient data center standards and edge computing facilities, supporting municipal IoT portfolios, piloting secure communications, and launching shared skills and AI-assisted operations programs. The anticipated impacts are improved economic conditions, environmental sustainability, and social well-being, achieved through fewer outages, better service reliability, reduced duplication, and enhanced cooperation. Implementation relies on coordinated multi-level governance, prioritizing cross-border interoperability, leveraging existing funding programs, and promoting shared infrastructure and capacity building. The document calls for collaboration among EU institutions, national and regional governments, local authorities, and community organizations to realize a secure, resilient, and inclusive digital future for the Alpine region.

The following is a summary list of the proposed policy recommendations:

P1. Promote Cross-border high-speed connectivity
P2. Strengthen Smart Region hubs
P3. Build Resilient, low-carbon data centers and edge computing facilities
P4. Manage Municipal IoT portfolios & stewardship
P5. Implement Secure communications pilots
P6. Develop Skills & AI-assisted operations

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Recognition, Validation and Certification Of Soft Skills

Action Group 3 – Labour Market, Education and Training

Soft skills are increasingly seen as essential to be effective at work, but remain difficult to define, assess, and certify. The lack of a common European framework hinders their recognition and integration into education and employment pathways.

Action Group 3 seeks to contribute to the creation of a common Alpine framework for the observation, assessment, and validation of soft skills. A dedicated toolset was developed and successfully piloted in Austria, Italy, and Slovenia, demonstrating its potential for broader application.
Based on the knowledge and experience gained through AG 3 work it is recommended to:

1. **Develop a unified classification system** for soft skills, regularly updated and applicable at all governance levels.
2. **Create an open repository** of soft skills identification, assessment and validation practices and tools to support knowledge sharing and continuous improvement.
3. **Raise awareness and provide incentives** for soft skills development and recognition.
4. **Integrate soft skills into education and lifelong learning policies** through supportive legislation.
5. **Launch a EUSALP-wide pilot initiative** to scale the toolset, train educators and Human Resources professionals, and promote cross-border mobility.

The initiative supports regional cohesion by enhancing the mutual recognition of soft skills, improving workforce mobility, and aligning educational outcomes with labour market needs. It also contributes to EU-wide goals on skills recognition and lifelong learning.

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Current Issues of Alpine Water Management

Action Group 6 – Resources

Alpine water bodies face growing challenges from climate change, overuse, and mismanagement. While the EU Water Framework Directive (WFD) (2000/60/EC) and the Swiss Water Protection Act (GSchG) provide a solid legal framework, in the Alpine macro-region progress in environmental quality and sustainable water management are often hindered by fragmented governance, insufficient monitoring, and weak source-control measures.

These policy recommendations identify five key domains requiring action, considering both their feasibility and the potential role of EUSALP in facilitating their implementation. Since water management involves different levels of governance, the policy recommendations address diverse stakeholders.
EUSALP can play a valuable role by promoting macro-regional cooperation in shared basins, supporting the replication and upscaling of successful projects, leveraging the newly adopted Water Resilience Strategy as a call for macro-regional action, and thereby highlighting the strategic role of the Alpine region for European water resilience.

The following recommendations are proposed:

1. **Step up action to reduce pollution**
   Target: National authorities
2. **Increase investment in Alpine water basin monitoring and early warning strategies for Alpine source areas**
   Target: National and Regional authorities
3. **Promote regionally coordinated Nature-based Solutions (NbS) in Alpine water bodies**
   Target: Regional and Local authorities
4. **Strengthen macro-regional governance for water management**
   Target: Regional and Local authorities
5. **Provide tailored funding for water resilience in the Alps**
   Target: National and Regional authorities

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Connectivity and Biodiversiy

Action Group 7 – Green Infrastructures

The Alps remain a stronghold of relatively well-preserved habitats, rich biodiversity, and areas of high natural value. However, they face a significant threat of becoming ecologically isolated, lacking vital corridors that connect them to other important natural regions.

To safeguard their ecological integrity, it is essential to address the issues of ecological connectivity and nature restoration – both within the EUSALP region and in collaboration with neighbouring territories.

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Enhancing Vertical Governance of Climate Change Adaptation in the Alpine Space, through Mandatory Mainstreaming, Multi-Level Coordination, and Criteria-Driven Funding

Action Group 8 – Risk Governance

In light of the still fragmented vertical governance, lack of political continuity, and weak integration of adaptation criteria into regulatory frameworks to effectively address the pressing and increasingly severe impacts of climate change, we call on policymakers at all levels (particularly EU and regional ones) to enhance integration between the different levels of vertical governance in the field of climate change adaptation.

