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Climate Change and its Impacts on Tourism in the Alpine Space

Alpine SPACE
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ClimAlpTour – Climate Change and its Impact on Tourism in the Alpine Space

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ClimAlpTour – Climate Change and its Impact on Tourism in the Alpine Space
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In fond memory of Lisa Garbellini, colleague, researcher and lover of the mountains.

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BACKGROUND INFORMATION

1.1 Introduction

The tourism sector plays an important economic and social role for the Alps. According to the World Tourism Organization, every year more than 100 million people visit the Alps, which is about 12% of the world's tourists. In several Alpine regions, winter sports are still the main tourist attractions and represent a significant source of income.

According to the European Environment Agency (EEA 2005), the winter tourism industry provides a significant contribution to the economy of the Alpine countries: tourism generates close to € 50 billion in annual turnover and provides 10 to 12% of the jobs in the region.

The environmental, cultural, and economic diversity of the Alps historically has brought a large set of tourist activities to them. Some of these are likely to be affected by temperature increases, as is particularly true for winter tourism, but climate change may force modifications to the entire Alpine tourism sector. Mountain tourism is, after all, a climate-dependent activity, especially with regard to winter sports, for which the availability of snow is a necessary condition for running seasonal tourist activities.

Although there are variations across the region, in general temperatures in the Alps have increased about twice as much as global ones. As a consequence, many ski resorts could go out of business and only high-elevation facilities (above 1,500 meters) will be able to host winter sports. This in turn is likely to have a great impact on the regional economy (OECD 2007).

Adaptation strategies and measures have been applied in the Alps in order to cope with climate change. Better knowledge of these techniques and their efficacy is needed, however. In particular, if warming continues, snowmaking and other technical measures that might have been used successfully so far may not suffice to prevent reductions in snow reliability, and transitioning towards non-snow dependent economic activities might be necessary.

The ClimAlpTour project is designed to gain knowledge and experience that can be used to develop future strategies and raise awareness at various levels.

1.2 Project aims and objectives

Based on existing knowledge and by means of new studies and field activities, ClimAlpTour – Climate Change and its Impact on Tourism in the Alpine Space seeks to improve the capacity of Alpine territories, peoples, and economic systems to respond to the challenges of climate change.

In particular, in a departure from the understanding of the close relationship between temperature and tourism in the Alps and the historically recognized dependence of winter tourism on snowfall, the project seeks to deal with the internationally recognized issue of the effects of climate change on Alpine tourism, extending its approach beyond winter tourism and sports to embrace Alpine all-season tourism.

Alpine tourism needs to be rethought: both public institutions and private stakeholders must rise to the challenge of a new idea of tourism that goes beyond the traditional vision of winter sports and other typical Alpine tourist activities.

In this sense, the main objective of the project is to increase the value derived from Alpine tourism centers' potential, going beyond the traditional vision that relegates them to places where winter sports are the only available activity, and making them attractive tourist destinations all year round.

1.3 International partnership and project organization

The ClimAlpTour partnership covers most of the Alpine territory. Experts from Austria, France, Germany, Italy, Slovenia, and Switzerland are working together in order to assure a broad perspective on the issue of Alpine tourism and take into consideration the significant differences among territories in the Alpine Arc.

Moreover, the partnership includes a wide variety of institutions ranging from universities and research institutes to national public administrations. Regional authorities

are also well represented, as are local administrations (e.g., mountain municipalities), which have been involved through other territorial partners in the entire territory covered by the project. Both public and private associations are part of the partnership. In addition, an international organization has joined the project in an effort to transfer the project outcomes not only throughout the Alpine area, but also beyond, to other mountain regions worldwide that are facing similar problems today.
Partners:

- Regione Veneto, Unità di Progetto Foreste e Parchi (IT); Lead Partner (LP)
- European Academy Bolzano (IT); (EURAC)
- Alpenforschungsinstitut GmbH (DE); (AFI)
- ERSAF - Ente Regionale per i Servizi all'Agricoltura e alle Foreste (IT); (ERSAF)
- Haute école spécialisée de Suisse occidentale Valais, Institut Economie & Tourisme (CH); (HES-SO)
- Hochschule für Technik Rapperswil, Institut für Landschaft und Freiraum (CH); (HSR)
- HTW Chur, Institut für Tourismus- und Freizeitforschung (CH); (HTW)
- Hochschule München, Fakultät für Tourismus (DE); (HM)
- Institut Universitaire Kurt Bösch (CH); (IUKB)
- Ministero dell'Ambiente e della tutela del territorio e del Mare (IT); (MATTM)
- Regione Autonoma Valle d'Aosta, Direzione Ambiente (IT); (RAVA Env)
- Regione Autonoma Valle d'Aosta, Direzione Turismo (IT); (RAVA Tour)
- Unione Nazionale Comuni Comunità Enti Montani (IT); UNCEM
- United Nations Environment Programme in Vienna (AT); (UNEP)
- Universität Innsbruck, Institut für strategisches Management, Marketing und Tourismus (AT); (UIBK)
- Université de Savoie, EDYTEM/Institut de la Montagne (FR); (InstMont)
- World Wide Fund for Nature (IT); (WWF)
- Znanstvenoraziskovalni center Slovenske akademije znanosti in umetnosti, Geografski inštitut Antona Melika (SI); (ZRC SAZU).

Technical Secretariat:

- Informest (IT)
- Starter (IT).

1.4 Project activities

The project is organized into seven work packages (WPs), five of which are thematic ones. The partners involved in each of them cooperated in order to deliver concrete results that provided appropriate support in achieving project goals (see Figure 1.1.2).

ClimAlpTour archives

Figure 1.1.1: Project partners meeting in Ljubljana.

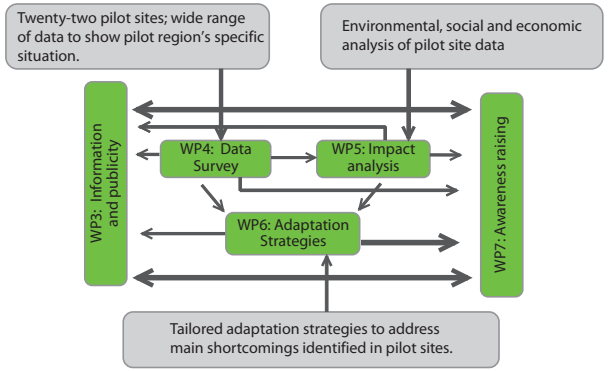

Figure 1.1.2: Work package structure in the ClimAlpTour project.

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World Wide Fund for Nature, Italy

