Interreg Alpine Space

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BeyondSnow

STD Adaptation Report

D.1.2.2 – APRIL 2024

Philipp Corradini, Andrea Omizzolo, Agnese Moroni, Matteo Rizzari, Benoit Nenert, Jean-François Caron and Anne-Louise Negre

Who should read this report?

The intended audience of this document are:

Local, Regional and National Public Authorities, to gain an overview of CC adaptation strategies & projects, which have been and/or are currently implemented on a local and regional level, as well as the different legal frameworks on national level.

Local and Regional DMOs, to increase their understanding regarding the potential role of tourism actors within CC adaptation strategies & projects.

Higher education and research organisations, to benefit from real-world examples of tourism system CC adaptation on different administrative levels.

Tourism infrastructure and (public) service providers, to increase their awareness regarding their potential role in CC adaptation strategies & projects.

Tourism SMEs, to increase their knowledge base regarding their role in the development of CC adaptation strategies & projects.

Local communities of STDs, to increase their understanding of how they can be included in the development of CC adaptation strategies & projects through participatory approaches.

This report offers an initial overview regarding the multitude of different CC adaptation strategies & projects, which have been implemented in the past, are currently underway or are envisioned in the near future, developed targeting different local, regional, national and transnational levels within the AS area. The measures derived and actions described in these documents also represent examples, which can constitute an inspiration for the development of D.2.2.1 (PWA transition strategies and scenario analysis regarding their potential long-term impacts) for the 10 PWAs of the BeyondSnow project, as well as for A2.3 (Pilot implementation of CC resilience-enhancing activities in PWAs).

This publication is available on the project website https://www.alpine-space.eu/project/beyondsnow/

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Mission Statements

ANALYSIS OF EXISTING TRANSITION MODELS, APPROACHES, AND TECHNICAL INNOVATIONS, FOSTERING THE ADAPTATION OF STDs TO CC INDUCED EFFECTS FOR STDs' VULNERABILITY DECREASE AND RESILIENCE INCREASE

Disclaimer

Acknowledgements

The authors would like to thank all the Project Partners who contributed to the writing, proofreading and harmonisation of the contents as well as the identification of relevant case studies. Thank you also to our Observers for their support and to the team of the other EU projects related to the CC topic for valuable information exchanges.

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Acronyms used in this report

BeyondSnow-specific acronyms are **bold**.

Acronym	Meaning
AS	Alpine Space
CC	CC
CO2	Carbon dioxide
DMO	Destination Management Organisation
EC	European Commission
ES	Ecosystem Services
EU	European Union
GIS	Geographic Information System
GHG	Greenhouse gas
MS	Member States
NAS	National Adaptation Strategy
OECD	Organisation for Economic Co-operation and Development
PA	Pilot Action
PWA	**Pilot Working Areas**
SME	Small and Medium-sized Enterprises
STD	**Snow Tourism Destination**
SWT	Snow & Winter Tourism
TG	Target Group
UN	United Nations
UNFCCC	United Framework Convention on CC
VA	Vulnerability Assessment

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Contents

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1 Introduction and background

The present **report**, part of the activity A1.2 of the BeyondSnow project (A1.2 – STD vulnerability and resilience evaluation), aims at providing an overview of existing transition models, approaches, and technical innovations, fostering the adaptation of snow tourism destinations (hereinafter STDs) to climate change-induced effects for their vulnerability decrease and resilience increase. The report encompasses a brief keyword research within the scientific literature, followed by initial consideration regarding climate change (hereinafter CC) adaptation & transitions strategies and an overview of CC strategies at national level. Out of a total of 51 collected strategies and projects concerning CC adaptation on municipal, intermunicipal, national and transnational level (see Annex 1), 23 documents have been selected and briefly analysed in Chapter 3. Chapter 4 represents an overview regarding CC and transition approaches on French local and national level, based on the extensive experience of the BeyondSnow project partner la Fabrique des Transitions (PP13), followed by a brief summary, lessons learned and conclusion (Chapter 5).

1.1 CC adaptation of mountain tourism systems: A brief keyword analysis

The scientific literature regarding CC adaptation has been developing constantly over the last decades, also within tourism research. To provide an initial overview, focusing on mountain tourism systems, the following research query has been inserted both in Web of Science (WoS, 2024) and Scopus (Scopus, 2024) on the 28th of March 2024:

(TITLE-ABS-KEY ("climat chang* adapt*") AND TITLE-ABS-KEY (tour* OR destination) AND TITLE-ABS-KEY (strategy OR measur*) AND TITLE-ABS-KEY (mount* OR alp*))*

This research query has been constructed in order to identify academic literature, specifically focusing on

- CC adaptation strategies/measures of
- Mountain/alpine tourism/tourism destinations

The unification of the resulting documents (Web of Science: 31 results; Scopus: 41 results), yielded an database of 47 academic documents, of which the earliest was published in 2010 (Balbi et al., 2010) and the latest in 2024 (Rice et al., 2024).

The overall goal of this brief bibliometric analysis was to identify keywords, that are mainly associated with the above-mentioned research theme within the academic literature and their relative diffusion. The latter was identified through a keyword co-occurrence analysis, which reveals what keywords are shared

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between articles. A further goal was to see if it was possible to group different keywords into keyword clusters.

In order to visualize the keyword co-occurrence network, the keywords utilized either within the title, abstract or as keywords of the articles were explored using the software VOSviewer (Van Eck & Waltman, 2010).

Based on a minimum of 3 occurrences, the following keyword network map was elaborated:

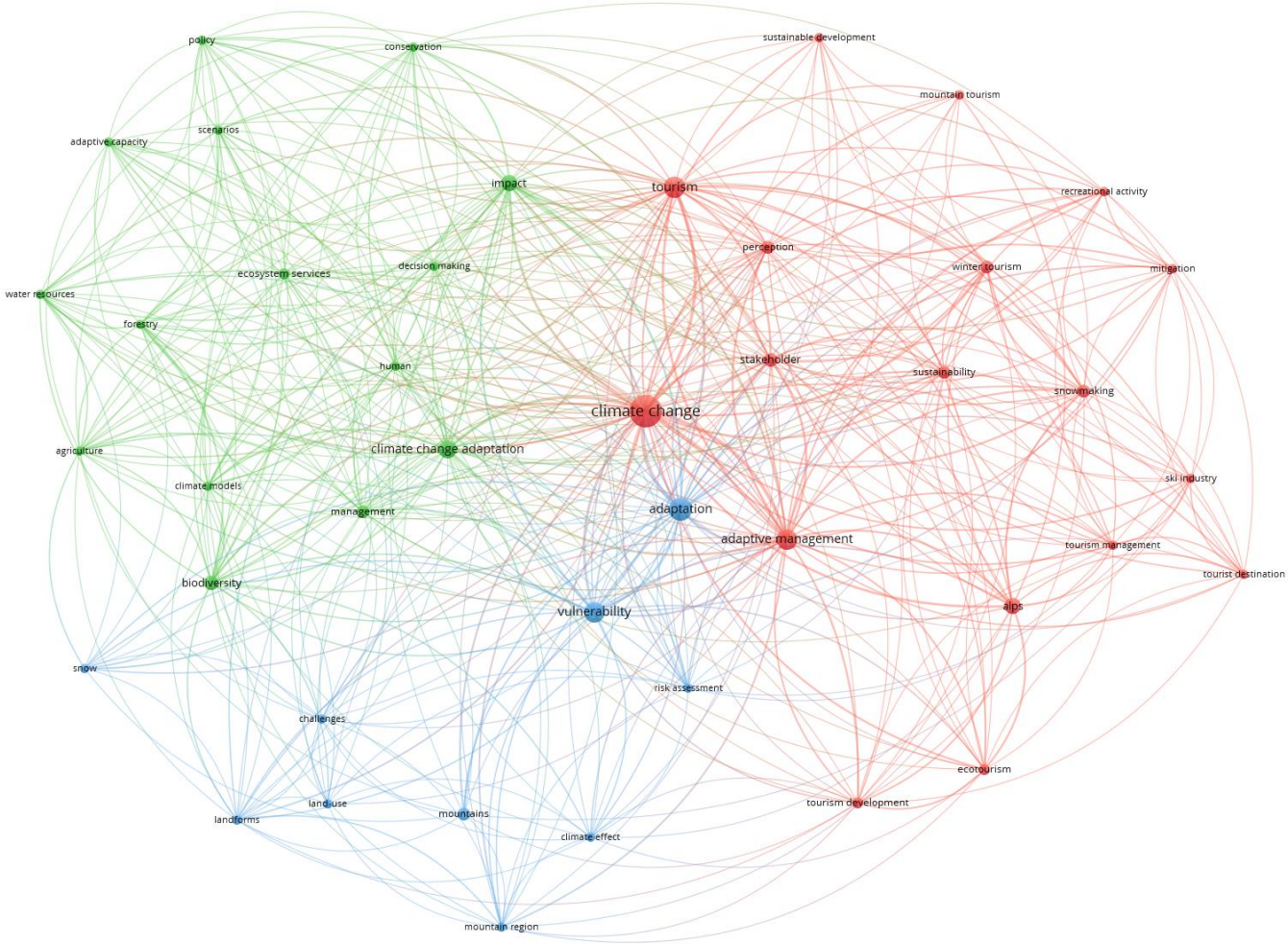

Figure 1: Network map of keyword co-occurrence (own elaboration with VOSviewer)

Cluster 1, named **"CC & Tourism"**, includes most of the main keywords utilized within the research query. Furthermore, it comprises elements strongly pertaining to the challenges faced by winter tourism destinations in the alps regarding CC, including keywords such as "snowmaking", "sustainability", "ski

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industry" and "sustainable development". Cluster 2, named **"CC Adaptation"**, encompasses aspects, which include ecological resources (such as "biodiversity", "ecosystem services", "water resources") as well as socio-economic sectors ("agriculture", "forestry"), pointing towards the necessity of resource-based and sustainable adaptation approaches. Cluster 3, named **"Adaptation vs. Vulnerability"**, visualizes the Adaption-Vulnerability-Nexus, and several aspects connected to it, such as general "challenges", the issue of "land-use" and "landforms" in "mountain regions" and the necessity of a general initial "risk assessment".

Cluster 1 - CC & Tourism			Cluster 2 - CC adaptation			Cluster 3 - Adaptation vs. vulnerability		
Keywords	**Occur-rence**	**Total link strength**	**Keywords**	**Occur-rence**	**Total link strength**	**Keywords**	**Occur-rence**	**Total link strength**
CC	33	184	CC adaptation	10	70	adaptation	17	92
tourism	14	98	impact	8	69	vulnerability	13	76
adaptive management	13	120	biodiversity	7	52	mountains	5	21
alps	8	48	management	5	38	challenges	3	19
stakeholder	6	67	ecosystem services	4	28	climate effect	3	22
perception	5	55	adaptive capacity	3	24	land-use	3	14
snowmaking	5	39	agriculture	3	35	landforms	3	29
sustainability	5	42	climate models	3	33	mountain region	3	28
winter tourism	5	34	conservation	3	32	risk assessment	3	29
ecotourism	4	32	decision making	3	35	snow	3	19
tourism development	4	31	forestry	3	35			
mitigation	3	28	human	3	37			
mountain tourism	3	15	policy	3	24			
recreational activity	3	29	scenarios	3	24			
ski industry	3	23	water resources	3	31			
sustainable development	3	17						
tourism management	3	30						
tourist destination	3	24						

Table 1: Identified keywords with their respective Occurrence and Total Link Strength, located within the different clusters.

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1.2 CC adaptation & transition strategies: Initial considerations

While developing CC transition strategies, STD decision makers have to regard several aspects, which can profoundly influence the final structure of said strategies. Although a diversification between CC mitigation and adaptation exists, several studies suggest that strategies dealing with the effects of CC should comprise elements of both CC mitigation as well as adaptation (Scott & Gössling, 2022).

One of the aspects to be considered during the development of transition strategies encompasses the necessary definition of the different levels of actions targeting adaptation, hereby differentiating between consumer, business, tourism destination and national destination adaptation (Njoroge, 2015). STDs are complex systems, involving a multitude of actors on different systemic levels, comprising the tourist as final consumer, to the tourism service providers and actors, the destination management organization itself and the national policy framework. Ideally these target groups are all addressed within transition strategies, but the actions connected to them differ a great deal (BeyondSnow, 2023; Pröbstl-Haider et al., 2021).

Tourists exhibit the highest level of adaptability, oftentimes by simply changing their destination if the negative effects of CC on the conditions necessary to visit a STD go beyond a certain threshold of acceptability. Therefore, the interventive actions at the STD level, besides addressing the direct issues connected to CC, need also to be based on a profound understanding of the travellers' motivations to visit the STD, and to encompass actions partially aimed at positively influencing the travellers' decisions, ideally targeting moreover a shift towards a more sustainable behaviour. Furthermore, as the effects of CC increase the probability of natural hazards in mountain areas, the institution of a precise information system for tourists will become even more important (Scott & Jones, 2006; Strapazzon et al., 2021).

Tourism service providers, comprising accommodation infrastructure, gastronomy, tourism guides, etc. are the beneficiaries of transition strategies, but have also an important role regarding their successful implementation (and therefore adaptation to CC of the STD). Due to the broad impacts of CC, in many STDs, single adaptation measures will not be sufficient, but a deeper systemic change will be necessary, ideally envisioned and supported by a transition strategy. This systemic change will also affect the tourism service providers themselves. Therefore, it is crucial to integrate these actors within the overall adaptation process. On the company level, implementable actions will have to encompass CC mitigation as well as adaptation measures (Hetzenauer et al., 2022).

Supported by the municipal and/or regional administration and based on the national directives, policies and guidelines, the STD and/or its destination management organization (hereinafter DMO) should ideally be one of the main initiators of the development of CC transition strategies, based on the profound knowledge of the tourism actor system and its networks (tourism service providers, infrastructure, etc.) as

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well as the overall demand (tourism flows composed by overnight tourists, daily visitors, etc.). Based on the different types of adaptations, i.e. technical, business management as well as behavioural adaptation, the elements of transition strategies can, for ex., encompass the development of climate-friendly products and services (CC Mitigation > CC Adaptation), a gradual shift from a winter-focused tourism orientation towards a year-round destination, the careful assessment of new tourism infrastructure projects, the re-evaluation/adaptation of already existing infrastructure, etc. (Jopp et al., 2010).

Pröbstl-Haider et al. (2021) identified six strategic fields for the development of adaptation strategies:

- Legal & normative instruments
- Economic steering instruments
- Instruments of behavioural economics & psychology
- Technical planning instruments & governance
- Moderation and facilitation processes
- Awareness raising & information

1.3 CC strategies at national level

In 2021 the European Environment Agency highlighted in its "Report on status of reported national adaptation actions" that EU Member States recognise with increasing momentum the importance of adapting to impacts of heatwaves, droughts, floods, heavy precipitation and changing temperatures and of mainstreaming CC adaptation to a wide range of affected areas like agriculture, tourism, or water and disaster risk management (EEA, 2022). In this context, compared to the mitigation policies started in the 1990s, the efforts of the Member States in closing gaps and catching up on adaptation policies should be recognised (Figure 2).