Regional authorities are best placed to implement tailored adaptation measures in line with EU and national criteria, so we urge policymakers to make climate change adaptation procedures mandatory in regional development strategies and sectoral plans. This should be supported by multi-level governance, with dedicated coordinated bodies, and resources for adaptation. This could also be achieved by implementing additional climate change adaptation criteria in regional funding programmes applicable at EU, national and regional levels.

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The content of this document was discussed during AG8 meetings. Draft versions were circulated among all AG8 members for input and review. The final version has been shared with and agreed upon by AG8 members.

Adapting to Natural Hazards in the Alps: Strengthening Risk Governance, Risk Culture, and Climate-Resilient Land Use

Action Group 8 – Risk Governance

The Alpine region is experiencing an increase in the frequency and intensity of natural hazards, such as floods, landslides and glacial retreat, all of which are driven by climate change.
Key gaps in the management of these risks include fragmented governance, a lack of comprehensive early warning and monitoring systems, limited public awareness, and the insufficient integration of climate risks into spatial planning.
This set of policy recommendations urges decision-makers at all levels to take immediate and coordinated action.
Key priorities include:

- Strengthening early warning and monitoring systems by investing in cross-border nowcasting infrastructure and harmonised data platforms.
- Build a shared risk culture by integrating natural hazard education into school curricula and supporting civil protection systems with adequate training and resources.
- Introduce legally binding spatial planning principles that reflect future climate risks, prioritise nature-based solutions and discourage development in hazard-prone areas.

National governments and EU institutions should provide legal clarity, sustained funding and technical support, while regional and local authorities must implement context-specific measures and engage communities directly. Investing in coordinated, cross-border risk governance and nature-based solutions can help policymakers to reduce losses, enhance preparedness and protect communities, infrastructure and ecosystems. The time to act is now. Proactive, integrated policies based on cross-sectoral cooperation are vital for ensuring a safer, more resilient Alpine region.

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Boosting Energy Efficiency in Alpine Frieght Transport and Tourism Mobility

Action Group 4 – Mobility

Developed in the frame of the Cross-Cutting Priority "Accelerating the Energy Transition for a Carbon-Neutral Alpine Region", in cooperation with AG2, AG4, AG5 and AG9.

The Alpine Region is increasingly exposed to the impacts of climate change, as recent extreme weather events and infrastructure damages have shown. These developments highlight the urgent need to accelerate decarbonisation efforts, particularly in the transport sector, which accounts for more than one third of greenhouse gas emissions in the Alpine countries and approximately 30% of overall energy consumption. Given the Alpine region's geographical constraints and limited potential for large-scale renewable energy expansion, unlocking the potentials of energy efficiency in transport is specifically relevant for the Alpine countries and regions. These policy recommendations highlight specific need for action – following the "Avoid-Shift-Improve" logic that also guides the EU Green Deal and Fit-for-55 package. EUSALP AG4 calls on decision-makers to:

1. AVOID redundant freight movements: Leverage digital solutions to reduce energy demand from the transport sector

Digital solutions offer significant potential to reduce energy demand in freight transport by improving coordination, interoperability, and operational efficiency.

→ We call on decision makers at regional, national and European level to step-up their coordination efforts to provide the necessary digital tools, data interfaces and support for relevant technologies necessary to enable efficiency gains.

→ Also, we urge all levels to strengthen the exchange of experiences and lessons-learned in a cross-border context, to allow a faster replication and scaling of successful approaches.

→ Specifically, we call on decision makers at all policy levels for a stronger coordination with stakeholders from the industry and logistics sectors to boost pilot and demonstration activities and to ensure that efforts are in-line with stakeholder needs.

2. SHIFT freight transport: Boost efforts for modal shift in freight transport

To reduce the energy consumption of freight transport in the Alpine Region, a decisive shift from road to rail is essential, building on the Joint Declaration on Rail Transport endorsed by 15 Alpine regions.

→ We call on decision makers at national and regional level to keep up their ambitious efforts to finalize the relevant TEN-T infrastructures.

→ We call on decision makers at European level to implement the new provisions of the TEN-T regulation and urge the Member States to keep up with their commitments. Also, we call on the EU to swiftly move ahead the pending dossiers of the Greening Freight Transport package, to improve planning security for all stakeholders involved in transalpine transport.

3. IMPROVE freight transport: Accelerate the market uptake of zero-emissions road transport vehicles and strengthen enforcement

Battery-electric trucks offer the highest energy savings among alternative drive systems for road freight, making their widespread adoption a key priority for decarbonising transport.

→ We call on decision makers at regional and national level to step-up their coordination efforts and to use lessons learned for boosting the uptake of zero-emission technologies on the Alpine transit corridors, also ensuring that needs of the transport industry are met.