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GENERAL OUTPUTS

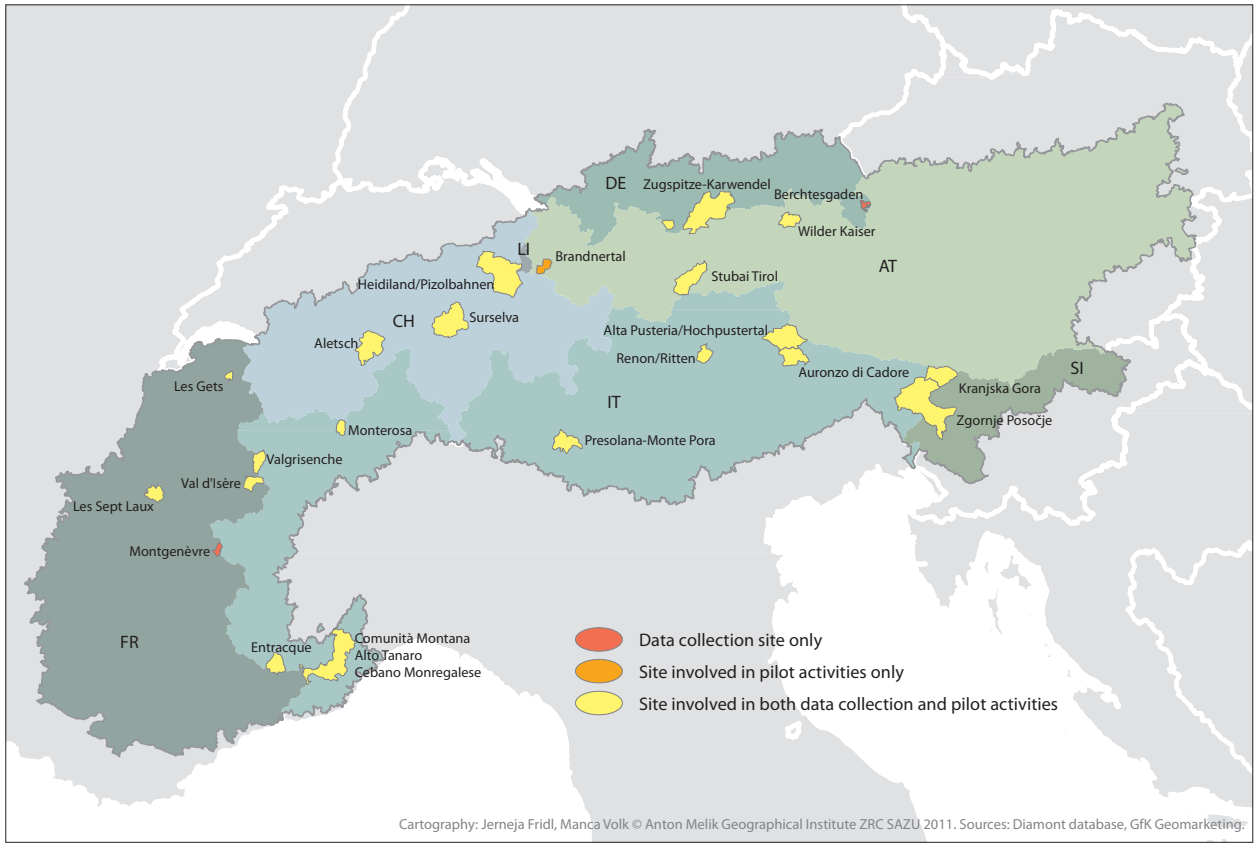


Figure 2.1.1: ClimAlpTour site locations.

2.1 Overview of ClimAlpTour sites

The ClimAlpTour project involved 22 sites, of which 21 participated in the data survey (WP4). For these 21 sites, secondary data (collection of existing statistics and other information) and primary data (new research carried out using an online survey of stakeholders and visitors) were collected between October 2009 and March 2010, for socioeconomic, environmental, meteorological, and tourism indicators. The reference year used for data collection was 2008. The choice of sites was left to each partner and was largely unrestricted. Thus, the sites selected are extremely diverse in size, elevation, activities, and so on, as the following analysis shows.[1]

Municipalities comprising the ClimAlpTour sites:

Austria

- Brandnertal: Brand, Bürserberg, Bürs
- Stubai Tirol: Fulpmes, Mieders, Neustift, Schönberg, Telfes
- Wilder Kaiser: Ellmau, Going, Scheffau, Söll

France

- Les Gets: Les Gets
- Les Sept Laux: La Ferrière, Les Adrets, Theys
- Montgenèvre: Montgenèvre
- Val d'Isère: Val d'Isère

Germany

- Berchtesgaden: Berchtesgaden

[1] There may be slight differences between earlier versions of these graphs and the final versions in section 2.1 because inaccuracies in pilot site data have been corrected in cooperation with the pilot sites. These final graphs replace all earlier versions.

- Zugspitze-Karwendel: subproject Grainau: Grainau; subproject Karwendel: Mittenwald, Krün, Wallgau, Kochel a. See, Jachenau, Lenggries

Italy

- Auronzo di Cadore: Auronzo di Cadore
- Comunità Montana Alto Tanaro Cebano Monregalese (hereinafter: Comunità Montana): Alto, Bagnasco, Battifollo, Briga Alta, Caprauna, Castellino Tanaro, Castelnuovo di Ceva, Ceva, Cigliè, Garessio, Igliano, Lesegno, Lisio, Marsaglia, Mombasiglio, Montezemolo, Nucetto, Ormea, Perlo, Priola, Paroldo, Priero, Roascio, Rocca Cigliè, Sale Langhe, Sale San Giovanni, Scagnello, Torresina, Viola
- Entracque: Entracque
- Alta Pusteria/Hochpustertal: Braies/Prags, Dobbiaco/Toblach, Sesto/Sexten, San Candido/Innichen, Villabassa/Niederdorf
- Monterosa: Ayas, Gressoney La Trinité, Gressoney Saint-Jean
- Presolana-Monte Pora: Angolo Terme, Bossico, Castione della Presolana, Cerete, Costa Volpino, Darfo Boario Terme, Fino del Monte, Onore, Rovetta, Rogno, Songavazzo
- Renon/Ritten: Renon/Ritten
- Valgrisenche: Valgrisenche

Slovenia

- Kranjska Gora: Kranjska Gora
- Zgornje Posočje: Bovec, Kobarid, Tolmin

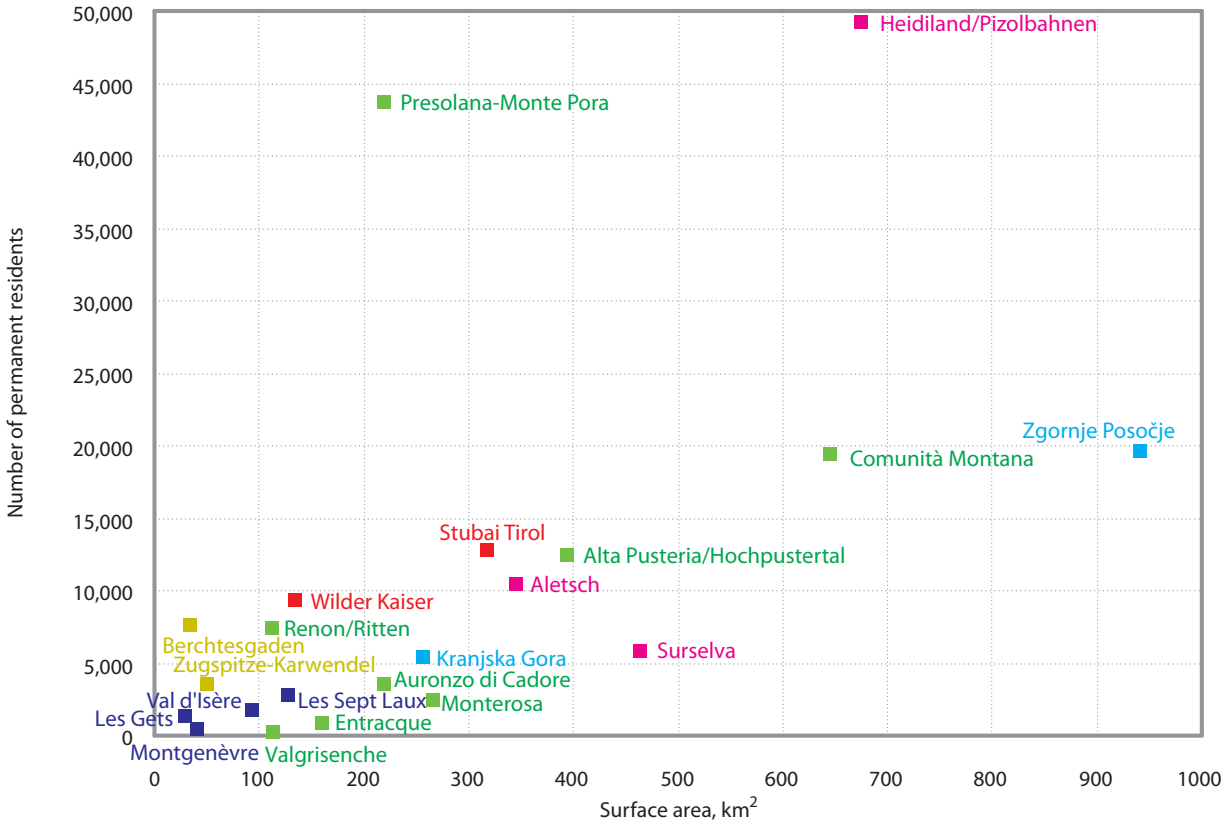


Figure 2.1.2: Size of pilot sites by resident population (2008) and area.