The first EU Adaptation Strategy of 2013, and the second version of 2021, have put the focus on providing a common framework but also on the need of Member States (hereinafter EU MS) action. According to EEA (2023) on early 2023, almost all EU MS have prepared National Adaptation Strategies (hereinafter NASs), as cross-sectoral planning instruments to inform and prioritise actions and investments towards CC adaptation.

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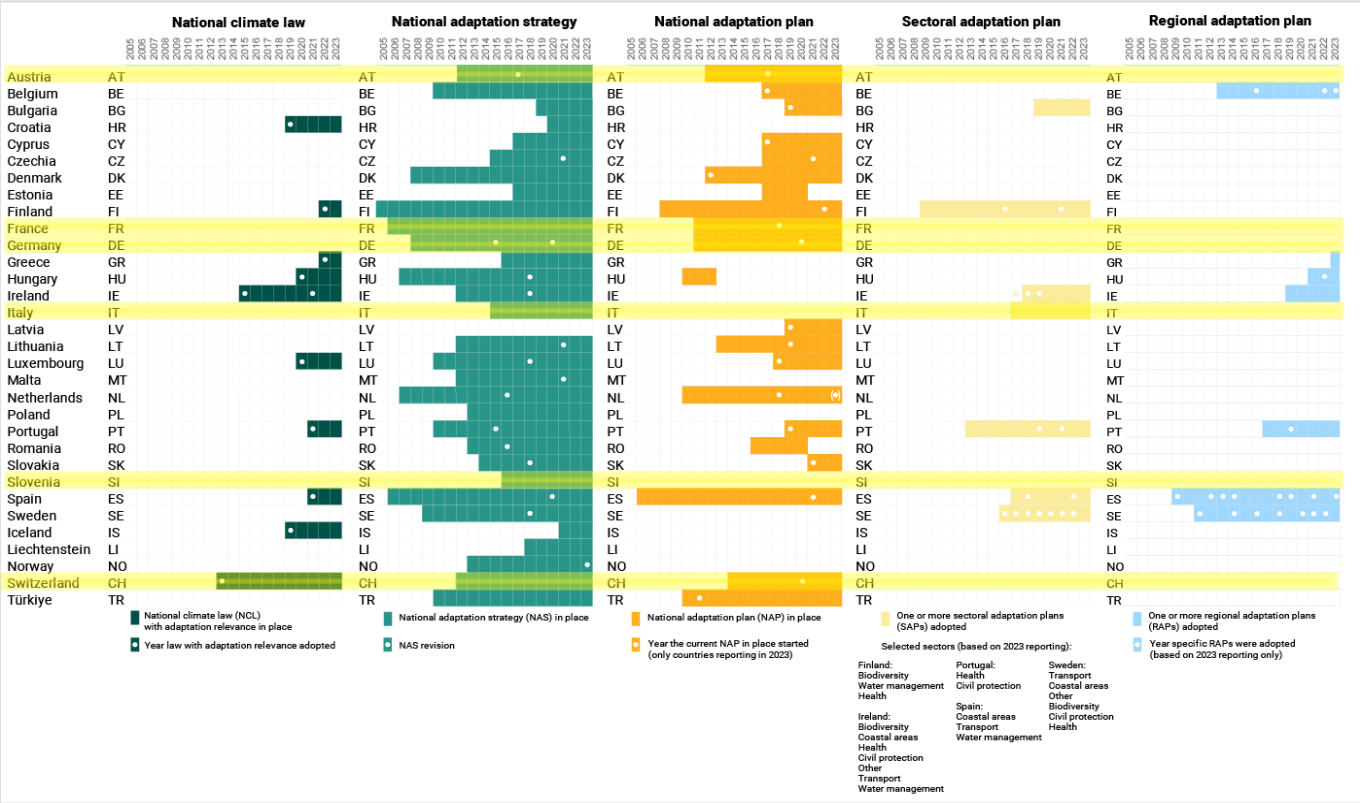

Figure 2. Overview of adaptation policies in Europe (updated in March 2023, EEA, 2023)

The national strategies of the Alpine Countries involved in the BeyondSnow project are presented schematically below.

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1.3.1 EU Climate Adaptation Strategy

Type of resource
CC adaptation strategy

Fields of interventions
All sectors

Context
The European Commission recognises adaptation as a key component of the long-term global response to CC and requires its MSs to enhance their adaptive capacity, strengthen resilience and reduce vulnerability to CC.

Vision
Forging a climate-resilient Europe: developing and rolling out adaptation solutions to help reduce climate-related risk, increase climate protection and safeguard the availability of fresh water.

Status	Adopted
Year(s)	2013, 2021 - ongoing
Region/Country	Europe
Geographic dimension	International
Developer	European Commission – EEA - CMCC
Target groups	EU Members, regional and local authorities of EU members, citizens
Link to online resource	

Overview and main objectives
The European Commission adopted the EU strategy on CC adaptation on the 24th of February 2021. The strategy sets out how the European Union and its MSs can adapt to the unavoidable impacts of CC and become climate resilient by 2050. It has four principal objectives: to make adaptation smarter, swifter and more systemic, and to step up international action on CC adaptation.

Relevant actions
The Strategy integrates international action for climate resilience into its framework and focuses on: Smarter adaptation - (1) Improving knowledge and manage uncertainty including pushing the frontiers of adaptation knowledge; (2) More and better climate data; (3) Enhancing and expanding Climate-ADAPT as the European platform for adaptation knowledge. More systemic adaptation – (1) Supporting policy development at all levels and at all relevant policy fields; (2) Including three cross-cutting priorities to integrate adaptation into Macro-fiscal policy, Nature-based solutions, and Local adaptation actions. Faster adaptation – (1) Speed up adaptation implementation across the EU.

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1.3.2 Italian National Climate Change Strategy (SNAC)

Type of resource
CC adaptation strategy

Fields of interventions
All sectors

Context
The strategy was prepared in implementation of the 2013 EU Climate Change Adaptation Strategy.

Vision
A national vision on common pathways to address CC, counteracting and mitigating its impacts.

Status	Adopted
Year(s)	2015 - ongoing
Region/Country	Italy
Geographic dimension	National
Developer	Italian Ministry of Environment and Energy Security
Target groups	National, regional and local authorities, economic sectors, NGOs, citizens
Link to online resource	

Overview and main objectives
The SNAC identifies actions and directions to minimize the risks of CC, protect health, well-being and assets of the population, preserve natural heritage, maintain and/or improve the resilience and adaptive capacity of natural, social and economic systems, and take advantage of any opportunities that may arise under new climate conditions The strategy and the sectoral action plans indicate when and how to internalize CC adaptation issues in national, district, regional and local sectoral programmes.

Relevant actions
The national strategy is developed into 5 Strategic Axes of Action: (1) Improving knowledge about CC and its impacts; (2) Describing land vulnerability and adaptation options for all relevant natural systems and socioeconomic sectors, and any associated opportunities; (3) Promoting participation and increase awareness of stakeholders in the development of sectoral adaptation strategies and plans; (4) Supporting awareness and information on adaptation through widespread communication activities; (5) Specifying the tools to be used to identify the best options for adaptation actions, also highlighting co-benefits. A National CC Adaptation Plan (PNACC) was approved by the Ministry of the Environment on 21 December 2023 (Link to online resource).

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1.3.3 German Strategy for Adaptation to Climate Change (DAS)

Type of resource
CC adaptation strategy

Fields of interventions
All sectors

Context
The strategy laid the foundation for Germany to prepare for the impacts of CC and reduce climate risks in a continuous process.

Vision
Identifying and reduce Germany's vulnerabilities in regard to the consequences of CC, as well as maintaining and/or strengthening its capacity for adaptation in the country's natural, social and economic systems.

Status	Adopted
Year(s)	2008 - ongoing
Region/Country	Germany
Geographic dimension	National
Developer	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
Target groups	National, regional and local authorities, economic sectors, NGOs, citizens
Link to online resource	

Overview and main objectives
In its five chapters the strategy sets out the basic principles, the present state of knowledge with regard to the expected CCs (worldwide and in Germany), their potential consequences and the ways of dealing with uncertainty factors. In addition to giving a concrete description of possible consequences of CC and outlining options for 15 fields of action and selected regions, it provides an overview of the international context and Germany's contribution to adaptation in other parts of the world. Furthermore, it describes the forthcoming steps in the continuing development of the German Adaptation Strategy (see the Federal Climate Adaptation Act & Precautionary climate adaptation strategy, 2023).

Relevant actions
The strategy lays the foundation for a medium-term, step-by-step process undertaken in cooperation with the federal Länder and other civil groups and aimed at assessing the risks of CC, identifying the possible need for actions, defining appropriate goals and developing and implementing options for adaptation measures.

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1.3.4 Austrian Strategy for Adaptation to Climate Change

Type of resource
CC adaptation strategy

Fields of interventions
All sectors

Context
In Austria, CC is making itself more and more clearly noticeable. Its existence is demonstrated by measurements and observations, and it is proceeding faster than the global average (APCC14).

Vision
Avoiding adverse effects of CC on the environment, society and economy, and taking advantage of opportunities which arise in Austria.

Status	Adopted
Year(s)	2017 - ongoing
Region/Country	Austria
Geographic dimension	National
Developer	Austrian Federal Ministry for Sustainability and Tourism
Target groups	National, Länder, regional and local authorities, economic sectors, NGOs, citizens
Link to online resource	

Overview and main objectives
The strategy was adopted by the Council of Ministers in August 2017 and acknowledged by the Conference of the Provincial Governors on the 10th of November 2017. It represents the comprehensive guiding document for all of Austria's activities concerning CC adaptation. The strategy aims at strengthening the natural, social and technical capacity to adapt. Adaptation measures should thus involve no social downsides; rather, they should minimize risks to democracy, health, security, and social justice.

Relevant actions
The strategy is divided into two parts: a strategic part (Context) and an Action Plan with concrete recommendations for action. 14 fields of activity are addressed in detail: agriculture, forestry, water resources, tourism, energy, construction and housing, protection from natural hazards, disaster risk management, health, ecosystems/ biodiversity, transport infrastructure, spatial planning, business/ industry/ trade, and cities. The Austrian Adaptation Strategy is one of the strategies in Europe which particularly considers social aspects and includes a cross-sectional analysis in order to accelerate synergies between areas of action and recommendations for action while actively trying to avoid negative interdependencies.

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1.3.5 French National Adaptation Plan for Climate Change

Type of resource
CC adaptation strategy

Fields of interventions
All sectors

Context
France recognises adaptation as a key component of the long-term global response to CC.

Vision
France is adapting. The State's point of view on how to approach the issue of adaptation to CC.

Status	Adopted (v.2)
Year(s)	2008, 2017 - ongoing
Region/Country	France
Geographic dimension	National
Developer	French Ministry of Ecological Transition and Territorial Cohesion
Target groups	National, regional and local authorities, economic sectors, NGOs, citizens
Link to online resource	

Overview and main objectives
The strategy aims at preparing the country to face the effects which will result from the variation of the planet's climate affecting both the lifestyle of the French as well as all sectors of the community. The strategy identifies four overarching goals to be considered in national planning processes: (1) to protect people and property from the effects of CC by enhancing safety and public health; (2) to take social considerations into account and to avoid inequality in the exposure to climate risks; (3) to limit the costs linked to the effects of CC and to exploit possible opportunities; and (4) to preserve French natural heritage.

Relevant actions
Nine strategic axes are proposed in the strategy, which are then examined from three different angles: resources and risks (cross-sectoral approaches), sectors of activity (sectoral approaches) and living environments (environment-specific approaches). The strategy is the guideline for the National Adaptation Plan (second version currently adopted, third version under elaboration). The main goal of the plan is to adapt French territories by 2050 to expected regional CC effects. The plan has 6 guiding principles covering: (1) governance, (2) prevention and resilience, (3) nature and environment, (4) economic sectors, (5) knowledge and information, and (6) international scene.

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1.3.6 Swiss National Climate Change Adaptation Plan (PNACC)

Type of resource
CC adaptation strategy

Fields of interventions
All sectors

Context
CC has an impact on the environment, economy and society in Switzerland. Measures to adapt to these effects are already necessary today and will become increasingly important in the future.

Vision
Setting the framework for the coordinated approach of the federal offices in adapting to CC.

Status	Adopted
Year(s)	2012 - ongoing
Region/Country	Switzerland
Geographic dimension	Federal (National)
Developer	Swiss Federal Office for the Environment
Target groups	Federal offices, cantons, and local authorities, economic sectors, NGOs, citizens
Link to online resource	

Overview and main objectives
The strategy of CC adaptation in Switzerland formulates the goals and principles for adaptation at the federal level, identifies the fields of action for nine sectors and describes the cross-sectoral challenges. The following objectives are connected to CC adaptation: (1) Switzerland takes advantage of the opportunities that arise due to CC, (2) it minimizes the risks of CC, protects the population, property and natural livelihoods, (3) and increases the adaptability of the society, the economy and the environment.

Relevant actions
The adaptation strategy is implemented through an Action Plan for the years 2020-2025, which builds on the first action plan for the years 2014-2019 and continues many of the measures contained therein. The 2020–2025 action plan contains 75 measures at the federal level. 63 measures are in the sectors of water management, dealing with natural hazards, soil protection, agriculture, forestry, energy, tourism, biodiversity management, health (humans and animals), housing and spatial development. 12 measures are designed across sectors and aim to improve the knowledge base and transfer of knowledge as well as coordinate and promote the implementation of the adaptation strategy.

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1.3.7 Slovenian Strategic Framework for Climate Change Adaptation

Type of resource
CC adaptation strategy

Fields of interventions
All sectors

Context
Considering the predictions regarding the scale of CC impacts, Slovenia, with its diverse landscape and various climate types, faces great uncertainty.

Vision
By 2050 Slovenia should become a society adapted and resilient to CC impacts and characterised by a high quality of life and a high degree of safety of life, while taking full advantage of the changed climate on the basis of sustainable development.

Status	Adopted
Year(s)	2016 - ongoing
Region/Country	Slovenia
Geographic dimension	National
Developer	Ministry of Environment and Spatial Planning (MESP)
Target groups	National, regional and local authorities, economic sectors, NGOs, citizens
Link to online resource	

Overview and main objectives
The main objective is to reduce Slovenia's exposure, sensitivity and vulnerability to CC impacts and increase the climate resilience and adaptive capacity of the society.

Relevant actions
The strategy follows 4 horizontal guidelines and, in order to fully take them into account, it encompasses the following activities (organised into four chapters) which should take place before or run parallel to the implementation of individual CC adaptation measures in different sectors: (1) Mainstreaming; (2) Broader cooperation; (3) Research and knowledge transfer; (4) Education and training, awareness-raising, and communication.

A specific Action Plan is currently under development (2024).