→ We call on decision makers at European level to maintain an ambitious approach to implementing the EU Alternative Fuels Infrastructure Regulation and to ensure that its provisions are adequately enforced.

4. Tackling the "ENERGY – EFFIECIENCY – FIRST" principle in tourism mobility

Tourism mobility is a major driver of energy demand in the Alpine region and must be addressed with the same urgency as freight transport. The greatest efficiency gains can be achieved by shifting from private car use to public and zero-emission transport options, both for travel to and within Alpine destinations.

→ We call on decision makers at European, national, regional and local level to better coordinate their services for public transport, to ensure easy transfer from long-distance to regional and local services and especially to ensure a seamless information and possibly ticketing.

→ We call on all levels involved in EUSALP to better communicate existing good practices and successful approaches to allow a transfer to other regions.

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The EUSALP Region: a European Frontrunner Area for Green Hydrogen

Action Group 9 – Energy

Developed in the frame of the Cross-Cutting Priority "Accelerating the Energy Transition for a Carbon-Neutral Alpine Region", a cooperation of AG2, AG4, AG5 and AG9.

The Hydrogen Strategy of the European Union has defined ambitious targets to develop a European hydrogen economy. In this context, the **Alpine territory is transforming into a pioneering area for green hydrogen**: Most Alpine countries have endorsed national hydrogen strategies, and several Alpine regions have adopted - or are developing - regional roadmaps and strategies, are setting up pilot projects, are establishing hydrogen valleys and are advancing cross-border collaboration and infrastructure[1].The Alpine area holds strategic relevance in the context of European green hydrogen economy implementation and technical testing: With a high incidence of renewable energy, heavy industries in the Alpine forelands that represent amongst the most productive European areas, and its function as a European transport corridor that connects the South and the North of Europe, the region is well-positioned to pioneer green hydrogen deployment. It has the potential to become a European frontrunner for green hydrogen-based long term energy storage and industrial decarbonization, aligning regional innovation with the climate goals of the European Union (EU).

To untap the potential of green hydrogen in supporting the energy transition, several key challenges need to be tackled. These include high production costs, the safeguarding of hydrogen applications as the most effective CO_2 emission reduction technology, the lack of infrastructure to match offer and demand, as well as the need to intensify multi-level, trans-regional and cross-border collaboration. To advance the Alpine area into becoming a frontrunner area for green hydrogen, **EUSALP Action Group 9, that has the mission to make the Alpine territory a model region for renewable energy and energy efficiency, calls on decision-makers and stakeholders to commit to the following policy recommendations:**

Regional level: Green hydrogen initiatives need to align with the EU definition of renewable hydrogen[2] and with climate policy goals focusing on application areas where hydrogen has the highest decarbonization potential, for instance, in the hard-to-abate sector. Regional hydrogen strategies need embedding into regional energy and climate plans, supported by continuous monitoring of environmental and economic impacts and policies. Communication about the benefits and risks is essential to raise public understanding and acceptance for the implementation of hydrogen initiatives.

Regional and national level: Regional hydrogen initiatives need alignment with national strategies and support from corresponding structures (e.g., one-stop shops and stakeholder platforms) to strengthen the sustainable hydrogen economy ramp-up. Education, training, and upskilling programs are needed to

[1] "Hydrogen Valleys are hydrogen ecosystems that cover a specific geography ranging from local or regional focus (e.g. industrial cluster, ports, airports, etc.) to specific national or international regions (e.g. cross border hydrogen corridors). Hydrogen Valleys showcase the versatility of hydrogen by supplying several sectors in their geography such as mobility, industry and energy end uses. They are ecosystems or clusters where various final applications share a common hydrogen supply infrastructure. Across their geographic scope, Hydrogen Valleys cover multiple steps in the hydrogen value chain, ranging from hydrogen production (and often even dedicated renewables production) to the subsequent storage of hydrogen and distribution to off-takers.", https://www.clean-hydrogen.europa.eu/get-involved/hydrogen-valleys_en, last accessed 14.10.2025.
[2] European Commission, Commission Delegated Regulation (EU) 2023/1184 of 10 February 2023.

meet the growing demand for skilled labor in the hydrogen sector.

EUSALP/Interregional and transborder collaboration: Promote the exchange of good practices from hydrogen projects and valleys across the Alpine region, focusing on financing, governance, and cross-border infrastructure. Address policy gaps, for instance, in transborder infrastructure. Coordinate public funding and joint pilot projects to efficiently develop hydrogen infrastructure, including "hydrogen valleys." Establish shared technical, regulatory, and operational standards to ensure seamless integration and interoperability of hydrogen ecosystems across the region.

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