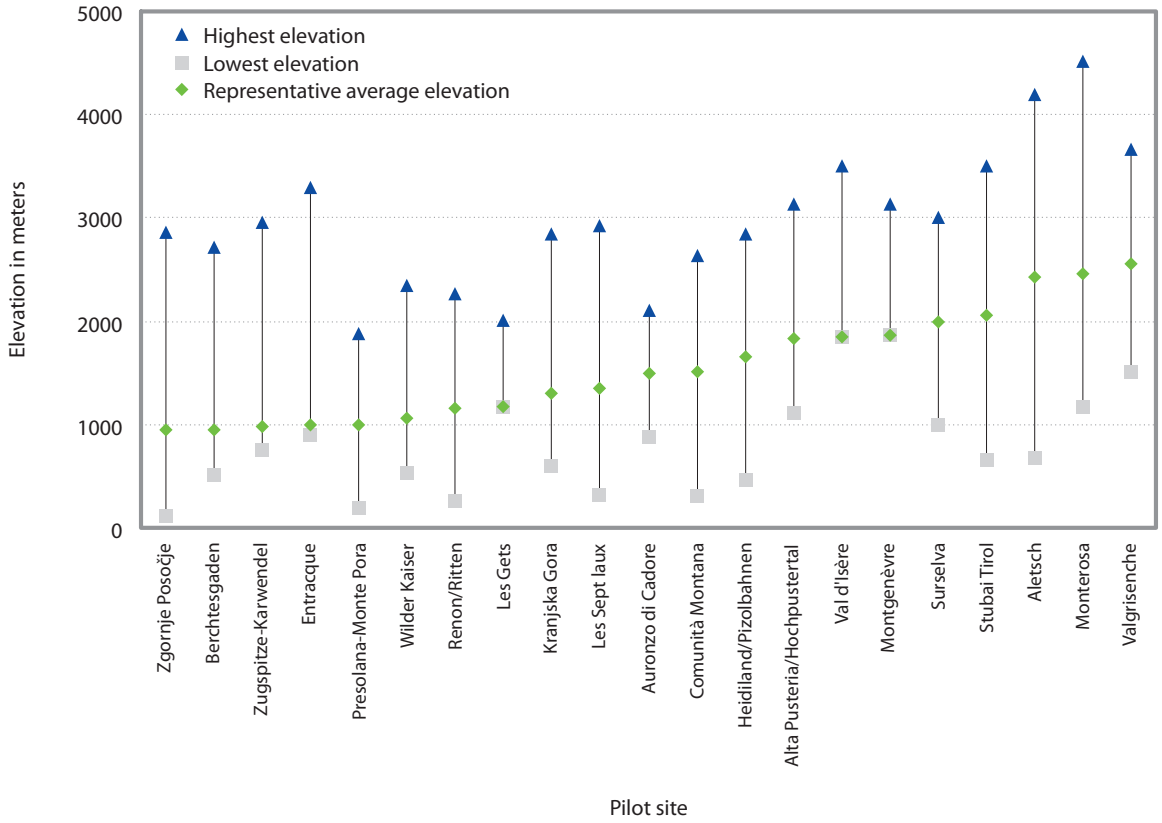


Figure 2.1.3: Elevation of pilot sites.

Switzerland

- Aletsch: Bellwald, Betten-Bettmeralp, Fieschertal, Fiesch, Naters, Riederalp
- Heidiland/Pizolbahnen: Amden, Bad Ragaz, Pfäfers, Flums, Glarus Nord, Mels, Quarten, Sargans, Walenstadt, Wartau, Weesen, Vilters-Wangs
- Surselva: Disentis/Mustér, Tujetsch, Medel (Lucmagn), Sumvitg

2.1.1 Size and elevation of ClimAlpTour sites

The majority of pilot sites cover less than 300 km^2 and have fewer than 10,000 permanent residents. A second group can be identified, with an area between 300 and 500 km^2 and fewer than 15,000 permanent residents (Figure 2.1.2).

The four remaining pilot sites are considerably larger. In terms of area, the Zgornje Posočje is the largest site at 941.5 km^2, and Heidiland/Pizolbahnen has the highest number of permanent residents (49,161).

The "representative average elevation" was calculated by partners using one of three possible methods: calculation based on a digital elevation model; use of one or several principal tourist sites as representative of the majority of the site or the most important area for tourism purposes; or calculation of the arithmetic mean of the highest and lowest points of the pilot site (Figure 2.1.3).

For details of the method used by each pilot site, please refer to the project website.

Using the representative average elevation, the Zgornje Posočje is the lowest of the pilot sites at 948 m, although it rises to 2,858 m at its highest point. Valgrisenche has the highest average elevation at 2,556 m. The range of elevation covered by the pilot sites also differs greatly; for example, Les Gets covers a range of 830 m and Aletsch extends over 3,527 m. These differing elevations and ranges impact the meteorological conditions experienced by the pilot sites, their economic and tourism activities, and their culture and traditions.

2.1.2 Nature of tourism in each pilot site

"Intensity of tourism" (Figure 2.1.4) compares the annual number of tourist nights with the number of permanent residents. An "Intensity of tourism" rating greater than 1 indicates that tourism is a dominant industry for the pilot site. The diversity between the pilot sites is again extremely high. For Val d'Isère and Montgenèvre, the "intensity of tourism" ratings of 11.03 and 9.38 respectively show the overwhelming dominance of tourism in these pilot sites.

Both pilot sites are well known, high-elevation ski resorts whose local economies are based almost entirely on tourism and which have very small year-round populations. At the other end of the scale, Comunità Montana and Presolana-Monte Pora have "intensity of tourism" ratings of 0.02 and 0.06 respectively.

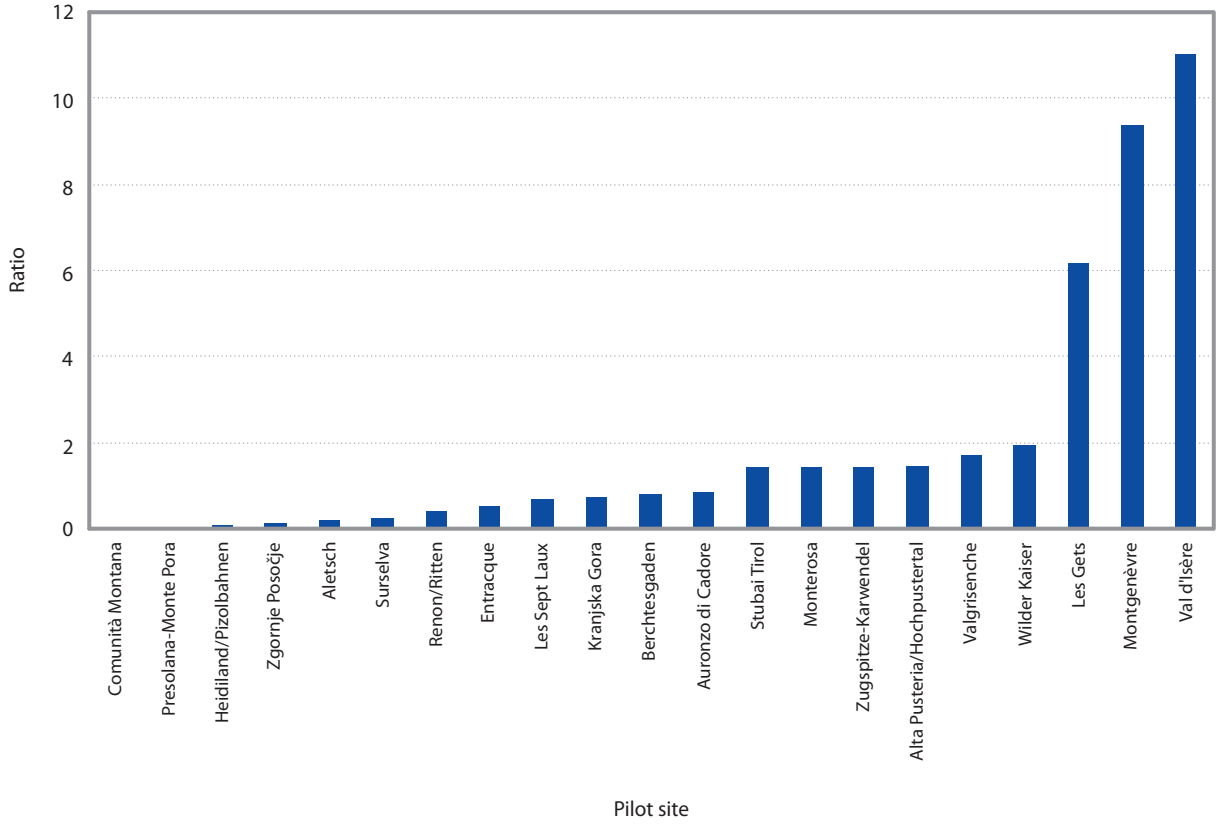


Figure 2.1.4: Intensity of tourism (2008).