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2 Overview of selected strategies & projects

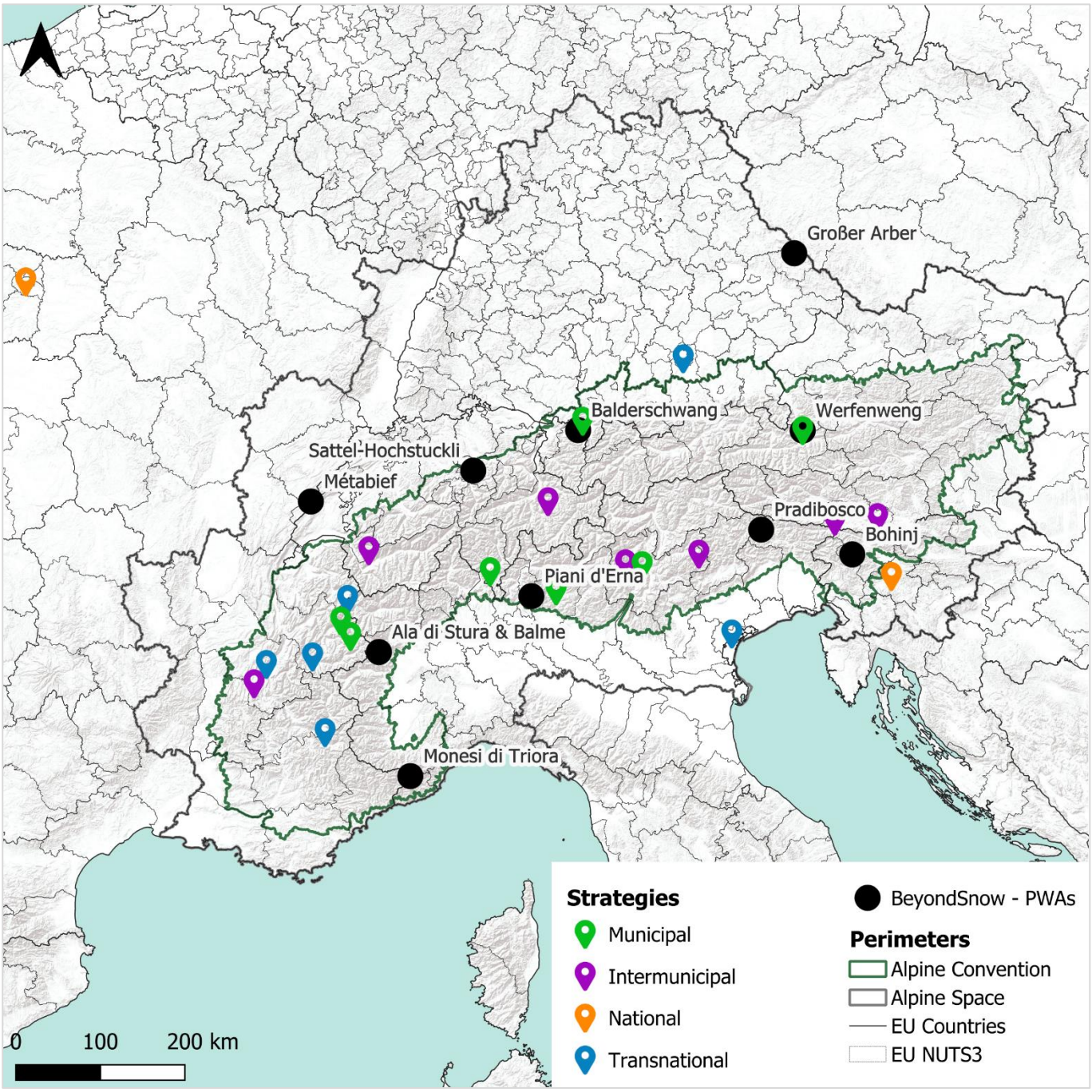

Figure 3. Spatial distribution of the collected approaches, strategies & projects (own elaboration)

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MUNICIPAL		
Gschwender Horn	Bavaria (DE)	Project
Dolomiti Paganella Future Lab	Trentino (IT)	Project
Werfenweng Card	Salzburg (AT)	Initiative
Imaginons Tignes in 2050	Auvergne-Rhône-Alpes (FR)	Initiative
Commune de Peisey Vallandry	Savoie (FR)	Strategy
Monte Tamaro	Canton Ticino (CH)	Strategy
Bourg-Saint-Maurice	Auvergne-Rhône-Alpes (FR)	Strategy
Arera 1600	Lombardy (IT)	Project
INTERMUNICIPAL		
Dobratsch Nature Park	Carinthia (AT)	Project
Adamello Brenta Nature Park	Trentino (IT)	Strategy
Beyond Skiing – Pale di San Martino	Trentino (IT)	Initiative
KLAR! Programm	Carinthia (AT)	Program
Arosa 2030	Graubünden (CH)	Strategy
Alpes Vaudoises	Vaud (CH)	Strategy
Vercors Citoyens, Ecouvent	Massif du Vercors (FR)	Initiative
NATIONAL		
Le Flocon Vert	France	Label
Slovenian Ski Resorts	Slovenia	Policy
TRANSNATIONAL		
Boîte à outils - AdaPT Mont Blanc	Mont Blanc (FR-IT-CH)	Project
ClimAlpTour	Alpine Space	Project
High Valleys Smart Destination	FR & IT	Strategy
SmartAltitude	Alpine Space	Project
ClimChAlp	Alpine Space	Project
Transtat	Alpine Space	Project

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3 Description of selected strategies & projects

3.1 Municipal

3.1.1 Gschwender Horn

Type of resource
CC adaptation project

Fields of interventions
Tourism sector; ski industry

Context
As a result of several winters with poor snowfall, the ski area became unprofitable in the early 1990s.

Vision
Transforming a financially unsustainable ski area into a regenerated, environmentally harmonious landscape, promoting sustainable tourism, and serving as a replicable model for alpine regions.

Status	Completed
Year(s)	1994 - 1998
Region/Country	Bavaria (DE)
Geographic dimension	Municipal
Developer	Immenstadt + Foundation *'Allianz-Stiftung zum Schutz der Umwelt'*
Target groups	Tourism destination
Link to online resource	

Overview and main objectives
In 1994 work began to dismantle the infrastructure, and from 1995 to 1997 renaturation activities were carried out. The main objectives were: complete dismantling of the skiing infrastructure, recultivation and renaturation of the former slope areas, development of a concept for ecologically compatible subsequent use, promotion of soft tourism.

Relevant actions
The project involved concrete actions such as reforestation and recultivation of former slopes, renovation of the hiking trail network as well as the development and marking of a ski touring route. After 30 years, the Gschwender Horn area has returned to environmentally compatible forms of use, in which recreational, alpine pasture and silviculture activities coexist in an optimal habitat for alpine biodiversity. From a tourism point of view, the area is developed both in winter and summer, thanks to routes that can be undertaken on foot, by bicycle, on cross-country skis or with snowshoes.

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3.1.2 Dolomiti Paganella Future Lab

Type of resource
CC adaptation project

Fields of interventions
Tourism; social resilience

Context
According to the local community of the Paganella upland, a more sustainable tourism approach is needed in order to face the macro-challenges of CC and demographic changes.

Vision
Facilitating the co-existence of nature and culture through innovation, while making both residents and tourists more responsible towards the territory.

Status	Operative
Year(s)	2019 - ongoing
Region/Country	Trentino (IT)
Geographic dimension	Municipal
Developer	Dolomiti Paganella Future Lab
Target groups	Citizens, local inhabitants, tourist operators
Link to online resource	

Overview and main objectives
Guided by the views and inputs from the local community, and the 10 principles of the "Values Charter" (Dolomiti Paganella, 2021), the Future Lab defined 10 future-oriented projects that will help the Altopiano della Paganella to become a more balanced holiday destination in the future, both for residents and tourists, in the face of CC.

Relevant actions
The actions defined in the 10 future-oriented projects comprise: "Dolomiti Paganella Membership Program", "Smart Destination Management", "A circular tourist system", "A manager for balanced community development", "Dolomiti Paganella Flexible Mobility", "New Generation Tourism Commission (NGTC)", "A season-free destination", "Dolomiti Paganella Innovaiton Hub", "Places on a human scale" and "Transformative Destination Storytelling".

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3.1.3 Werfenweng Card

Status	Operative
Year(s)	2023 - 2024
Region/Country	Salzburg (AT)
Geographic dimension	Municipal
Developer	Tourismusverband Werfenweng
Target groups	Tourists
Link to online resource	

Type of resource

CC adaptation & mitigation initiative

Fields of interventions

Tourism sector; mobility services

Context

The initiative focuses on enhancing the quality of tourism experiences in Werfenweng by expanding service offers and implementing sustainable mobility options. It addresses the need for environmentally friendly mobility and diversified winter activities.

Vision

To establish Werfenweng as a leader in sustainable tourism, where visitors enjoy a diverse range of eco-friendly activities and transport options, creating an environmentally responsible tourism experience.

Overview and main objectives

The Werfenweng Card includes a variety of services such as snowshoe hiking, horse-drawn sleigh rides, and sustainable mobility options during the entire holiday. It can be purchased as Basic or Plus version, according to the length of the stay and to the number of activities planned.

Relevant actions

Actions include providing sustainable mobility options (shuttle, electric cars, etc.), and implementing a points system that allows guests to exchange accumulated points for various activities and services.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.1.4 Imaginons Tignes in 2050

Type of resource
CC adaptation initiative

Fields of interventions
Tourism sector; urban planning; community engagement

Context
Due to the end of the ski lift management contract, the municipality of Tignes is engaging in a voluntary consultation with the general public and mountain professionals regarding the future of Tignes.

Vision
A future where both residents and visitors can thrive in harmony with the surrounding environment, embracing sustainable practices and innovative solutions. The future development aims at answering the question "How to live well in Tignes in 2050 and based on what tourism offer?"

Status	Operative
Year(s)	2024 - ongoing
Region/Country	Auvergne-Rhône-Alpes (FR)
Geographic dimension	Municipal
Developer	Municipality of Tignes
Target groups	Local inhabitants; Tourism destination
Link to online resource	

Overview and main objectives
The municipality is launching a wide-ranging consultation to envision life in Tignes in the decades to come. From 2022 to 2026 the local project will guide the municipality towards a more sustainable long-term vision for the operation of the ski area. The main objective is to foster a community-driven dialogue on how to best develop and utilize Tignes' resources, ensuring that future developments align with principles of environmental stewardship, social inclusivity, and economic vitality.

Relevant actions
The initiative is currently at the end of its second phase of consultation, which included workshops, a survey, a round table, and a final public meeting to present the outcome of the second phase in March 2024.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.1.5 Commune de Peisey Vallandry

Type of resource
CC adaptation strategy

Fields of interventions
Tourism sector

Context
Today, the growing environmental awareness together with an expanding tourist demand require many tourism destinations to review their services and overall tourism products. The Peisey Vallandry municipality feels an increasing urgency of diversifying its tourist offer and making it more sustainable.

Vision
Become a leading example of sustainable tourism by diversifying activities, promoting eco-friendly practices, and ensuring long-term environmental and economic resilience.

Status	Operative
Year(s)	2023 - ongoing
Region/Country	Savoie (FR)
Geographic dimension	Municipal
Developer	Peisey Vallandry Tourist Office
Target group	Tourism destination
Link to online resource	

Overview and main objectives
Peisey Vallandry aims to diversify its tourism offerings to meet growing environmental awareness and demand for sustainable tourism. The main objectives include developing new forms of tourism and leisure activities, enhancing sustainability, and promoting eco-friendly practices to ensure long-term resilience and attractiveness of the destination

Relevant actions
Activities include establishing a laboratory to innovate new tourism and leisure activities, introducing an "I don't ski" pass offering a variety of outdoor and wellness experiences, and championing soft mobility initiatives to reduce environmental impacts and enhance visitor experiences.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.1.6 Monte Tamaro

Type of resource
CC adaptation strategy

Fields of interventions
Tourism sector

Context
The Monte Tamaro tourism destination decided to abandon traditional winter tourism in 2003 by closing 5 ski lifts. The cable car has undergone complete reconversion, thus planning the opening only from April to November.

Vision
To transform Monte Tamaro into a summer destination, attracting visitors with diverse and sustainable tourism offerings that showcase the natural beauty and recreational opportunities of the region.

Status	Operative
Year(s)	2003 - ongoing
Region/Country	Canton Ticino (CH)
Geographic dimension	Municipal
Developer	Monte Tamaro Tourist Office
Target group	Tourism destination
Link to online resource	

Overview and main objectives
Monte Tamaro aims to create a diverse and sustainable tourism experience by offering a variety of recreational and wellness activities. The main objectives include increasing visitor numbers, enhancing the quality of tourism infrastructure, promoting outdoor and adventure activities, and ensuring the sustainable development of the region. Now, there are more than 100,000 visitors between April and September.

Relevant actions
Recent actions include investments in hiking trails leading in all directions, downhill tracks and a bike park for bikers. The mountain restaurant, the summer toboggan run, the Tyrolean cable car, the large children's playground at the top station and the adventure park at the middle station complete the summer offer of Monte Tamaro.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.1.7 Bourg-Saint-Maurice

Type of resource
CC adaptation strategy

Fields of interventions
Tourism sector; ski industry; transport services

Context
Bourg-Saint-Maurice is determined to address the transition of the territory in order to meet climate challenges.

Vision
Fostering adaptation and resilience through a comprehensive approach including housing, mobility, energy, water, waste management, services for inhabitants, and tourism transition.

Status	Operative
Year(s)	2022 - ongoing
Region/Country	Auvergne-Rhône-Alpes (FR)
Geographic dimension	Municipal
Developer	Bourg-Saint-Maurice Municipality
Target group	Toursim destination; local inhabitants
Link to online resource	

Overview and main objectives
Bourg-Saint-Maurice and Les Arcs aim to remain among the top ten French resorts by 2030-2040. However, the mayor stresses the need for proactive measures to face the decline of skiing, which still constitutes 80% of the local economy. The focus is on sustaining all forms of tourism and ensuring economic resilience by adapting to climate challenges, leveraging the region's assets to attract visitors year-round.

Relevant actions
Key initiatives include a major investment of €15 million in the funicular connecting Bourg-Saint-Maurice to Les Arcs, extending its hours, reducing fares, and accommodating mountain bikes since 2023. The funicular has increased passages by 40% compared to 2019. The municipality has also expanded inter-station shuttles and secured a daily train service between Paris and Bourg-Saint-Maurice to enhance accessibility. Additionally, the Alpine Campus, affiliated with the University of Savoie, was opened in 2022, offering free, well-equipped space for distance learning, providing students with daily tutor support, and promoting educational opportunities in the region.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.1.8 Arera 1600

Type of resource
CC adaptation project

Fields of interventions
Tourism sector; ski industry; infrastructural renovation

Context
A small tourism destination in the Orobie Alps, which hosts an abandoned chairlift and some ski slopes that used to be operative in the 80s, but could not sustain the economic investments in snowmaking to cope with CC.

Vision
Arera 1600 as an intermediate stage has its own natural role, to be transformed and made available to the community.

Status	Operative
Year(s)	2023 - ongoing
Region/Country	Lombardy (IT)
Geographic dimension	Municipal
Developer	Oltre il Cole Municipality
Target group	Toursim destination; Tourists
Link to online resource	

Overview and main objectives
Although it had been abandoned for decades, the destination is being used by many tourists as a starting point for hiking in summer, but also snowshoeing and ski touring in winter. Thus, the municipality of Oltre il Colle is the promoter of a project that involves renovation, demolition and reconstruction of the area. Works are co-financed by Regione Lombardia for €575,000.