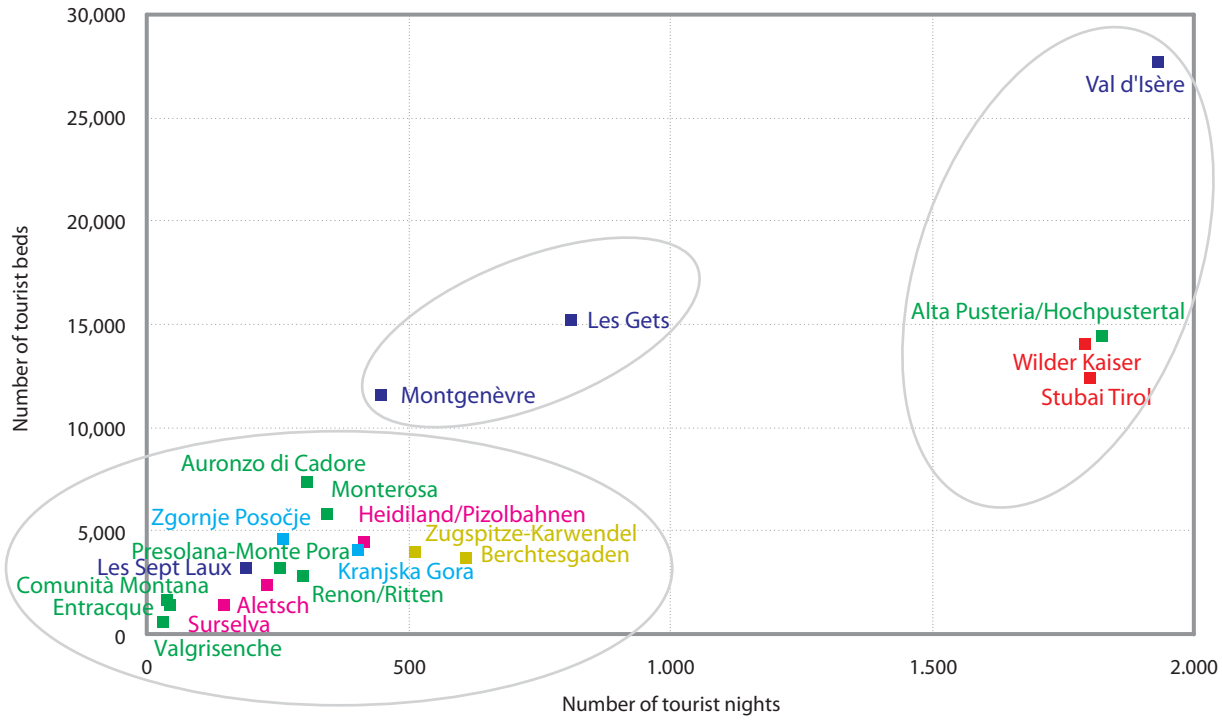


Figure 2.1.5: Comparison of number of beds and number of tourist nights (2008).

Comunità Montana has a low number of tourist nights compared with the other pilot sites, whereas Presolana--Monte Pora has one of the highest resident populations of all the pilot sites. The low figure thus suggests that tourism is only one of many economic activities in these pilot sites.

The majority of pilot sites reported fewer than 10,000 tourist beds and fewer than 500,000 tourist nights in 2008 (Figure 2.1.5). Val d'Isère has the highest number of tourist beds, with over 27,500, although it had a similar number of tourist nights as Alta Pusteria/ Hochpustertal, Wilder Kaiser, and Stubai Tirol, which have considerably fewer tourist beds. Les Gets, Les Sept Laux, and Montgenèvre have a similar number of tourist beds as these sites, but reported significantly fewer tourist nights in 2008. This suggests that Alta Pusteria/Hoch-pustertal, Wilder Kaiser, and Stubai Tirol have higher occupancy rates than the French pilot sites.

The annual gross occupancy rate (Figure 2.1.6) is a common measure calculated by almost all tourist resorts. The annual rates provided by the pilot sites were calculated using their own definition of the number of days in the tourist season, which prevented like-for-like comparison of the pilot sites. In order to compare the sites, an annual rate was calculated, taking the number of tourist nights in 2008 divided by the number of tourist beds × 365 days. The summer and winter seasons were calculated similarly, using 182.5 days (6 months

each). This method tends to understate the gross occupancy rate of each pilot site compared to the figure calculated by the site itself; however, it serves to highlight the potential for pilot sites to fill their tourist beds at other times of the year. One of the objectives of the ClimAlpTour project is to propose strategies for the tourism industry to help it capitalize on this potential in the future.

A comparison of the importance of summer tourism with winter tourism can be made by calculating the ratio of the number of tourist nights in summer to the number of tourist nights in winter (Figure 2.1.7). A figure greater than 1.5 is taken to indicate that the summer season is more important for the pilot site, and a figure less than 0.75 indicates a dominance of winter tourism. When the ratio is around 1 (0.75–1.5), this implies the fairly equal importance of summer and winter tourism, which is referred to as "all seasons." (The thresholds were set up such that they produced an even distribution of pilot sites). The diversity of pilot sites is again clear, with some sites (Zgornje Posočje, Valgrisenche) focusing very strongly on summer tourism, whereas in others, notably the French pilot sites Val d'Isère, Montgenèvre, and Les Gets, winter tourism dominates.

Based on this analysis of the importance of summer tourism compared with winter tourism, the ClimAlpTour pilot sites can be divided into three classes:

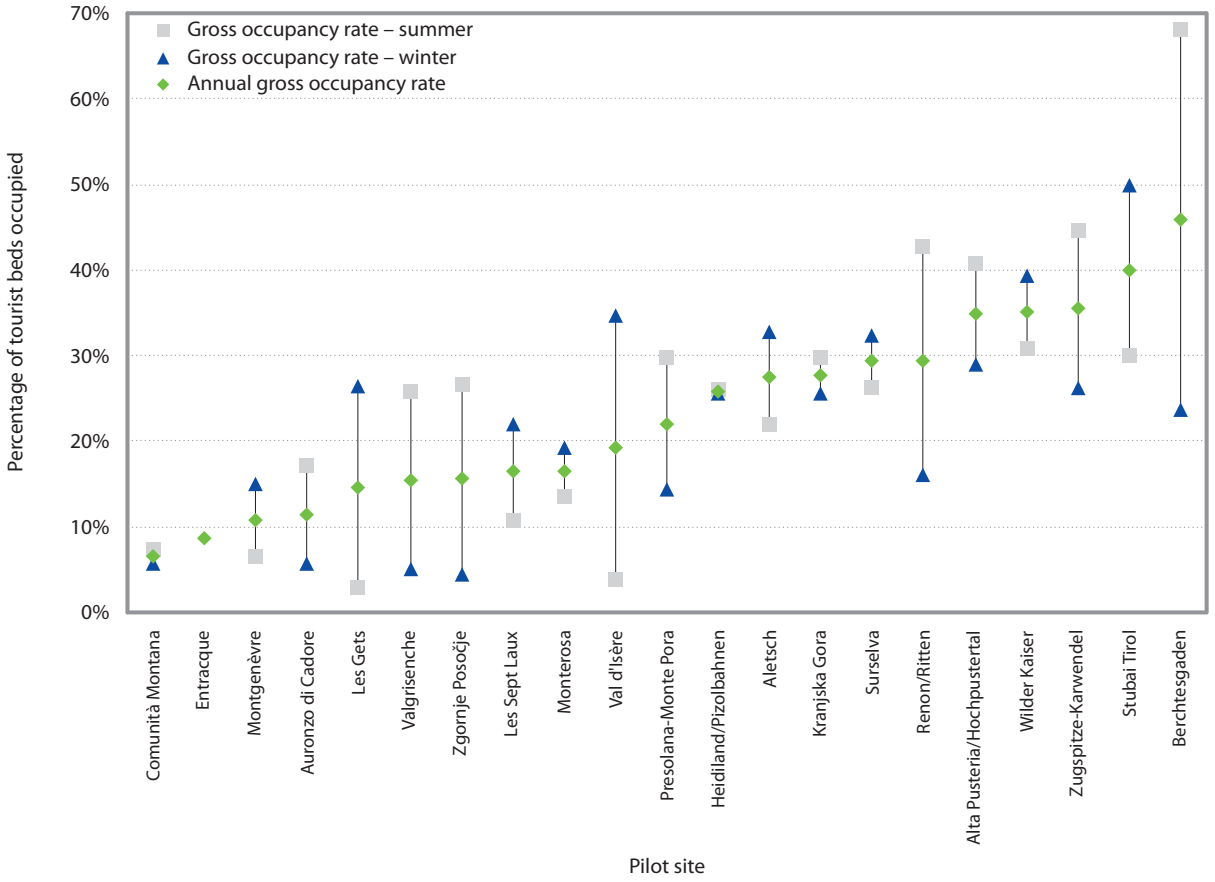


Figure 2.1.6: Gross occupancy rate (2008).

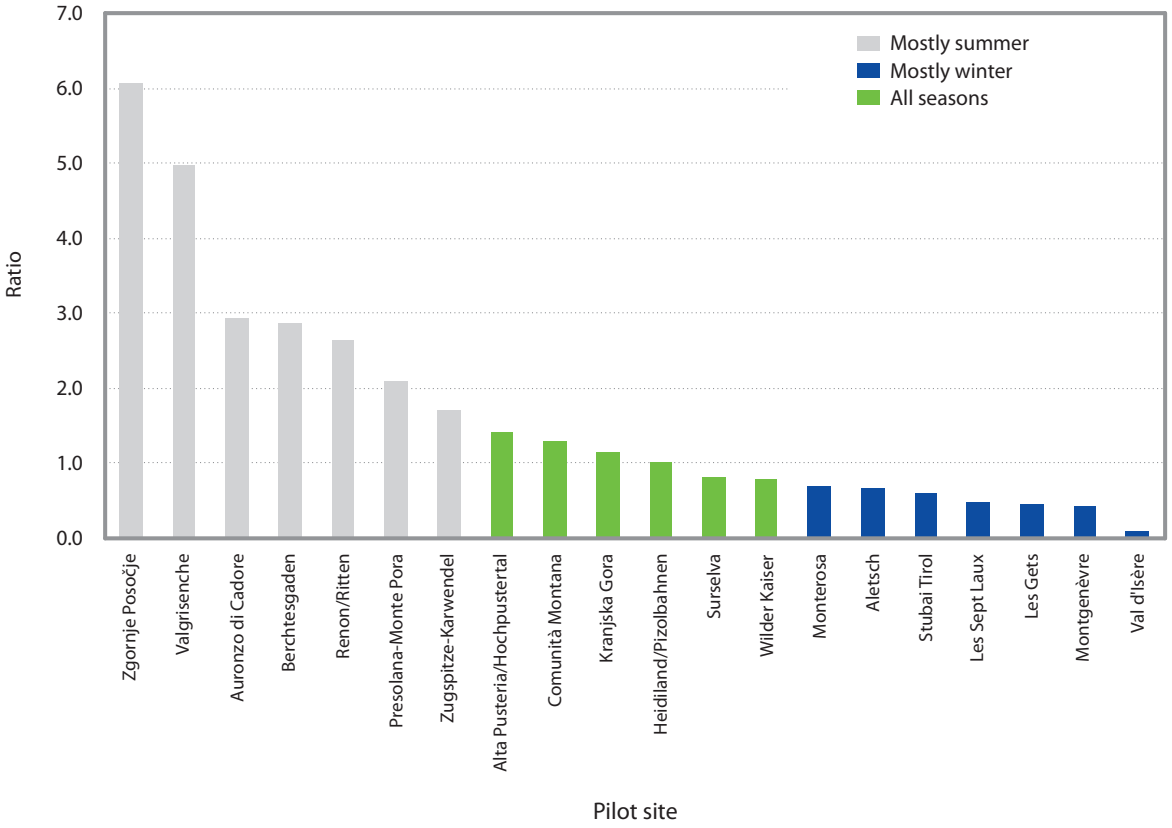


Figure 2.1.7: Ratio of summer tourist nights vs winter tourist nights.

[2] Pilot activities were not carried out, and so Berchtesgaden is not included in section 3.

[3] At the Zugspitze-Karwendel pilot site, activities are concentrated in two subprojects:
- Development and implementation of an Alpine Nature Experience Park (Naturerlebnispark) for the Municipality of Grainau which being located at the foot of the Zugspitze represents the "Zugspitze" part of the pilot site name. Data were collected only for Grainau.
- Gradual realization of a nature park in the Karwendel Region which represents the second part of the pilot site nomination.

[4] Data collection was not carried out, and so Brandnertal is not included in the figures and results presented in section 2.1. The summer:winter tourism ratio was calculated in order to position the pilot site in a suitable group.

[5] Pilot activities were not carried out, and so Montgenèvre is not included in section 3.

- Mostly summer tourism pilot sites:
  - Auronzo di Cadore, Berchtesgaden[2], Presolana--Monte Pora, Renon/Ritten, Valgrisenche, Zgornje Posočje, Zugspitze-Karwendel[3].
- All-seasons pilot sites:
  - Comunità Montana, Entracque (based on qualitative assessment), Heidiland/Pizolbahnen, Alta Pusteria/ Hochpustertal, Kranjska Gora, Surselva, Wilder Kaiser.
- Mostly winter tourism pilot sites:
  - Aletsch, Brandnertal[4], Les Gets, Les Sept Laux, Monterosa, Montgenèvre[5], Stubai Tirol, Val d'Isère.

2.2 Climate change studies

2.2.1 Overview of climate change research

The *Climate Changes over the Alps* report (Gallée 2010) gives an overview of some new findings obtained from climate change research since the publication of the IPCC AR4 report (Solomon et al. 2007). It considers long-term warming due to the emission of greenhouse gases (GHGs) as well as natural factors affecting the climate system and internal climate variability.

The climate of the Alps is strongly linked to the climate of Europe. One difficulty is that the European climate is influenced more or less with the same intensity by:

- Anthropogenic factors (emission of aerosols and greenhouse gases);

- Natural factors (solar forcing, volcanic eruptions); and
- Internal variability (change in atmospheric circulation over the Atlantic Ocean).

Global climate models, including a coupled atmosphere-ocean general circulation model and a carbon cycle model, are able to simulate temperature evolution at the global and continental levels sufficiently accurately to determine the effects of anthropogenic and natural factors on recent climate changes. In particular, it has been found that global warming results from an increase of greenhouse gases in the atmosphere (see, e.g., Figure TS.29 in the IPCC AR4 report; Solomon et al. 2007).

A further conclusion of recent research is that atmospheric circulation changes play an important role in changes in the European climate. Variations of the North Atlantic Oscillation (NAO) influence winter extremes such as minimum temperature and precipitation, and the soil moisture deficit amplifies summer heat waves.

A new feature is the unexpected weakening of the solar cycle. For the first time since anthropogenic climate change began accelerating, solar and anthropogenic trends are now moving in opposite directions. It is possible that a decrease in solar activity could influence atmospheric circulation, causing a cooling of the European climate during winter and subsequently counteracting global warming, but only temporarily and regionally.