Relevant actions
The project is divided into two phases: (1) work began with the renovation of the ski resort as a mountain museum, as well as the demolition of all other pre-existing structures. A new multi-purpose facility and info-point for climbing, skiing, hiking and biking is then planned, as well as accommodation and catering facilities. (2) A second phase will focus on the exhibition part, including the Sentiero dei Fiori and the overall promotion of the natural heritage.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.2 Intermunicipal

3.2.1 Dobratsch Nature Park

Type of resource
CC adaptation project

Fields of interventions
Water conservation; tourism sector; ski industry

Context
Water is vital for Dobratsch, flowing through its limestone rock, enriched with health-giving substances. To safeguard this resource, drinking water protection measures are implemented.

Vision
Preserving "what we also wish to pass on to our guests: the pristine landscape, the intact flora and fauna, unforgettable nature experiences and the most beautiful places to observe, relax and enjoy."

Status	Operative
Year(s)	2002 - ongoing
Region/Country	Carinthia (AT)
Geographic dimension	Intermunicipal
Developer	Dobratsch Nature Park
Target groups	Tourism destination; Tourists
Link to online resource	

Overview and main objectives
During the 1990s, the Villacher Alpe hosted a ski area. However, technical snowmaking was difficult due to drinking water protection. Alternative ideas were necessary. The nature park project was reconsidered and confirmed as Carinthia's first nature park by the local government in 2002, resting on four pillars: education, recreation, regional development, and protection of the ecoregion.

Relevant actions
Today, tourists and outdoor enthusiasts can practice a wide variety of activities without any skiing infrastructure. During winter, routes for cross-country skiing, snowshoeing and ski touring are available. In summer, the park features hiking trails, including the opportunity to observe wildlife with a guide, or to explore the botanical garden. The Villach tourist area developed the "Erlebnis CARD", which Dobratsch is also part of.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.2.2 Adamello Brenta Nature Park

Type of resource
CC adaptation strategy

Fields of interventions
Sustainable tourism

Context
The Adamello Brenta natural park defines its strategy for a more sustainable tourism starting from available data on economic activities, the status of natural heritage and its current tourism infrastructure.

Vision
A future where sustainable tourism seamlessly integrates with its rich natural heritage. The visitor experience is harmonized with environmental sensitivity, ensuring a balance between visitor needs as well as conservation of biodiversity and natural heritage.

Status	Completed
Year(s)	2018 - 2023
Region/Country	Trentino (IT)
Geographic dimension	Intermunicipal
Developer	Geopark – Parco Naturale Adamello Brenta
Target groups	Tourism destination
Link to online resource	

Overview and main objectives
The strategy builds on three pathways: awareness, senses, and quality. These pathways link to and include the 5 principles of the European Charter for Sustainable Tourism (ECST) (Europarc Federation, 2021). The definition of the contents of the strategy involved a twofold participatory process, on the one hand with a multiplicity of subjects, institutional and non-institutional, who represent the communities involved, and on the other with the various actors of the Trentino protected areas system, Parks and Networks of Reserves. There are 40 actions within the 2018 - 2023 park plan, which were analysed and categorized according to the park's three strategic pathways. Subsequently, each action was declined according to the 10 key themes defined by ECST.

Relevant actions
Relevant actions include awareness-raising events, the creation of environmental information materials, book presentations, writing labs, honey guided tours, scientific touring exhibition, and new thematic itineraries.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.2.3 Beyond Skiing - Pale di San Martino

Type of resource
CC adaptation initiative

Fields of interventions
Local tourism; outdoor activities; gastronomy

Context
Since not all tourists coming during the winter season are skiing, it is necessary to offer a more diversified touristic experience with alternative and/or additional activities and services.

Vision
Establishing the Pale di San Martino area as a diversified winter destination by expanding tourism activities and offers beyond skiing, showcasing the region's rich historical, natural, and cultural heritage, and promoting sustainable tourism practices.

Status	Operative
Year(s)	2023 - ongoing
Region/Country	Trentino (IT)
Geographic dimension	Intermunicipal
Developer	San Martino di Castrozza Tourism Office
Target groups	Tourists
Link to online resource	

Overview and main objectives
The initiative aims to create a diverse range of services and activities to highlight the historical, natural, and cultural opportunities in the Pale di San Martino region. This enhances the tourist experience while promoting sustainability. It can be an unusual and exciting way to experience the atmosphere of mountain communities and the environment of the Paneveggio Pale di San Martino Nature Park in the quiet of the winter season.

Relevant actions
Among the proposed activities it is possible to find snowshoe excursions, snow safety courses, ice climbing, aperitifs and dinners by snowmobile, ice skating, paragliding, carriage rides, village tours, cooking workshops, and kids entertainment.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.2.4 KLAR! Programm

Type of resource
CC adaptation programme

Fields of interventions
Sustainable tourism; water management; community resilience; spatial planning

Context
Excessive heat is threatening Austrian alpine areas, and therefore new local development models are needed. Through adequate measures, the regions aim at being recognized as pioneers of CC adaptation.

Vision
Through adequate measures, the advantages of CC should at least partially compensate for its disadvantages. The Karawanken, as well as the border regions with Italy and Slovenia with their cooler microclimate, are intended to provide recreation for heat-stricken visitors.

Status	Operative
Year(s)	2017 - ongoing
Region/Country	Carinthia (AT)
Geographic dimension	Intermunicipal
Developer	KLAR! program
Target groups	Tourism destination
Link to online resource	

Overview and main objectives
The programme is funded by the Austrian Climate and Energy Fund and offers a process-oriented approach for municipalities to raise awareness for CC adaptation and implement concrete actions on a regional level. Considering the potential shift of tourism flows tourism from southern to more northern and from lower to higher regions, the initiative aims to use this trend to increase sales and overnights during summer. In winter, the tourism flows will have to be stabilized by diversifying activities.

Relevant actions
As for CC and tourism, an information campaign to revitalize summer tourism is established within the region, along with the promotion of climate-friendly winter tourism in cooperation with the tourism association. Moreover, focusing on tourism and catering businesses, measures to prevent drinking water contamination are introduced.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.2.5 Arosa 2030

Type of resource
CC adaptation & mitigation strategy

Fields of interventions
Tourism sector

Context
Arosa faces the challenge of adapting to CC impacts without a comprehensive framework. Emphasizing participative and inclusive methods, the aim is to develop locally tailored solutions for sustainability in tourism.

Vision
Becoming one of the most sustainable destinations in the Alps and one of the three most sought-after holiday regions in Switzerland.

Status	Operative
Year(s)	2021 - ongoing
Region/Country	Graubünden (CH)
Geographic dimension	Intermunicipal
Developer	Arosa Tourist Office
Target group	Tourism destination; local inhabitants
Link to online resource	

Overview and main objectives
Arosa Tourism prioritizes sustainability across ecological, social, and economic dimensions, ensuring a responsible holiday destination for future generations. The focus is on four-dimensional sustainability: nature, economy, society, and management, with specific targets set within each area.

Relevant actions
Examples of actions are: (1) CleanUp Day Arosa: Arosa Tourism and the Valsana Hotel invite all service providers to an Arosa Clean Up Day. The entire village will be cleaned and will be ready for the summer season. (2) Arosa Tourism is calculating a comprehensive climate footprint of its tourism destination for the first time in the "KlimDest" project (KlimDest, 2023). The aim is to use the exact footprint to develop targeted measures to avoid, reduce and compensate for the unavoidable remainder in order to ultimately achieve net zero.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.2.6 Alpes Vaudoises

Type of resource
CC adaptation & mitigation strategy

Fields of interventions
Tourism sector

Context
Mountain regions confront economic shifts and global competition. With tourism reliance and CC effects increasing, strategic planning is crucial for sustained regional development and economic resilience.

Vision
Becoming a resilient, diversified, and sustainable tourist destination. By enhancing local engagement, enriching visitor experiences, and preserving natural and cultural heritage, the region will become a model of integrated and adaptive tourism development in response to evolving global and regional challenges.

Status	Operative
Year(s)	2014 - ongoing
Region/Country	Vaud (CH)
Geographic dimension	Intermunicipal
Developer	Canton de Vaud
Target group	Toursim destination; Local inhabitants
Link to online resource	

Overview and main objectives
The Vaud Alps are developing a regional strategy to diversify their ski destinations, addressing the need for broader tourism offerings. Key objectives include attracting more local and short-stay visitors, diversifying accommodation options, enhancing and promoting natural landscapes and built heritage, and defining distinct identities for each destination. It aims to improve tourism services and establish a sustainable governance model to ensure coordinated efforts across the region. This approach is designed to support the long-term resilience and integrated development of the Vaud Alps' tourism sector.

Relevant actions
Examples of actions included in the strategy are: (1) attracting new clientele by implementing initiatives to increase the number of local and short-stay visitors, thereby diversifying the tourism base. (2) enhancing accommodation diversity by developing a range of accommodation options to cater to different visitor preferences and needs, contributing to a more comprehensive tourism offering.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.2.7 Vercors Citoyens, Ecouvent

Type of resource
CC adaptation initiative

Fields of interventions
Tourism sector; community engagement

Context
The initiative began in response to increasing local opposition to large tourism development projects in the area, and residents' advocacy for sustainable, community-driven alternatives.

Vision
Fostering a socio-ecological transition in the Vercors by promoting sustainable alternatives to large-scale tourism, encouraging community engagement, and exploring innovative ways of living, working, and coexisting harmoniously.

Status	Operative
Year(s)	2022 - ongoing
Region/Country	Massif du Vercors (FR)
Geographic dimension	Intermunicipal
Developer	Vercors Citizens Association
Target group	Tourism destination; local inhabitants
Link to online resource	

Overview and main objectives
Against a backdrop of growing opposition to major tourism development projects, particularly in Villard-de-Lans and Corrençon-en-Vercors, the Vercors Citizens Association's aim is not just to mobilize against these projects, but also to promote alternatives to 'all tourism' as part of a socio-ecological transition. The association brings together the residents of the villages to inform, respect the environment, and co-construct the 4 sustainable Mountains. A research team is supporting the association in the deployment of a "citizen listening" in different sectors of the massif.

Relevant actions
The central question in 2024 focuses on the ways of living, working and living together in the Vercors in a transition context. This project is an extension of the TransforMont project, whose research team has been working since 2019 to identify social innovations in mountain territories and their ability to transform their dynamics (TransforMont, 2024).

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.3 National

3.3.1 Le Flocon Vert

Type of resource
CC adaptation & mitigation label

Fields of interventions
Mountain tourism sector

Context
The collaboration between tourism stakeholders, governmental bodies, and environmental organizations to establish criteria and standards for eco-friendly destinations led to the definition of a set of criteria for a sustainability label.

Vision
Supporting territories in their transition and giving mountain enthusiasts a clear vision of committed tourism destinations.

Status	Operative
Year(s)	2011 - ongoing
Region/Country	France
Geographic dimension	National
Developer	Mountain Riders
Target groups	Tourism destination; tourists
Link to online resource	

Overview and main objectives
The Flocon Vert label distinguishes environmentally conscious mountain tourism destinations in France, signalling a commitment to sustainable practices. The specifications include 20 criteria divided into 4 main themes: Governance & Destination, Local economy, Social & Cultural, Natural resources & ecology.

Relevant actions
The labelling process involves the organization of several workshops within the involved territories. During these workshops, tourism actors, the municipality representatives and the operators of the ski area are involved in the co-construction of a long-term vision for the development of their territory. After a shared diagnosis phase, the region's economic actors are invited to participate in the implementation of concrete solutions to support the transition.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.3.2 Slovenian Ski Resorts

Type of resource
CC adaptation policy

Fields of interventions
Tourism sector and tourism destinations

Context
In order to guarantee a year-round sustainable tourism, 8 skiing resorts have to carry out large infrastructure investments in the total amount of €84 million by the end of 2023, supported by co-financing from the Slovenian Ministry of Economy, Tourism and Sport in the amount of more than €55.4 million.

Vision
It is crucial that the development of Slovenian ski centres is directed towards sustainable tourism throughout the year. Through investment, ski areas will acquire higher-quality infrastructure, offer year-round tourism activities, and provide enhanced experiences for tourists.

Status	Operative
Year(s)	2023 - ongoing
Region/Country	Slovenia
Geographic dimension	National
Developer	Ministry of Economy, Tourism and Sport
Target group	Tourism destination
Link to online resource	

Overview and main objectives
The aim is to enhance the tourism offer by combining promotional and communication activities together with substantial improvement of tourism infrastructures. Coordination between these two aspects is crucial to attract new customers into Slovenian tourism facilities.

Relevant actions
The investments embrace several actions, from the creation of a common cross-country ski pass to the installation of new and modern chairlifts and cable cars. Other investments focus on the expansion of adventure parks, new tourism-related apps, e-bikes, new cycling routes and theme parks for children.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.4 Transnational

3.4.1 Boîte à outils - AdaPT Mont-Blanc

Type of resource
CC adaptation project

Fields of interventions
Cross-sectional

Context
The Mont-Blanc region faces escalating CC impacts, threatening its environment, economy, and communities.

Vision
Development of spatial planning and management tools for CC adaptation that could be integrated and adopted by public institutions in Espace Mont-Blanc at different levels (local, regional).

Status	Completed
Year(s)	2014 - 2020
Region/Country	Mont Blanc (FR-IT-CH)
Geographic dimension	Transnational
Developer	Espace Mont-Blanc
Target groups	Social sector
Link to online resource	

Overview and main objectives
The project was a collaborative initiative that united stakeholders from various sectors to plan tailored strategies for CC adaptation and resilience in the region. Its main objectives included assessing climate risks, developing tailored adaptation strategies, building capacity through knowledge sharing, and engaging stakeholders for inclusive decision-making and active participation in adaptation and mitigation efforts.

Relevant actions
All the material produced by the project has been implemented on an online platform called "Toolbox - Boîte à outils", which enriches the offer of the interactive services of Espace Mont-Blanc and is characterised as a space for the collection of data, good practices, experiences, scenarios, and actions. It was partly derived from the participatory process carried out by the Adapt Mont-Blanc project and partly extrapolated based on specific thematic analyses.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.4.2 ClimAlpTour

Status	Completed
Year(s)	2007 - 2011
Region/Country	Alpine Space
Geographic dimension	Transnational
Developer	ClimAlpTour consortium
Target groups	Tourism destination
Link to online resource	

Type of resource
CC adaptation project

Fields of interventions
Sustainable tourism; CC; economic development

Context
The increasing temperatures can alter alpine ecosystems and, strongly depending on the former, the local tourism destinations.

Vision
The project envisions transforming alpine tourism by enhancing the year-round appeal of destinations. Moving beyond the traditional winter activities focus, it aims to capitalize on the full potential of alpine areas, promoting sustainable tourism and economic development while addressing CC impacts and preserving local ecosystems.

Overview and main objectives
The final project document provides an overview of alpine-wide adaptation strategies for the tourism sector, differentiating between lower- and higher-elevation resorts. It then presents adaptation strategies tailored for each pilot area of the project as outcomes of the pilot activities. The focus mainly lies on diversifying the tourism offer.

Relevant actions
Different activities in the pilot areas have been performed following a SWOT analysis. Starting from interviews and surveys, tailored adaptation strategies for each pilot area have been developed and assessed.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.4.3 High Valleys Smart Destination

Type of resource
CC adaptation & mitigation strategy

Fields of interventions
Tourism sector; mobility; technological innovation

Context
The cross-border area that comprises notable alpine tourism destinations needed a joint strategy developed by local authorities for strengthening its tourism system.