2.2.2. Climate change and tourism in the Alps

The *Climate Change and Tourism in the Alps* study (Chaix 2010) analyzes the potential impacts of climate change on various tourist activities and on the ClimAlpTour pilot sites as a starting point for local decision-makers and stakeholders in the development of adaptation strategies for tourism. The analysis is subject to significant uncertainty relating in particular to the meteorological data for each pilot site (meteorological measurement stations are often some distance from the pilot site, experience different meteorological conditions, and have relatively short data series), knowledge of the specific characteristics of a pilot site (its detailed topography and any micro-climate conditions), and knowledge of the specific features of tourism activities at each site. Pilot sites are therefore urged to use the analysis as a basis from which to address the issues with experts that know the local area, the challenges, and the potential impacts of climate change at the local level (university scientists, associations, etc).

Long-term climate data series (temperature, rainfall, and snowfall, among others) are used to establish past changes in the climate. The Histalp study (www.zamg.ac.at/histalp) of alpine climate data series highlighted four alpine zones for which temperature changes have been practically identical 1850 (see Figure 2.2.1).

The data show a gradual temperature rise of around +0.75 °C since the end of the nineteenth century up

	1850/2007	1850/1975	1975/2007
NW	+1.71 °C	+0.84 °C	+1.63 °C
NE	+1.52 °C	+0.77 °C	+1.5 °C
SW	+1.51 °C	+0.75 °C	+1.53 °C
SE	+1.37 °C	+0.725 °C	+1.62 °C

Table 2.2.1: Increase in temperatures for each given period (linear trend). www.zamg.ac.at/histalp

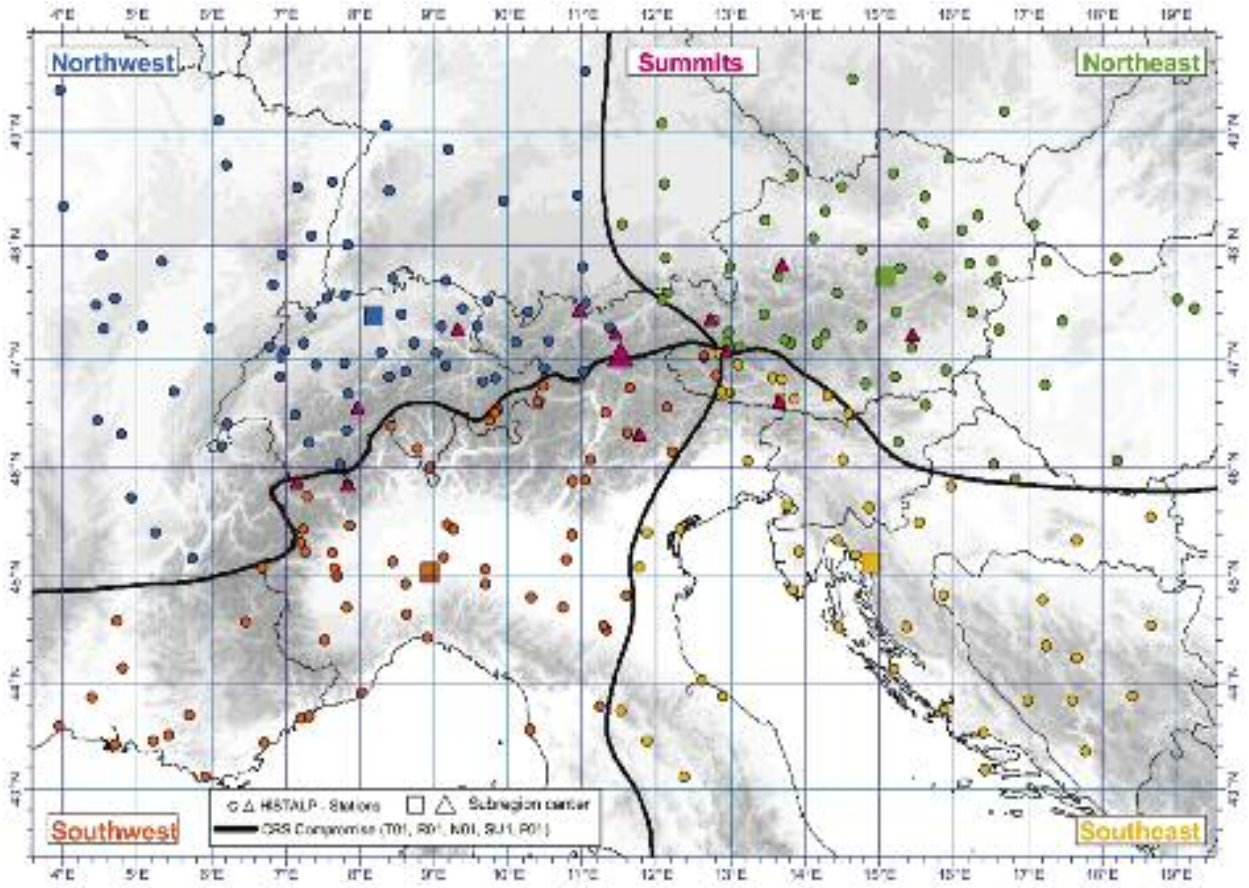


Figure 2.2.1: Map of positions of measuring points used in the Histalp project. Division of the Alps into four climatically homogenous sub-regions (NW, SW, NE, SE). www.zamg.ac.at/histalp

to the 1980s and a significant acceleration since that time (see Table 2.2.1).

In terms of rainfall, it remains relatively difficult to identify a significant trend. However, as can be observed on the map in Figure 2.2.2, the southern and eastern Alps have experienced a decrease in rainfall since the 1960s, a phenomenon also supported by the Histalp data.

Climate models such as that developed in the EU project *Prudence* and certain IPCC models centered on Europe offer credible scenarios for defining the alpine environment, indicating potential differences between the various regions of the Alps.

At the overall level, the possible impacts of climate change in the Alps are:

- Increase in temperatures
- Changes in rainfall patterns, with more marked droughts in summer
- Reduction in snow cover
- Changes in the regimes of water courses, with more dry courses in summer
- Reduction in water resources
- Changes in agricultural practices, biodiversity, and thus landscapes
- Increase in natural hazards: rock falls, landslides, falling ice blocks, and floods.

All of these impacts could directly or indirectly affect tourist activities in various ways.

Impact of climate change on summer tourism

- The principal threat to hiking, mountaineering, and high-mountain activities is the increase in natural hazards such as avalanches and falling ice blocks caused by melting glaciers, landslides due to increased incidence of extreme rainfall, and mudslides and rock falls resulting from the melting of permafrost.
- Mountain biking may be at risk from an increase in natural hazards but otherwise should not be affected by climate change.
- Whitewater activities such as canyoning depend on the behavior of water courses. In the context of climate change, one can expect significant stress on water resources, with more severe low water levels in summer and thus the risk of rivers drying up, even if glacier melt (if there is a glacier) compensates for the hydrological shortage in the short term. It is important for water managers and public authorities to deal with the problem of water resources with great care because water constitutes the cornerstone of mountain tourism.
- With the increase in temperatures, we can expect an increase in the popularity of swimming (in lakes and swimming pools), bringing with it potentially detrimental environmental impacts.
- At the same time, the increase in temperatures is also likely to bring more tourists to the Alps in summer when they attempt to escape the higher temperatures at lower elevations.