Vision
High Valleys area becoming an intelligent destination, integrating innovative solutions and economic growth while maintaining its appeal as a prominent tourism destination.

Status	Operative
Year(s)	2018 - ongoing
Region/Country	France & Italy
Geographic dimension	Transnational
Developer	Syndicat Du Pays De Maurienne (& others)
Target group	Social sector
Link to online resource	

Overview and main objectives
The cross-border strategy aims to make the area more attractive for new residents, tourists and businesses, while ensuring a high quality of life for its communities. The main objectives include creating a Franco-Italian network of economic actors to facilitate cross-border cooperation, fostering collaborations between companies and laboratories, developing cross-border services, promoting sustainable tourism, creating new business services, and enhancing existing ones to transform the High Valleys area into an intelligent destination.

Relevant actions
(1) Creation of networks of operators, cross-border services, and innovation opportunities for companies to strengthen their capacities and competitiveness, particularly in the tourism sector, through the development of innovative supply chains. (2) Innovative and incentivizing mobility services, actions in favour of intermodality, car sharing, use of bicycles, e-bikes, to make the High Alps more accessible and reduce the use of individual vehicles. (3) Experimentation with new services and social innovation focusing on the benefit for mountain populations from quality and proximity services.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.4.4 SmartAltitude

Type of resource
CC mitigation & adaptation project

Fields of interventions
Winter tourism sector

Context
Design and adoption of strategies that can help ski resort operators and policy makers of mountain regions in dealing with the new climate conditions.

Vision
Development of innovative solutions for accelerating low-carbon policies, envisioning enhanced energy efficiency, reducing emissions, and sustainable decision-making for operators and policymakers.

Status	Completed
Year(s)	2018 - 2021
Region/Country	Alpine Space
Geographic dimension	Transnational
Developer	Municipality of Les Orres (& others)
Target group	Tourism destination
Link to online resource	

Overview and main objectives
The project aimed at enabling and accelerating the implementation of low-carbon policies in winter tourism destinations and regions. It provided new tools to improve the use of energy and reduce GHG emissions in alpine ski areas (actions are specific for each pilot area). It also developed decision-making tools for ski operators as well as policy makers and technical solutions tested in four living labs.

Relevant actions
The SmartAltitude Toolkit comprises six tools, one for each step of the decision-making process for implementing low carbon measures. The six tools focus on energy efficiency, renewable energy, sustainable mobility, energy management, smart grid and climate adaptation. The tools were designed for ski resort operators and policy makers, but they can be used by any stakeholder operating in the winter tourism sector.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.4.5 ClimChAlp

Type of resource
CC adaptation project

Fields of interventions
Tourism sector; community engagement

Context
Misinformation hinders effective preparation for adaptation measures. Solid background information and actionable recommendations can foster resilience and capitalize on opportunities regarding CC.

Vision
Developing robust adaptation strategies in spatial planning and risk management, ensuring the sustainable resilience of tourism destinations and their local inhabitants across the Alps.

Status	Completed
Year(s)	2006 - 2008
Region/Country	Alpine Space
Geographic dimension	Transnational
Developer	Bavarian State Ministry of the Environment, Public Health and Consumer Protection (& others)
Target group	Tourism destination; local inhabitants
Link to online resource	

Overview and main objectives
Administration authorities, researchers, and experts from seven alpine countries worked closely together to analyse and highlight the impacts of CC in the Alpine Space area and to elaborate the basis for adaptation strategies. The main objective of the project was to develop concrete transnational strategies and response measures, within the framework of spatial planning and risk prevention, regarding the effects of CC throughout the alpine area.

Relevant actions
The ClimChAlp project produced a methodological basis and recommendations for both adaptation to CC and the further development of effective transnational cooperation in this context. The overall results of the project have been synthesized in an Extended Scientific Final Report (ESFR), which was available on the project website. Unfortunately, the report is not available anymore. Although the project dealt with adaptation on a broader sense, there was also a focus on strategies for the tourism sector.

This project is co-funded by the European Union through the Interreg Alpine Space programme

3.4.6 TranStat

Type of resource
CC adaptation project

Fields of interventions
Tourism and skiing sector; local communities; disaster risk prevention; resilience

Context
Actors in mountain resorts are faced with a common challenge: coping with the effects of CC without having a solid reference framework within which to act. A participative and inclusive approach is needed to propose new locally tailored solutions.

Vision
Developing and adopting of co-constructed transition processes in mountain resorts, understood as ski resorts and their territory.

Status	Operative
Year(s)	2022 - ongoing
Region/Country	Alpine Space
Geographic dimension	Intermunicipal and transnational
Developer	TranStat Project Consortium
Target group	Tourism destination
Link to online resource	

Overview and main objectives
Based on a participatory & inclusive approach, TranStat aims at elaborating scenarios and co-constructed solutions able to respond to the challenges identified in mountain resorts. The challenge is to promote new models of economic, social, and environmental development in order to support a lively future in the alpine mountain areas, with a focus on sustainability. TranStat will address this overall issue through the creation of a physical & digital network of resorts in transition to share knowledge and experiences about the future.

Relevant actions
A practical, flexible and comprehensive collection of step-by-step instructions is being developed, in order to support mountain resorts in their participatory transition towards desirable futures. It proposes a Transition Framework to help identify and involve stakeholders in the transition processes, and it creates a common understanding of desirable futures for them. Moreover, both roadmaps for transition processes and policy recommendations are being established.

This project is co-funded by the European Union through the Interreg Alpine Space programme

4 Snow tourism destinations: transition, business as usual or maladaptation? Local and national French initiatives

BeyondSnow PP13 – Fabtra: Benoit Nenert, Jean-François Caron and Anne-Louise Negre

4.1 French local case studies

4.1.1 Faverges – La Sambuy

La Sambuy-Seythenex was a ski area (or, more accurately, a "snow stadium", as there is only one skiable area, but it is not urbanized, i.e. there is no accommodation infrastructure) located in the municipality of Faverges-Seythenex, in the Haute-Savoie department in the Auvergne-Rhône-Alpes region, at the heart of the Massif des Bauges regional nature park (a UNESCO geopark). The area was created in 1960. It was equipped with 3 ski lifts and a chairlift and offers around ten ski slopes at altitudes between 1,000 and 2,000 meters. From the top of the area's chairlift, visitors enjoyed a panoramic view of Mont Blanc, the Aravis mountain range and Annecy lake. The chairlift was also opened in summer. It provided access to several hikes to the surrounding peaks and ridges. A toboggan track, salto trampolines and an orientation table completed the summer offering. It was financed by the municipality.

In 2020, the newly elected mayor realised the financial burden the ski area represented for the municipality. Too small, it had never attracted enough customers to break even. Therefore, the ski area was kept running also through regular subsidies of around €300,000 to €400,000 a year, next to the average annual turnover of €700,000 from the winter and summer season together.

Therefore, it was decided to have a full and objective audit of the ski area's current situation carried out by specialist consultants. This audit was presented to the ski area's socio-professional partners, local councillors and residents in June 2022. Extended consultation took place from November 2022 to April 2023. External service providers were commissioned to provide technical and financial expertise, as well as facilitation and leadership services. Co-constructed materials from citizens and/or associations also fed into the collective brainstorming. This process led to the development of several scenarios for the future of the site:

- Closure and dismantling of ski lifts and definition of a tourism project based on outdoor activities;
- Shutting down winter operations, maintaining summer activities;

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- Continuation of all operations based on the existing model, with maintenance and no new investment;
- Continuation of the existing business model with investment in a new chairlift and technical snow production at the bottom of the destination;
- Continuation of the existing business model with investment in a new chairlift and snowmaking to cover 25% of the ski area.

Scenarios involving the production of technical snow were quickly ruled out as the areas' water resources were deemed not sufficient.

In May 2023, the mayor received a letter from the State local representative, which stated that legally municipalities were not allowed to regularly compensating the operating deficit of a municipal structure through repeated balancing subsidies.

This led to an initial decision voted by the Municipal Council on 15/06/2023: "Decision to cease operating the ski lifts and ski area of the Sambuy destination after the 2023 summer season". This decision was taken because it would be impossible to achieve financial equilibrium, regardless of the scenario for maintaining operations. The Council also authorised the mayor to take all the necessary steps to implement a transformation project for the Sambuy site, based on a "return to nature".

The task now is to get all the local players on board for the second phase of the implementation of the Sambuy ecological, economic and social transition project, taking into account the various stages that have already been completed. To this end, the Commune of Faverges-Seythenex and the French government have asked the Fabrique des Transitions to continue supporting the project, to facilitate and guarantee its inclusion in a process of territorial transformation at the service of local players and residents. In this context, the Fabrique des Transitions is leading a working group whose objective is to co-construct a project that brings together the skills and expertise of the various stakeholders who have decided to make a commitment to the future of the area.

This pilot project will enable players from very different backgrounds to work together on:

- a shared definition of a new vision of the snow stadium, the mountains and tourism,
- a new concept of the attractiveness of the region,

thanks to a cooperative, collective intelligence method, so that it can be spread/reproduced on different themes or projects within the area (e.g. cultural centre, mobility, etc.) and/or outside the area (e.g. other mid-altitude destinations).

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The general objective is to transform the area, considering the challenges of ecological, social and economic transition. The approach involves identifying and listening to stakeholders and defining a transition project that is economically and socially acceptable, with the primary beneficiaries being the residents and socio-economic players of Faverges and the local community.

4.1.2 Céüse and Puigmal: A comparative analysis of transition trajectories for two emblematic destinations - Céüse 2000 and Puigmal 2900".

On one side, there's Céüse, in the Hautes-Alpes department, between the sea and the mountains. It was a small peri-urban destination (town of Gap), on an altitude between 1,550m and 2,016m, where two federation of municipalities are involved. Most of the land is privately owned, which is partially blocking the development, due to the absence of the owners during the consultations. During the summer the main economic activity encompasses agropastoralism including sheep farming with watchdogs (Bonnemains & Claeys, 2023).

On the other is Puigmal, in the Pyrénées Orientales department, in Catalan country. It was a cross-border destination, situated at an altitude of between 1,850m and 2,600m, with 75% of its clientele being Spanish Catalans. Most of the land is publicly owned, comprising mountain pastures with cattle rearing. Although no watchdogs are present, cows seem to be quite aggressive, resulting in regular incidents with hikers (Carrère et al., 2019).

Common features:

- Both are snow tourism destinations, although having few ski lifts, few slopes, and little or no residential development.
- Both destinations have the particularity of featuring an area that allows off-piste skiing.
- Both are coined by local political management with very little cooperation between the various municipalities and federation of municipalities

The areas are described as two areas of passion and discord, with shared rationales but different trajectories.

At Céüse, after several bad years due to lack of snow, there was a shock when the town of Gap withdrew from management of the site. There was also a "water war" when the technical snow projects were being studied and evaluated. The two Federations of municipalities were not in contact with each other. Only the intervention of a local association (IDD - Idées de demain) and that of the Gap university cluster enabled the establishment of a contact between them.

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In Puigmal, there have been many local conflicts, including the building of a fence to separate two small neighbouring destinations. Another example encompasses a ski pass war over a pylon, within which a syndicate was set up around the destination with the municipalities in the catchment area, and free ski passes were introduced for certain sections of the public. The conflict intensified after a new ski lift was built and one of the pylons was erected on the territory of a commune. Being not part of the syndicate, the commune demanded also to benefit from the free ski pass scheme, expanding the pool of free ski passes and further decreasing the revenue streams.

Both areas were on their individual trajectories and had their own hesitations but needed to decide whether continuing or giving up.

Céüse:

- The first decision to abandon the ski destination activity was made by default but was controversial (it has not opened since 2017), given its chronic deficit,
- A controversial and concerted decision to abandon the ski destination activity (closure in 2020),
- Alternative recreational projects have been initiated and are currently being considered.

In the end, Céüse gave up. At first it was a renunciation suffered by default. Then came the time for controversy and discussion, culminating in a decision to abandon the project. The lifts should be dismantled in 2024. For several years now, the transformation of the site has made little progress. One major barrier of change has emerged: the land is largely owned by a private landowner who has never really taken part in the discussions and consultation process.

Puigmal:

- Closing in 2013
- Reopening in 2021
- (Re)closure in 2023 (compulsory liquidation)
- Diversification activities and announcements of a takeover of the destination

A brief history of the attempt to reopen:

After its closure in 2013, the movable assets and equipment of the destination were taken over by other local destinations. Concerned about the wasteland situation, in 2013/14 Puigmal's mayor launched a call for public service contracts to try to get the destination back into service. No ski resort operator responded.

In 2021, driven by passion, nostalgia and entrepreneurship, four friends who had learned to ski at Puigmal decided to take up the challenge. They invested €250,000 of their own capital and opened the further investments to private individuals.

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In 2023, after losing their entire investment, they investor group applied for receivership, experiencing a transition from the dream to the reality of running a destination. One of the factors, which likely led to this development, was the different visions the investors had regarding the development of the destination:

- One perceived the site as an eco-friendly alpine skiing experiment, with a small number of ski lifts, no implementation of technical snow and a focus on off-piste skiing and ski mountaineering.
- Another investor focused on the Franco-Spanish aspect, planning for the site's expansion to the summit, which represents also the border between France and Spain. This development was not possible, due to the location of the area in a Natura 2000 zone.
- A third investor wanted to dedicate the site mainly to ski mountaineering competitions and training.

One of the main issues was that the lift infrastructure was dilapidated. Since the regulations stipulated that the manufacturer was responsible for maintenance, the investor group was obliged to turn to POMA (a leading supplier of ski lifts). Due to communication difficulties and the reduced interest of POMA for the infrastructure maintenance, the investors had to proceed legally against the company. Further difficulties for the destination arose due to the climate, which resulted in several snow-free seasons. The installation of snow cannons also proved to be futile, due to high temperature and rain-on-snow events.

4.1.3 Federation of municipalities Cœur de Chartreuse

The Saint-Pierre de Chartreuse - Le Planolet ski area is located in the Isère department, in the heart of the Chartreuse Regional Nature Park, at an altitude of 1,100m. For several decades, it has been run at a deficit, regardless of the operator or the various forms of operation (local authority, public-private partnership). This situation is worsening every year due to an increasingly unfavourable systemic situation:

- A sharp increase in operating and maintenance costs, for both intrinsic (inappropriate investment) and extrinsic reasons (higher energy costs, wage bill, etc.);
- Increasingly severe snow loss, leading to a reduction in the number of opening days;
- Increasing recruitment difficulties, particularly for jobs requiring technical skills specific to ski lifts;
- An ageing lift infrastructure and fleet of equipment;
- The financial resources of the local authorities responsible for or supporting the destination are insufficient to run the ski area on their own.

This situation tends to divide the region's population between those who want to maintain skiing and ski lifts and those who think it's time to change the overall approach and embark on new pathways.

Despite the financial and governance difficulties caused by the operation of the Saint-Pierre de Chartreuse / Le Planolet ski area, the Federation of municipalities, which is responsible for ski lifts and downhill skiing, wishes to maintain downhill skiing as part of its mountain tourism offering. However, the downhill skiing activity needs to be reorganised in order not to impact the ability to finance other areas of responsibility.

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This reorganization is also needed to support a collective effort for developing a tourism pathway less vulnerable to the effects of CC, in line with the destination's tourism strategy and rooted in the regional values.

The municipalities of Saint-Pierre de Chartreuse and Saint-Pierre d'Entremont as well as the association “Nouvelles traces en Chartreuse”, aware of this situation and in agreement with the directions taken by the Federation of municipalities, wish, with its support, to give impetus to new dynamic developments through experimentation and to co-construct, together with the local actors (socio-professionals, residents, elected representatives, etc.), a new tourism offer grouped under the term "Station d'activités".

The municipalities of Saint-Pierre de Chartreuse and Saint-Pierre d'Entremont and the Nouvelles traces en Chartreuse association, with the support of the Federation of municipalities, see the evolution and development of the methods of governance as a major priority of this project. First and foremost, governance will be based on the principles and values of the Social & Solidarity Economy.

In addition, these actions will enable them to develop a project for the operation of the ski lifts that could feed into the specifications of a possible public service contract. This experiment could prove to be an inspiring model for the transition in tourism and involves facilitating the joint development of a multi-activity destination based on an evolving perimeter linking several villages of the area. The centre towns of the two municipalities could also be involved.

Based on the work undertaken with local stakeholders, their vision to participatively develop a balanced and profitable model for a destination, emerged. The model will need to meet current and future local as well as global challenges, being also compatible with the destination's tourism positioning and values. This activity will be led by the 2 municipalities as well as Nouvelles traces en Chartreuse and supported by the Fabrique des transitions).

The main objectives and deliverables currently identified are the following:

- Defining, setting up and running a contributory governance system (led by the 2 municipalities + Nouvelles traces en Chartreuse, supported by the Fabrique des transitions in conjunction with the Confédération générale des Scop et des Scic);
- The development of a robust economic and social model based on locally available resources and respecting other economic activities (led by the 2 municipalities + Nouvelles traces en Chartreuse and supported by Alp'Evasion);
- The technical and financial rationalisation of ski lift operations (led by the 2 municipalities + Nouvelles traces en Chartreuse and supported by Alp'Evasion);
- Sharing the marketing strategy of the Chartreuse destination, in particular its positioning and values;

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- Sharing the local and global situation through objective and simplified data (the Federation of municipalities will share its data);
- Contributing knowledge about the expectations, needs and future behaviour of local residents, tourists and daily visitors, etc.

4.2 National/industry-wide strategies in France

4.2.1 Plan Avenir Montagne

Launched in May 2021, the Avenir Montagnes' programme is an adaptation of the recovery plan for the French massifs, to support the reopening of destinations closed during the Covid 19 pandemic and make the mountains an accelerator for the ecological transition (Avenir Montagnes, 2021). This programme complements the State's contractual arrangements, in particular the interregional mountain agreements, which include funding for measures to adapt to CC.

The programme has three objectives:

- To encourage diversification of the tourism offering and attract new guests;
- To accelerate the ecological transition of mountain tourism activities;
- To boost leisure accommodation and curb the diffusion of "cold beds".

The programme's main cross-cutting measure is the launch of the "Avenir Montagnes" fund. Endowed with €331 million over two years (2021 and 2022), this fund has two components set up by the Massif Commissariats:

- An investment component of €300 Million, divided equally between the State and the regions, to support investments in line with the three priorities of the programme;
- An engineering component worth €31 Million, to support mountain areas in creating tourism development strategies tailored to the challenges of ecological change and tourism diversification.

With regard to the first strand (Future Mountain Investments), eligible equipment and investment projects must relate to:

- The development of sustainable tourist facilities (two- or four-season) and the modernisation of facilities for snow-related activities;
- The support of the ecological transition of activities and the protection of biodiversity;
- The development of first/last mile mobility;
- The renovation of tourist accommodation and/or the creation and renovation of accommodation for seasonal workers;
- The renovation and/or modernisation of spas and wellness centres.

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The second strand involves funding project manager hirings to help regions draw up a tourism development strategy tailored to the challenges of ecological transition and tourism diversification (Avenir montagnes ingénierie, 2024).

An initial inventory of the actions carried out under the programme Avenir Montagnes was drawn up in February 2023. A total of 669 projects have been supported, resulting in the following findings:

- Funds were allocated to a large number of projects, with the risk of spreading them too thinly;
- Priority was given to projects that were already prepared in the territories, limiting the time available to analyse their relevance to the challenges of the ecological transition. However, State funding was not used to support the development of the ski industry (other than by co-financing Climsnow studies);
- Regarding the engineering component, based on the analysis of the selection process it emerged that the funds were allocated as a priority to the local authorities, although only partially considering their exposure to climate risk. The main focus of the allocation of resources was to regard a form of territorial balance;
- The workforce made available to the ANCT (Agence Nationale de la Cohésion des Territoires - National state agency for territorial cohesion) and the Massif Commissariats to examine and manage aid applications was not sufficient to carry out all the necessary work: 27 non-permanent FTEs provided engineering support to 62 territories and monitor almost 500 investment projects;
- All of the funding for the mountain future investment programme was committed by the State on an accelerated basis as part of the recovery plan. The funding of projects currently being developed will therefore be compromised, even though these projects may prove to be more relevant, also due to their thorough development. Unless a follow-up of Avenir Montagnes' programme is considered (such as "Avenir Montagnes 2"), these projects may not receive funding.

4.2.2 Cour des Comptes report February 2024 - Focus on a method for assessing the vulnerability of mountain destinations

The Cour des Comptes is a financial court of administrative jurisdiction in France, responsible mainly for overseeing the regularity of public accounts, the State, national public establishments, public companies, social security, etc. In this capacity, it has published a report on mountain destinations in the face of CC, since in France these destinations are under the authority of the municipalities. In this report, the Cour des Comptes classified the destinations based on a vulnerability score, using a risk-based approach (Cour de Comptes, 2024).

Scientific publications on the medium- and long-term snow prospects for French ski resorts represent quite negative outlooks, pointing to numerous critical situations (Spandre et al., 2019). Even if the climatic factor is essential both for the reliability of snow cover and for glacial and periglacial risks, the audits carried out

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by the Cour des Comptes and the regional audit chambers concluded that the vulnerability of a situation cannot be assessed on the basis of this factor alone.

In order to understand the vulnerability of the mountain tourism sector, the financial jurisdictions developed a tool for assessing the risk weighing on ski resorts for the purposes of this survey. For the 163 mountain destinations for which data was available, a vulnerability score of each destination was identified. This was obtained by combining three types of data: the climatic risk, the socio-economic weight of the ski destination in the overall local economy, and the financial capacity of the ski lift authority.

The first component of the vulnerability score is based on the probability of occurrence of the climate risk associated with the loss of natural snow cover or technical snow production. It comprises three sub-indicators: the indicator of vulnerability to CC per resort, the high altitude of the ski area, which takes into account the ability of destinations to move their slopes upwards, and the average length of time that resorts have been open over the last 10 years. This climate vulnerability indicator is based in particular on the results of the above-mentioned study of the Cour des Comptes, which classifies ski resorts according to their exposure to CC.

The second component assesses the seriousness of the risk, through the economic and social impact of the possible closure of a ski resort in a given area. The methodological assumption is based on the fact that the permanent or temporary closure of a ski resort would have more serious consequences for the area if it had a large year-round population, an extensive ski area, major facilities and a large number of tourist accommodations generating economic spin-offs. In this respect, the sub-indicators selected are the permanent population of the ski resort's 'support' municipality in 2019, the number of tourist beds as counted by INSEE (Institut national de la statistique et des études économiques - State agency in charge of producing, analysing and publishing official statistics) and the ski resort's power moment.

Finally, the third component of the vulnerability score seeks to take into account the capacity of local public players to adapt. This is based on the financial strength of the ski-lift organising authority in a given ski resort, based on its ski-lift costs for 2021. The greater their financial strength, the greater the ability of the entity to deploy financial resources to adapt.

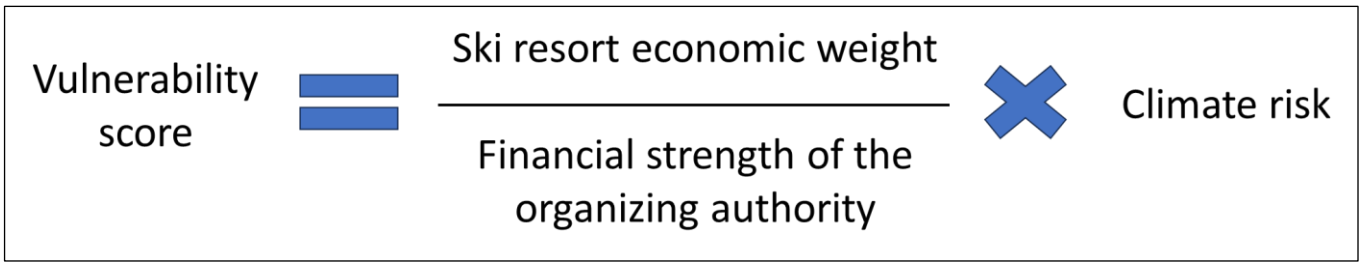

Figure 4: Calculation of the vulnerability score adapted from the Cour des Comptes report (2024)

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All in all, by combining these three components, the vulnerability score for a given station can be determined, according to the formula above, with the three components of this score being equally weighted. In this way, vulnerability is not just the result of climate, but also considers the socio-economic weight of the area and the financial strength of the delegating authority. These factors must be taken into account by the players involved when drawing up their strategies.

At least two limitations can be identified in the way this vulnerability score is calculated, which are related to the geographical perimeter over which the climate risk and to the financial elements.

The climatic risk is assessed for the perimeter of the mountain resort. It therefore does not take into account external regional, national or even international risks. Yet these risks have a direct impact on the area's ability to welcome visitors and provide the necessary living conditions for its inhabitants. For example, CC has a direct impact on the maintenance of the operational condition of mobility and transport networks (rail, roads). CC research points towards a significant increase of the frequency and severity of landslides, floods and droughts in the short term. All these events will make access to mountain destinations more difficult, or even impossible for certain periods of time. For example, a resort may have a lot of snow, but increased snow masses might lead to avalanches, potentially blocking the roads.

All these risk factors also exist at national and international level (geo-political or health risks, such as the Covid 19 pandemic). According to the previously applied method, the major French destinations in the northern Alps have a very low vulnerability score. Based on the fact that over 50% of their guests are foreign tourists, the impact of interrupted destination accessibility will therefore be major, especially considering an interruption in international travel as a result of a new pandemic, conflicts, etc.

The question of the geographic perimeter also arises regarding financial elements. As the resort is generally under the authority of a single municipality, only its financial surface is taken into account. However, from an economic point of view, the resort's turnover should be considered on a much wider scale, for example at that of a valley, a department, a region, or a country. Many other economic and financial criteria can affect a resort's business. For example, a fall in the purchasing power of a proportion of the population (local or of a source market) can have an impact on leisure spending. This can contribute to reduce the number of visitors of a resort, even if it has good snow cover and is in good financial health. The same applies to the consequences of an increase in the cost of energy and food.

As we can see, the vulnerability of a mountain resort depends on a very large number of factors, which can be assessed with varying degrees of accuracy. It is essential to take into account as many of them as possible, and to integrate the major trends into the development of adaptation strategies.

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4.2.3 Domaines skiables de France's eco-commitments

Domaines Skiables de France (hereinafter DSF) is the trade association for ski area operators. It has defined a roadmap adopted by all members of the profession, whether private or public, with revenues ranging from a few thousand Euros to several tens of millions, in all mountain areas.

This approach takes the form of 16 eco-commitments covering climate issues through an action plan aimed at saving energy and gradually decarbonising the business to achieve zero emissions by 2037 (Domaines Skiables de France, 2024). It includes measures to better manage, save and share the water used to produce technical snow. It includes investments to protect biodiversity and a proactive strategy to preserve the landscape, not forgetting the issue of waste generated by tourism.

Several of these commitments concern actions that have already been carried out by civil associations for many years (waste collection, dismantling of obsolete facilities, raising customer awareness, etc.). The efforts proposed by DSF will need to be expanded. For example, one of the commitments includes the plan to dismantle 3 abandoned ski lifts per year, but at this rate, it will take more than 30 years to dismantle all the listed facilities, not counting those added each year.

The most important commitment listed by DSF is to achieve carbon neutrality by 2037. Although admirable, currently it is difficult to envision the evolution of carbon neutrality assessment. Furthermore, the notion of carbon neutrality should be mainly considered at the global scale, and should not be applied on any other scale, such as sub-national territory, organisation (companies, associations, local authorities, etc.), product or service, etc., since it includes emissions that are beyond the direct control of sub-global entities (Agence de la Transition Ècologique, 2022; IPCC Working Group III, 2023). To achieve carbon neutrality, two levers are needed: reducing GHG emissions and increasing CO2 sequestration in biological (or technological) sinks. Regarding the latter, none of the 16 DSF eco-commitments are aimed towards the increase of carbon sinks. Finally, the value of using hydrogen for vehicles such as snow groomers is now being strongly questioned by experts, who are recommending the use of electric batteries (Lakhani, 2023; Pécout, 2024).

4.2.4 Compagnie des Alpes's commitments and renunciations

Compagnie des Alpes (hereinafter CDA) is a French company and European leader in leisure activities and ski destinations, operating the largest ski areas in the French Alps as well as leisure parks in Europe. In 2023, Compagnie des Alpes asked its employees and stakeholders to define its Raison d'Être and incorporate it into its articles of association: "At Compagnie des Alpes, we are passionately committed to offering exceptional moments of leisure that generate links and well-being, and to creating living spaces

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that combine regional vitality and ecological transformation" (Compagnie des Alpes, 2023). As part of the implementation of this Raison d'Être, the company has announced 10 commitments and 5 renunciations.

The 10 commitments are:

- Achieving net zero carbon by 2030 (scope 1 and 2);
- Work towards a reduction in scope 3 as part of the net zero carbon strategy;
- Contribute to the collective and rational management of water resources;
- Reduce the resource consumption and impact on biodiversity by contributing to its regeneration as soon as possible;
- Anticipating changes in France's mountain regions to devise solutions for the future;
- Finance and support initiatives with a positive impact (innovation, accessibility to leisure activities);
- Encourage the re-industrialisation of the country as close as possible to its regions;
- Investing in the skills and career paths of its employees;
- Contribute to the continuous improvement of its employees' well-being;
- Recognise the commitment and contribution of its employees to the success of the company by making each of them a shareholder of CDA.

The 5 renunciations are:

- Stop investing in areas where CC is very likely not to allow skiing in the foreseeable future, in particular low-altitude areas and glaciers, as well as discontinue snowmaking networks in glacial areas or areas with insufficient natural snow cover, as recommended in the Imp'Act or Climsnow studies(Climsnow, 2024);
- Continue not producing "positive-temperature snow";
- Discontinue the use of fossil fuels for the snow groomers and buses operated by the CDA, as well as for heating its buildings and accommodation in the mountains.
- Not to propose any "net extension" of the ski area. Only occasional adaptations of limited surface area (e.g. relocation of equipment, changes to snow fronts) will be considered, and these will be consistent with the objective of limiting the net footprint by 2030.
- Stop providing technical assistance to French or international ski destination and/or snowdome creation projects that do not involve a significant majority of natural snow.