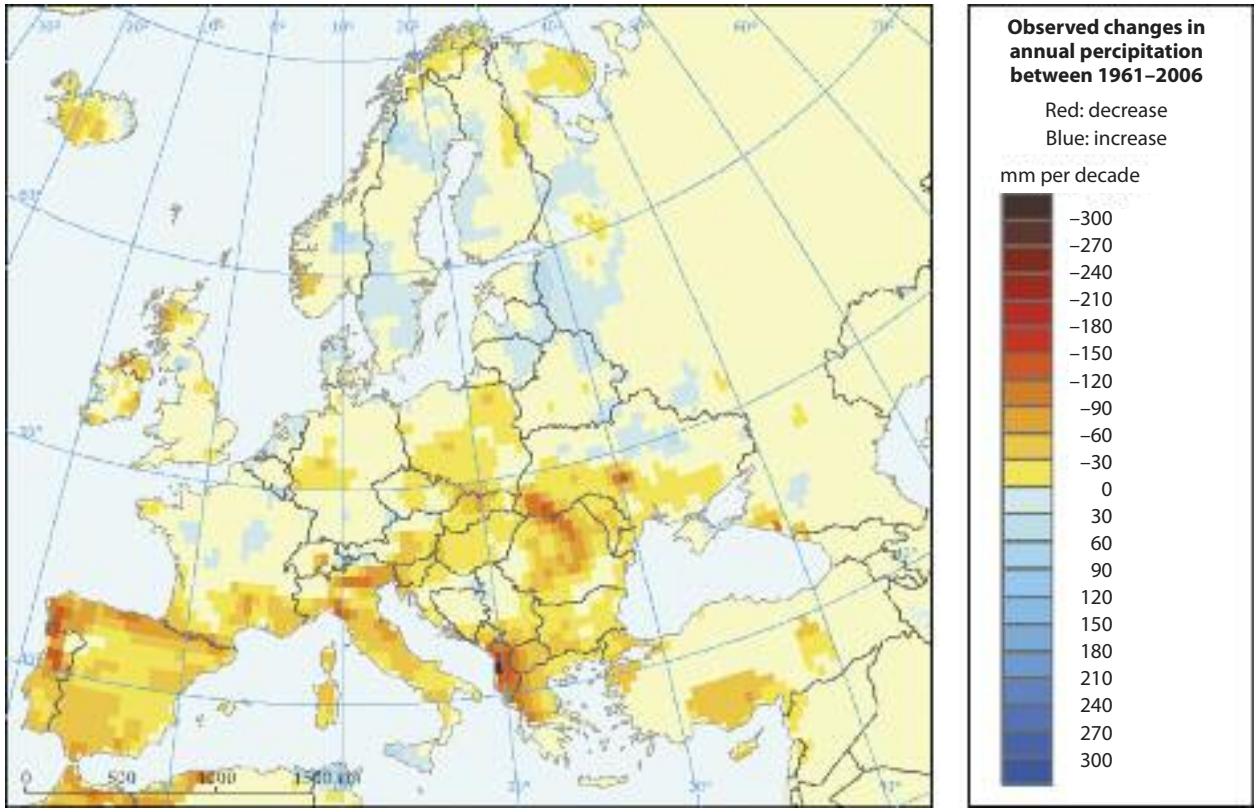


Figure 2.2.2: Observed changes in annual precipitation between 1961 and 2006. EEA Report, Impacts of Europe's changing climate, 2008 indictor-based assessment

Impact of climate change on winter tourism

- Cross country skiing faces the risk of little or no snow in individual years, which could preclude the activity. Although trails are often at relatively low elevations, snow cover is often less exposed to the sun because the trails are through forests or at the bottom of slopes, and techniques for packing the snow and planning the trails are also effective. Sites that are already experiencing problems with a lack of snow and cannot extend their domains to higher elevations will become increasingly vulnerable for cross country skiing activities.
- Downhill skiing is the tourist activity most vulnerable to climate change. Since the 1980s, the average winter temperature (December–February) in the Alps has increased by 1 °C and inter-year variability has also become more pronounced, with winters without snow such as in 2006/7 alternating with winters with high snowfall such as in 2008/9. The impacts of climate change on the winter season are far from linear and it is the years with a lack of snow that concern resort managers. Over the long term, important changes in snow cover will be seen if temperatures continue to increase, the main consequences being the rise in the rain-snow limit and the rapid melting of the snow cover in anti-cyclonic weather or at the beginning and end of winter. Furthermore, technical adaptation solutions (artificial snow, etc.) will not be able to compensate entirely for the lack of natural snow unless extraordinary new technical advances are made.

To assess the snow reliability in the ClimAlpTour pilot sites, the study used the technique developed by the OECD based on the one-hundred day rule and the elevation of the reliable natural snow limit. This limit fluctuates from one place to another in the Alps because the climate itself varies enormously in different areas of the Alps. Further details and additional information can be found in the OECD study (*Climate Change in the European Alps: Adapting Winter Tourism and Natural Hazards Management*, OECD 2007).

The effects of warming on the natural snow reliability limit also need to be considered. According to estimates, in a warmer climate the snow line, and also the limit of natural snow reliability, will rise by 150 m for each degree Celsius increase in temperature (Föhn 1990; Haeberli & Beniston 1998). As a consequence, a change in the climate could result in the limit of natural snow reliability rising by 150 m, 300 m, or 600 m, respectively, if the warming were 1, 2, or 4 °C. With the use of climate models, it is possible to determine a time horizon depending on the anticipated temperature increase.

Additional local factors were also considered in order to take into account the actual characteristics of climate, topography, and use. The orientation and the gradient of slopes have an important impact on the reliability of snow cover on any particular ski slope and the general orientation of slopes in a particular ski resort affects the overall reliability of snow for the resort. For further details of the analysis of snow reliability of each pilot site, please refer to the *Climate Change and Tourism in the Alps* study (Chaix 2010).

2.3 Adaption strategies of alpine tourism on climate change: results of an alpine-wide Delphi expert survey

2.3.1 Introduction

The impacts of climate change have great importance for the future of alpine tourism. The fragile alpine space is especially vulnerable due to its special position. In particular, alpine tourism will be affected by the anticipated climatic changes. In addition to mitigating climate change, another goal is to develop and implement adequate adaption strategies for alpine tourism destinations (cf. Abegg et al. 2007; CIPRA 2006; IPCC 2007). It is impossible to strictly separate the dimensions of adaption and mitigation, however; adaption and mitigation strategies are two sides of the same coin.

In the framework of the project ClimAlpTour, a Delphi expert survey was undertaken to learn about adaption strategies of alpine winter and summer tourism. The

expert survey was intended to find answers to the question of how guests react to the impacts of climate change. Various types of adaption strategies and the roles of single actors in the adaption process were analyzed.

2.3.2 Method and approach

The Delphi expert survey takes a qualitative social research approach. A group of experts is surveyed about a certain issue in a multi-level procedure with the intention of gathering a systematic collection of expert opinions.

This Delphi survey was carried out with a large number of experts in research, tourism, public administration, and NGOs.[6] The following questions formed the core of the study:

- How does climate change influence tourist demand and tourist behavior, particularly with regard to choice of destination and activities?
- What strategies exist for alpine tourism destinations to adapt to the impacts of climate change?
- What are the relevant actors and actor groups? Which roles do they have in the adaption process?

The experts' opinions were questioned in two survey rounds between March 2009 and October 2010[7]. The answers of the first survey round were evaluated by qualitative criteria. Based on those results the experts were again approached with further developed questions in a second survey round.

2.3.3 Results

Guest behavior, choice of destination, guest activities

According to the experts, the majority of guests acknowledge the existence of the problem of climate change. But most of them do not show much willingness to change their own vacation behavior. There is also a significant minority of guests who are willing to deal with the impacts of climate change in their daily lives and vacations, but only without major personal constraints.

Most guests will choose traditional vacation destinations in the future. More discerning target groups increasingly prefer authentic vacation destinations. The demand for authentic vacation destinations will therefore further increase, yet not outstrip the demand for conventional tourism services.

With regard to the summer season, alpine destinations will have a competitive advantage compared to some other destinations (e.g., the Mediterranean area) due to their moderate summer temperatures. In the winter an increasing number of tourists may avoid some alpine destinations due to there being less natural snow. To a certain degree attractive offers independent of snow can work against this trend. Another common strategy is targeted artificial snow-making. However, this is said to be relatively expensive and increases strain on natural resources.