While all these points, like Domaines Skiables de France's eco-commitments, are a step in the right direction, they need to be looked at critically.

The commitments correspond either to simple compliance with national strategies, or to the good management practices of any company. In this sense, no commitment corresponds to an innovative approach from an economic or social point of view.

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The use of the term "renunciation" is a novelty that should be welcomed. Even if, here again, it has to be pointed out that these renunciations are not revolutionary in nature, suggesting a real change of paradigm and some are simply a response to compliance with the law and regulations in force.

4.3 Adaptation through technical innovation

4.3.1 A critical view on Prosnow and ClimSnow programs

The investment needed for skiing infrastructure requires medium and long-term financing plans. However, natural snow cover, which is essential for resort activity, is becoming increasingly variable. With many mountain economies heavily dependent on the opening of ski areas, snow management has become a key issue. New management tools have emerged, starting with technical snow production systems, which became widespread in the 1990s. Due to their heavy reliance on investments, the capital intensity of the sector and its dependence on public funding increased even further.

The rate of technical snow coverage in ski areas is now a key indicator and an essential marketing argument. It allows to 'guarantee' the availability of the 'ski product' for customers from November onwards, and especially during the festive season.

CC, far from calling into question this strategy of maintaining activity, has on the contrary led professionals in the sector, with the support of scientists, to develop two new management tools: a tool for modelling the impact of global warming scenarios on the snow supply in resorts over the coming decades (Climsnow, 2024), and a tool for optimising technical snow production and managing grooming activity (PROSNOW, 2024).

Climsnow makes it possible to quantify, at various timescales, the reliability of snow cover (groomed natural snow, with/without technical snow), its variability and the capacity of each resort to maintain its operations. Using the information provided by ClimSnow, it is therefore possible to take account of the impact of CC in forward-looking studies on the development and transition of mountain areas. The power and precision of the model are impressive: the data runs on a supercomputer and can be used to estimate changes in snow cover over different timeframes and up to 2100, by simulating snow cover over strips of land just a few dozen metres wide.

Like the ski industry, which has already incorporated the gradual disappearance of natural snow into its economic model, scientists have made the production of technical snow a basic element of their model. Far from questioning this technique, the experts from Météo-France (CNRM Laboratory, Météo-France-CNRS,

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Centre d'Etudes de la Neige) and INRAE (LESSEM Laboratory) have made it a central element of the system, and have joined forces with Dianeige, a French firm specialising in ski resort development[1]. The aim is clearly stated: "To contribute to the guidelines to be adopted for tourism strategies and the composition of future structural investment programmes for mountain resorts and regions".

The system has four levels:

- Firstly, the system simulates the evolution of snow and weather variables at a very local level within a ski area, taking into account different altitudes, orientations and slopes. In addition to modelling the evolution of the natural snowpack, it can also explicitly simulate the effects of grooming and technical snow production.
- Secondly, "Dianeige's expertise enables us to go beyond the 'neutral' diagnosis made by the researchers and provide recommendations for practical assistance to project managers in developing tourist resorts. It is thus possible to translate all the scientific results into clear, comprehensible language, with very concrete analyses of the strategies to be followed to adapt to the effects of CC (types of investment, payback period, reinforcement of the technical snow network, diversification and 4-season activities, etc.)"(Climsnow, 2024).
- In addition, a consultancy firm is asked to draw up a report to assess the financial effort required by the resorts to produce technical snow. The financing of these studies is the responsibility of the municipalities supporting the resorts. For its part, the Provence-Alpes-Côte d'Azur Region has decided to launch a study of all the resorts in the Southern Alps, at its own expense. Files have been sent to the mayors. Although financed by public money, most of these studies remain confidential and are not accessible to the general public.
- The final stage is the marketing by DIA4S (a subsidiary of Dianeige) and its partners of its Prosnow and Tipsnow software.

This approach raises a number of questions. At a time when the scientific community is clearly asserting the reality of CC, its causes, and its impacts, some of its members are seizing on an economic and political issue, which has a direct consequence of exacerbating pressure on water resources and increasing energy consumption through the growing use of technical snow (François et al., 2023). Some of the drawbacks of ClimSnow are the following:

- It seems to be an opaque model: the studies are not public, making it impossible to cross-reference them, even though the subject is of general interest;
- It is financed by public funds, although its beneficiaries are mainly private players;
- Its model is mainly based on technical snowmaking without taking into account the availability of water and energy resources;

[1] CNRM (https://www.umr-cnrm.fr/), CEN (https://www.umr-cnrm.fr/spip.php?rubrique85), LESSEM (https://www.lessem.fr/), Dianeige (https://www.dia4s.fr/)

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- Its main conclusion seems to be that there is no reason to worry about continuing to operate ski resorts until 2050. At the same time, many resorts are closing, oftentimes due to chronic deficits, which are exacerbated by the lack of snow.

ProSnow is a European research programme that has developed software to optimise technical snow production by providing information on current and future snow cover. The system provides a forecast on the scale of a few days to a few weeks, according to several management and operational tactics: for example, whether to produce technical snow or not, whether to groom or not, etc. This enables managers to measure the consequences of their production choices on a scale of a few days to a few weeks (PROSNOW, 2024).

The evolution of the snowpack is predictable, because it depends on its initial state. For example, if there is 1m or just 20cm of snow on the 15th of December, it is possible to provide a likely range of snow conditions for the Christmas holidays, based on short-term weather forecasts up to 4 days (D+4), seasonal forecasts and the use of meteorological data from previous years. The data is provided to ProSnow users at a high frequency: every 3 hours for the first few days, then only every day after a few weeks.

In addition, two new techniques have emerged:

- Snow farming: a technique used by some resorts to conserve snow so that it is available when needed at the beginning or end of the season. The snow is technically produced in appropriate places and then covered with an insulating layer of sawdust or wood shavings. Up to 80% of the snow can be preserved from one season to the next.
- Snow factory: a freezer-type cooling system which, when connected to electricity and a simple water supply, produces ice which is then scraped into small shavings. This makes it possible to make snow at temperatures of up to 35°C. At the moment, it is difficult to say if this technology could be deployed at a large scale.

Despite the rapid development of this technology and the technical progress made, freedom from the variability of weather conditions remains limited.

Indeed, the technical adaptation that snow production represents does not free operators from certain constraints such as the need for sub-zero temperatures and for water & electricity resources. Today, the effects of CC are reducing the depth of the snow cover and the opportunities for producing snow.

By limiting its dependence on the weather, the winter sports industry has, at the same time, increased its dependence on snow production. Although future climate constraints are likely to limit the effectiveness of this production, it seems difficult for the winter sports industry to turn away from it. This situation, often described as a "headlong rush", has only recently been analysed.

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Drawing on the theory of "path dependence", used in evolutionary economic geography, French researchers have shown that snow production has led the winter sports industry down a genuine path dependency: previous decisions to invest in snow production and the snowfall gains achieved in the past encourage continued investment, while depriving other activities of the resources mobilised, whether economic or natural, such as water resources (Berard-Chenu et al., 2022, 2023).

This path dependency can lead ski tourism down a path known as "extension" or "contraction", with very different implications for mountain areas. Seen as a path of expansion, investment in snow production has strengthened a weather-dependent seasonal activity that has the characteristics of a heavy industry. But snow production can also lead to contraction. Investment in snowmaking is not only very specific, and in some cases solely dedicated to the continuation of the ski business, but above all forces its facilitators to maintain a sectoral logic focused on the snow tourism economy.

This risk of over-specialisation can also spill over to the mountain areas that support the resorts. All the specific capitals (infrastructure, specialised workforce, technical know-how, etc.) and the measures connected to them, such as dedicated public policies, delay any changes and can limit the effect of measures aimed at diversifying mountain economies. An unfavourable lock-in is then triggered: support for investment in snow production facilities that capture resources that could initiate possible transitions.

In conclusion, it appears that these technological innovations are not helping to make alpine communities more resilient in the face of CC, as they are increasing their dependence on snow tourism by monopolising funding and contributing to increased consumption of water and electricity resources.

4.3.2 Some misconceptions about diversification and 4-season skiing as a transition path for ski resorts

Ski resort models are very dependent on large investments and technological innovation, although these two factors contributed also to a reduction in the amount of time skiers spend on the slopes. In response to competition, ski resorts have increased investments to optimise and modernise their lifts, in order to attract, retain and expand their customer base and offer new activities and services. This strategy created new customers' needs and behaviours: no more waiting at the bottom of a lift, no more getting cold on a chairlift, limiting the time spent on the lifts, etc. The renewal and reliability of ski lifts are therefore strategic for the appeal and competitiveness of resorts: that's why ski lifts account for the majority of the investments, which in France revolve around €300 million a year.

A number of factors have come together to produce this trend: reduced time spent travelling on and waiting at ski lifts thanks to increased capacity, less technical slopes because they are more groomed and wider,

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modern skis suited to all profiles, and a decline in the physical fitness of skiers due to sedentary lifestyles. As a result, skiers are skiing for shorter periods, covering more kilometres, and reaching their physical limits more quickly (Huijgen, 2023). This is one of the reasons why, from the 1990s onwards, ski operators diversified the range of leisure activities offered in the resorts: skiers had to be presented with complementary activities to occupy their free time and encourage them to increase their consumption. Furthermore, two additional factors have to be considered:

- The small but steady decline in the number of downhill skiers.
- The fact that studies suggest that there are between 10% to 25% non-skiers in winter sports resorts, increasing the pressure for developing leisure activities for this clientele, who represent a significant share of the market.

Therefore, contrary to what oftentimes is implied, the aim of this growing diversification is not to move towards a transition of the model decreasing the dependence on ski tourism, but on the contrary to maintain it. For many ski tourism-intensive destinations, diversification, without the strong economic foundation of ski tourism revenues, seem to be an illusion, if not a new myth. The 4-season appeal that has been preached but mooted for over fifteen years remains a difficult challenge: how can a ski resort, designed on the basis of an integrated economic model built around the ski tourism sector, be functional and viable, if its primary revenue stream is generated by an industry, which is heavily challenged by CC and other external developments? Furthermore, “diversification” oftentimes consists of selling summer activities based on new infrastructures (summer tobogganing on rails, giant Tyrolean traverses, water skiing on the water of hill reservoirs, etc.), increasing the dependence on resources (such as water, energy and also land), which are becoming increasingly scarce and expensive, even more. Competition between winter tourism destinations will continue to increase, with each aiming to remain as "attractive" as possible, or even increase their attractiveness. The proliferation of labels is a good illustration of that trend.

As a result, the diversification of the tourism offer in resorts has only contributed marginally to the emergence or strengthening of the adaptive capacities of mountain areas. More generally, the relevance of tourism strategies based on diversification and the "4 seasons" has to be questioned:

"Marketing and selling of natural sites through sports or discovery activities, the extension of the seasons, the multiplication of small themed groups of visitors are all part of this process: one or more new tourist "niches" are exploited, while at the same time intensifying the uses of nature, seen only as a set of resources" (Berlan et al., 2022).

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4.4 Examples for illustrating the forms of redirection for ski destinations in the French massifs

	Planned	**Under stress**	**«Laissez faire»**
Rationale	*Planning/repositioning the offering*	*"Disarmament"/reactivation*	*Re-appropriation/self-organisation*
Temporality	*Continuity*	*Discontinuity*	*Sporadic*
Prerequisite	*Understanding a dead-end issue, territorial consensus in favour of transition*	*Moment of uncertainty, tension between definitive closure and relaunch, local strengths identification*	*Letting it go, abandonment, trivialisation of the site*
How closure is perceived	*Generates move towards transition*	*Allows to start from scratch*	*Offers opportunities for specific practices/people*
Project	Project at territory level	*Project at ski area level*	*Project at individual or group level*
Actors	*Historic players, management companies, local authorities*	*Local authorities, private players, associations, groups*	*Residents, visitors, users*
New functionalities	*Mountain destination*	*Leisure centre, Outdoor Experiences destination*	*Recreational dissidence, self-organised practices, leisure migration*
Examples	*Métabief (25)*	*Valdrôme (26)* *Céüze (05)* *Drouzin-le-Mont (74)* *Mas de la Barque (48)* *Puigmal (66)* *La Sambuy (74)*	*Sant Honoré 1500 (38)* *Vauplane-Soleihas (04)* *Ordonnaz (01)* *Valpelouse (73)* *Col du Sommeiller (73)*

Table 2: Forms of redirection for ski destinations in the French massifs (Métral, 2021)

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5 Summary, lessons learned and conclusion

CC adaptation and transition strategies and models frequently include measures aimed at addressing both carbon and climate risks. Although they are different concepts, the line between mitigation and adaptation is often blurred when it comes to strategies. Such an overlap can also be seen within tourism-oriented strategies, which, although aimed at being exclusively oriented towards the tourism sector, often comprise measures linked to other sectors and the host community of the destination. This can be especially seen in community-type destinations (Flagestad & Hope, 2001), towards which a large number of Alpine destinations tend. In these destinations, the local socio-ecological system plays an integral part of the overall tourism product and must therefore be considered during the development process of strategies and measures.

In such destinations, strategies targeting adaptation without considering potential system changes can be inadequate. For example, a reorientation of the overall tourism offer while maintaining the current status quo and system (e.g., trying to economically substitute a diminishing number of skiers with higher numbers of bikers and hikers in the summer) risks falling short in the long term because they often do not consider the wider ramifications and effects of CC.

The development of strategies and measures aiming at CC adaptation at the STD level necessitates several elements, such as:

- Current climatic data and, ideally, climate projections and scenarios
- A thorough evaluation of the status quo regarding the overall STD system, comprising:
    - Current tourism flows (overnight stays, daily visitors, main source markets, etc.)
    - Tourism attractions and activities, their current presence within the overall tourism offer, and their exploitation status
    - Ecological and local community resources
    - Network of tourism service providers and actors
    - The embeddedness of the STD in the comprehensive regional tourism system

Furthermore, local stakeholder involvement is essential throughout the strategy development and finalization process. Engaging these stakeholders ensures that the strategies are practical and relevant since they provide critical insights into the local context. Additionally, raising awareness among economic actors, residents, and tourists about CC adaptation and mitigation is important. These awareness activities help build a collective understanding of the challenges and opportunities related to CC.

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Strategies and projects aimed specifically at CC adaptation and mitigation often initiate additional processes that develop their own momentum. These processes can continue to shape tourism destinations beyond the original scope of the measures. For example, initiatives to reduce carbon emissions and enhance climate resilience can pave the way and subsequently lead to broader changes in the destination's infrastructure, governance, and community engagement practices.

Over time, these changes can support the destination in becoming more resilient and incorporating elements of sustainable tourism. On one side, these changes might lead to the loss of a certain part of the current customer base, but on the other, they can help attract new visitors who are increasingly aware of environmental and social issues.

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La FABRIQUE des TRANSITIONS

BeyondSnow is an Interreg - Alpine Space project co-funded by the European Union. It aims at decreasing the snow-dependency of Alpine Space snow tourism destinations, strengthen their resilience to climate change and retain/increase the viability for residents and their attractiveness for tourists.

Annex 1: Collected strategies and projects

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Country	Geographical area/Region	Tourism destination or municipality (if applicable)	Resource	Name (Original Language)	Name (English)	Link to online resource	Focus of resource	Reference year (if applicable)	Vision
AT	Salzburg	Werfenweng	Initiative	Werfenweng Card	Werfenweng Card	Link to online resource	CC adaptation	2023 Ongoing	Giving to the guests always the opportunity to move around in an environmentally conscious way and promoting winter activities alternative to skiing
AT	National		Initiative	Klimawandel-Anpassungsmodellregionen (KLAR!)	Climate Change Adaptation Model Regions (KLAR!)	Link to online resource	CC adaptation	2016 Ongoing	Offering a process-oriented approach for municipalities to raise awareness for climate change adaptation and implementing concrete actions on regional level
AT	Carinthia	Dobratsch	Project	Naturpark Dobratsch	Dobratsch Nature Park	Link to online resource	CC adaptation	2002	Developing the nature park based on four pillars: education, recreation, regional development and protection of the ecoregion
AT	Carinthia	Destination Nassfeld-Presseger See - Lesachtal - Weissensee	Project	Klima- und Energie-Modellregion	Climate and energy model region	Link to online resource	CC adaptation & mitigation	2019 Ongoing	Becoming Austria's most sustainable tourism region
AT	Vienna		Project	REFRESH	REFRESH	Link to online resource	CC adaptation	2014 - 2017	Creating summer heat retreats as an opportunity for Alpine tourism destinations close to cities
AT	Carinthia	Arnoldstein Finkenstein St. Jakob	Strategy	KLAR! Terra Future	KLAR! Terra Future	Link to online resource	CC adaptation	2017 Ongoing	Compensating the disadvantages of climate change at least partially with its advantages
CH	Canton Ticino	Monte Tamaro	Strategy	Monte Tamaro	Monte Tamaro	Link to online resource	CC adaptation	2003 Ongoing	Changing the tourism focus from winter to summer
CH	Graubünden	Arosa-Lenzerheide	Strategy	Destinationsstrategie Arosa 2030	Destination Strategy Arosa 2030	Link to online resource	CC adaptation & mitigation	2021	Becoming one of the most sustainable destinations in the Alps and one of the three most sought-after holiday regions in Switzerland
CH	Graubünden	Arosa-Lenzerheide	Strategy	Arosa-Lenzerheide	Arosa-Lenzerheide	Link to online resource	CC adaptation & mitigation	2021 Ongoing	Becoming a CO2 neutral lift operation, by obtaining 100% of the electricity from renewable sources and feeding the grid with solar power thanks to photovoltaic systems.
CH	Vaud	Alpes Vaudoises	Strategy	Alpes Vaudoises 2020	Alpes Vaudoises 2020	Link to online resource	CC adaptation & mitigation	2014	Accelerating the adaptation of socio-economic and tourism framework conditions as well as revitalizing the tourism products and offering a breath of fresh air in key markets
DE	National		Guidelines	Handlungsleitfaden Anpassung an den Klimawandel: Die Zukunft im Tourismus gestalten	Guidelines for adapting to climate change: Shaping the future of tourism	Link to online resource	CC adaptation	2020	Providing guidelines for adapting to climate change inclunding help municipalities and destinations: - Starting adaptation as a process - Understanding and describing the consequences of climate change - Creating awareness in the DMO - Creating and integrate strategy - Developing and evaluate measures - Implementing, monitoring and evaluating measures
DE	Bavaria	Grainau/national	Initiative	Natursportakademie	Nature sport academy	Link to online resource	CC adaptation		Creating a sport offer in harmony with nature and offering tourism operators possibilities to enhance their work skills
DE	Bavaria	Gschwender Horn	Project	Renaturierung des Skigebietes Gschwender Horn	Gschwender Horn: Restoring nature to a skiing region	Link to online resource	CC adaptation & mitigation	1994 - 1998	Converting the ski resort to a hiking, recreation and nature area

DE	Bavaria	Schleching	Project	Naturschutzgebiet Geigelstein	Nature conservation area Geigelstein	Link to online resource	CC adaptation	1991 Ongong	Deciding against skiing in the 1980s and becoming a nature conservation area with a well-developed sustainable tourism strategy.
FR	Auvergne-Rhône-Alpes Region	Massif du Vercors	Initiative	Vercors Citoyens, Ecouvent		Link to online resource	CC adaptation	2022	Developing and promoting alternatives to "all tourism" as part of a socio-ecological transition.
FR	Auvergne-Rhône-Alpes Region	Tignes	Initiative	Imaginons Tignes 2050	Imagine Tignes 2050	Link to online resource	CC adaptation	2024	Imagining life in Tignes in the decades to come, through guiding the municipality towards a more sustainable long-term vision for the operation of the ski area
FR	Auvergne-Rhône-Alpes Region	Massif de la Chartreuse (8 ski resorts)	Initiative	Nouvelles traces en Chartreuse, Ag'Hil, Agir pour la station de Saint-Hil	New traces in Chartreuse, Ag'Hil, Act for the Saint-Hil station	Link to online resource	CC adaptation	2024 Ongoing	Reviving the resorts and communities through associations and volunteering initiatives
FR	Auvergne-Rhône-Alpes Region	Les Gets	Initiative	GetsLib'	GetsLib'	Link to online resource	CC adaptation & mitigation	2015 - 2018	Diversifying the "off snow" tourism season and completing the local transport offer
FR	Isère	Station de ski alpin de Saint-Pierre/Le Planolet	Initiative	Association Nouvelles traces en Chartreuse	New traces in Chartreuse Association	Link to online resource	CC adaptation	2023 Ongoing	Citizens association's managing of the small ski area after the withdrawal of the private operator that had previously been in charge
FR	National		Initiative	Le Flocon Vert	The Green Snowflake	Link to online resource	CC adaptation & mitigation	2022	Supporting territories in their transition and giving mountain enthusiasts a clear vision of committed tourist destinations
FR	Cantal, Ardèche, Lozère	Cantal, Ardèche, Lozère	Project	Projet de recherche-action RECREATER	RECREATER action research project	Link to online resource	CC adaptation	2019 - 2023	Enhancing the residential and tourist attractiveness of the three pilot areas
FR	Hautes-Alpes	Serre Chevalier	Project	Enr by Serre Chevalier	Renewable Energy Serre Chevalier	Link to online resource	CC mitigation	2018 Ongoing	Reaching 30% self-consumption of renewable energy in 2023 and eventually 50% in the long-term
FR	Auvergne-Rhône-Alpes Region	Saint Pierre de Chartreuse	Project	Collectif Nouvelles traces en Chartreuse	Collective "New traces in Chartreuse"	Link to online resource	CC adaptation	2022 Ongoing	Collectively working for ensuring the operation of the ski station in Saint Pierre de Chartreuse
FR	Auvergne-Rhône-Alpes Region	Bourg Saint Maurice - Les Arcs	Strategy	Projet de territoire pour Bourg Saint Maurice 2030	Designing Bourg Saint Maurice in 2030	Link to online resource	CC adaptation & mitigation	2022 - 2024	Fostering adaptation and resilience through an all-encompassing approach including housing, mobility, energy, water, waste management, services for inhabitants and tourism transition
FR	Hautes Alpes	Manteyer-Céüse	Strategy	Structuration d'une offre récréative 4 saisons dans la station abandonnée de Manteyer-Céüse	Structuring a 4-season recreational offer in the abandoned Manteyer-Céüse ski resort	Link to online resource	CC adaptation	2020	Developing a four-season recreational offer for Céüse, including signposting of walking, cycling, snowshoeing and skiing routes, development of an orienteering course, etc.
FR	Provence Alpes Cote d'Azur	PETR du Briançonnais, des Ecrins, du Guillestrois et du Queyras	Strategy	Carnets de montagne	Mountain notebook	Link to online resource	CC adaptation & mitigation	2011 Ongoing	Developing a systemic approach for ecological transition
FR	Savoie	Peisey Vallandry	Strategy	Commune de Peisey Vallandry	Peisey Vallandry Municipality	Link to online resource	CC adaptation		Politically supporting projects and programmes to diversify the resort's activities
IT	Lombardy	Oltre il Colle	Initiative	Arera 1600	Arera 1600	Link to online resource	CC adaptation	2023 Ongoing	Transforming the area and making it available to the community
IT	Trentino	Primiero San Martino di Castrozza	Initiative	Oltre lo sci	Beyond Skiing	Link to online resource	CC adaptation	2023 Ongoing	Developing a rich programme of guided walks, snowshoes excursions, tasting of typical local products, historic and artistic tours, fascinating explorations and outdoor adventures, with a particular attention to sustainability topics, as an alternative or supplement to skiing
IT	Aosta Valley	Valpelline	Initiative	NaturaValp	NaturaValp	Link to online resource	CC adaptation	2012 Ongoing	Recovering the often forgotten historical memory and protecting the primary source of livelihood: the mountain environment

IT	Piedmont	Rittana	Project	BORGATA PARALOUP Al riparo dai lupi	BORGATA PARALOUP Sheltered from the wolves	Link to online resource	CC adaptation	2014 Ongoing	Creating a cultural centre, offering cultural, social and tourist services, where everyone can experience a year-round welcoming and sustainable community
IT	Piedmont	Ostana	Project	Ostana - SmartRural21	Ostana - SmartRural21	Link to online resource	CC adaptation	1980s Ongoing	Valorising local landscape and architecture, energy efficiency, mobility, agriculture and forest management, basic services, social entrepreneurship and culture
IT	Trentino	Panarotta	Project	Panarotta - una montagna diversa è possibile	Panarotta - a different mountain is possible	Link to online resource	CC adaptation	2023 Ongoing	Creating tourism alternatives to alpine skiing in Panarotta as well as diversifying activities and de-seasonalizing tourism in order to make the mountain economy less dependent on the presence of snow
IT	Trentino	Altopiano della Paganella	Project	Dolomiti Paganella Future Lab	Dolomiti Paganella Future Lab	Link to online resource	CC adaptation	2019 Ongoing	Developing the Dolomiti Paganella into a location where the mountains confer regeneration, with one foot solidly planted in the timeless heritage of the Dolomites, and the other taking a confident step into a future comprising residents and visitors who share our territory as responsible actors, where nature and culture can co-exist through innovation
IT	Lombardy		Strategy	Documento di Azione Regionale per l'adattamento al cambiamento cliamtico in Lombardia	Regional action document for CC adaptation in Lombardy	Link to online resource	CC adaptation	2016	Protecting and maintaining the income of all stakeholders, and urging the use of the potential of climate change in a positive sense
IT	Piedmont	Valle Maira	Strategy	Valle Maira - vacanza sostenibile	Maira Valley - sustainable holiday	Link to online resource	CC adaptation	2013 Ongoing	Developing the perfect destination for those looking for a mountain that is still deeply authentic, where nature is unspoiled and relationships are true and sincere
IT	Piedmont		Strategy	Strategia per le Montagne del Piemonte	Strategy for Piedmont Mountains	Link to online resource	CC adaptation	2024	Building an operational framework of opportunities and intervention priorities to address the development of mountain territories
IT	Trentino	Parco Naturale Adamello Brenta	Strategy	Piano d'Azione 2018-2023	Action Plan 2018-2023	Link to online resource	CC adaptation	2018 - 2023	Developing a strategy built on three pathways: awareness, senses, and quality and these pathways linking to and including the 5 principles of the European Charter for Sustainable Tourism
IT	Aosta Valley		Strategy	Strategia di Adattamento ai Cambiamenti Climatici della Regione autonoma Valle d'Aosta	CC adaptation strategy of Aosta Valley	Link to online resource	CC adaptation	2021 Ongoing	Minimizing vulnerability and grasping opportunities resulting from rising temperatures
IT	Veneto		Strategy	Piano Regionale Neve	Regional Snow Plan	Link to online resource	CC adaptation & mitigation	2023	Allowing, in every season and for different users (tourists or residents), to transit and enjoy the mountains, while respecting their fragility and its support of its population
IT FR	Savoy, Haute-Savoie	Savoy, Haute-Savoie	Project	Tourisme du Gout	Taste Tourism	Link to online resource	CC adaptation	2018 - 2021	Increasing the attractiveness of the mountain area and the valorisation of products in close synergy
IT FR	Alte Valli	Alte Valli	Strategy	Alte Valli Destinazione intelligente	High Valleys Smart Destination	Link to online resource	CC adaptation & mitigation	2018 Ongoing	Studying and encouraging the necessary conditions for the High Valleys area to become a smart destination through concrete innovations and economic development coordinated around its function as a major tourism destination
IT FR CH	Espace Mont Blanc	Espace Mont Blanc	Project	Boîte à outils - AdaPT Mont-Blanc	Toolbox - AdaPT Mont-Blanc	Link to online resource	CC adaptation	2014 - 2020	Developing spatial planning and management tools for climate change adaptation that could be integrated and adopted by public institutions in Espace Mont-Blanc at different levels (local, regional)

SI	National	Mountain centres in Slovenia	Guidelines	Predlog ukrepov za zagotavljanje trajnostnega delovanja žičniških naprav v Republiki Sloveniji	Measures to ensure the sustainable operation of the cable car infrastructure in Slovenia	Link to online resource	CC adaptation	2015	Guaranteeing the long-term economic sustainability of the cableway industry, while also exercising prudent management of the territory as a scarce commodity
SI	National	Mountain centres in Slovenia	Project	Gorski centri v Sloveniji Študija razvojnega stanja, potreb in ukrepov	Study of the mountain destinations in Slovenia regarding development situation, needs and measures	Link to online resource	CC adaptation	2019	Developing an overview regarding the situation of mountain destinations and a plan for further development that will contribute to the enhancement of the year-round tourism offer
EU	Alpine Space		Project	TranStat - Transitions to Sustainable Ski Tourism in the Alpes of Tomorrow	TranStat - Transitions to Sustainable Ski Tourism in the Alpes of Tomorrow	Link to online resource	CC adaptation	2022 Ongoing	Facilitating the adoption of co-constructed transition processes in Mountain Resorts (MR), understood as ski resorts and their territory
EU	Alpine Space		Project	ClimAlpTour	ClimAlpTour	Link to online resource	CC adaptation	2007 - 2011	Increasing the value derived from Alpine tourism destinations' potential, going beyond the traditional vision that relegates them to places where winter sports are the only available activity, and making them attractive year-round tourist destinations
EU	Alpine Space		Project	ClimChAlp	ClimChAlp	Link to online resource	CC adaptation	2006 - 2008	Finding ways for Alpine Space communities to cope successfully with the impacts of climate change whilst ensuring sustainable development
Eu	Alpine Space		Project	SpeciAlps2	SpeciAlps2	Link to online resource	CC adaptation	2020 - 2022	Sensitizing guests and locals regarding the diversity of alpine animals and plants, but also regarding the rules of how to behave in the natural environment
EU	Alpine Space		Project	Smart Altitude	Smart Altitude	Link to online resource	CC adaptation & mitigation	2018 - 2021	Enabling and accelerating the implementation of low-carbon policies in winter tourism regions
EU	EU		Strategy	EU Strategy on Adaptation to Climate Change	EU Strategy on Adaptation to Climate Change	Link to online resource	CC adaptation	2021	Forging a climate-resilient Europe