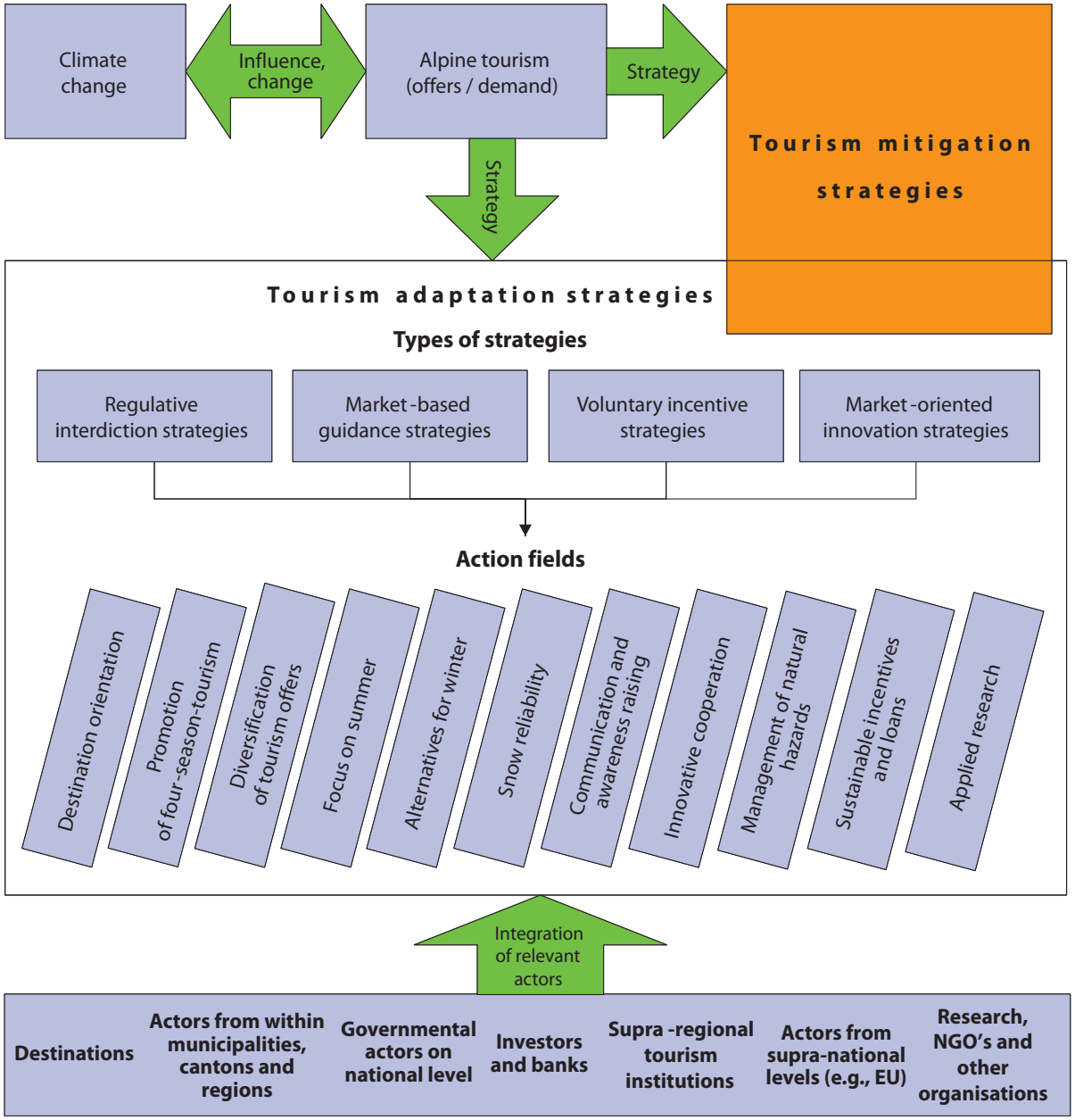
Many guests will increasingly turn towards skiing areas in higher altitudes that are sure to have snow in order to be able to participate in traditional winter activities. Some guests will increasingly respond to other winter activities such as winter hiking, other nature-based snow sports activities, and activities independent of snow (e.g., wellness, entertainment). Snow-independent activities will have increasing significance in addition to snow-dependent activities, particularly in low-lying ski areas.

Adaptive strategies and actor groups

The experts surveyed identified a large number of possible adaption strategies and allocated them to the various actor groups. The bandwidth of these strategies can be classified into eleven superior action fields and

[6] The choice of experts was kindly supported by the ClimAlpTour partners in order to find different experts regarding branch, departments and countries with respect to language regions. In the first survey round, 39 experts from six alpine countries took part, and in the second survey round 18 experts, among them only one expert from France and two from Italy.

[7] The survey was carried out with an online evaluation tool "Q-Feedback" of HSR. The questionnaire was available in German, French, Italian and Slovenian, and comprised open and closed questions as well as comment fields.



four different types of strategies. The coherence between types of strategies, action fields, and actor groups is displayed in figure 2.3.1.

The four types of strategies have various weights according to the various action fields:

- "Regulative interdiction strategies" are geared to the framework conditions of the economic activities. They primarily concern action fields in connection with the protection of nature, the landscape, and the environment (e.g., relating to protection from natural hazards, artificial snow-making, or extending ski areas in higher locations). Interdiction strategies have minor importance from the experts' point of view.
- "Market-based guidance strategies" tend to influence economic processes by financial stimulation. They are concentrated on the framework conditions of the economy and society and therefore particularly on the mitigation of climate change (e.g., through regulating energy consumption using energy prices).
- "Voluntary incentive strategies" stimulate the tourism actors to make voluntary behavior modifications through encouragement, awareness-raising, and exchange of experiences. From the experts' point of view this has major importance and can be used in almost all action fields given (e.g., in the reorientation and diversification of the destinations).

Figure 2.3.1: Action fields, types of strategies, and relevant actors.

- "Market-oriented innovation strategies" consist of innovative tourist products and services that regard adaption as the core business of destinations and tend to influence the tourist market and guest demand. This involves all the action fields with regard to the orientation and diversification of destinations and the development of new tourist opportunities. The experts also consider these strategies to be very important.

The single actor groups have various importance and specific functions in the adaption process.

- Municipalities, cantons, and regions, as well as national governments, have the highest importance. Next to legal execution, their function comprises raising awareness at tourist destinations and among actors and creating framework conditions that promote adaption.
- The tourist destinations and their actors are the base of the tourism economy and are thus the key actors for implementing measures. Yet their importance is considered to be less than that of the governmental actors.
- Medium importance is attached to supra-regional tourism institutions (e.g., lobbying, information, and awareness-raising), actors at supra-national levels (e.g., creation and coordination of legal frameworks for adaption) and actors from research, NGOs, and other organizations (e.g., professional and critical monitoring, awareness-raising).
- Least importance is attached to investors and banks (e.g., financing, lending). Yet it is assumed that there are great differences between the individual countries.

The various actor groups have varying importance according to the types of strategies. Regulative interdiction strategies are mostly the duty of the governmental action groups at various levels. Voluntary and market-oriented strategies are more within the responsibility of the tourist actor groups.

2.3.4 Conclusion

Even with considerable climate change, traditional winter tourism will maintain its function in the short and medium terms. Major changes are to be expected in the medium and long terms. The question arises whether snow-independent alternative activities will be able to compensate for the economic importance of traditional ski tourism.

Next to climate change, the reaction of the alpine tourism market strongly depends on future trends and preferences among various guest segments. The majority of guests do not seem to be up to adapting to the impacts of climate change on a voluntary base. Many guests react by choosing different destinations (e.g., areas guaranteed to have snow) as long as possible.

While winter tourism is under increased pressure of the impacts of climate change, alpine summer tourism can actually profit from climate change due to the competitive advantage of the Alps. However it is assumed that the increases in summer cannot compensate for the expected decreases in winter.

While the voluntary types of strategies receive the highest approval by the experts, the regulative strategies are judged skeptically. These should be chosen only when voluntary and market-oriented strategies do not work.

External initiatives and adaption to various levels are of high importance. Although the tourist destinations and their actors are key for realizing change, governmental actors have high importance for raising awareness and creating framework conditions.

It became apparent that destinations' strategies for adapting to climate change should be an integral part of the destinations' development strategies and not be treated in isolation. Regarding the choice of strategies it has to be taken into account that the Alps are not a homogenous region. There are large regional differences regarding natural conditions and the landscape as well as various socioeconomic aspects. Moreover, the tourist adaption process also has an important alpine-wide and transnational dimension, for example with regard to the establishment of alpine-wide standards for how to handle the impacts of climate change.

2.4 Product portfolio development

2.4.1. Basic approach and use of tourism product portfolios in strategic destination planning

The portfolio method is a well-known analysis and visualization technique in business administration. Its main purpose is to support strategic planning and change management processes in complex environments. By transferring this method into regional planning and destination management, ClimAlpTour offers new possibilities for climate change-related adaptation processes:

- Prioritizing adaptation needs and options by primarily analyzing the economic consequences of various changes in the tourism activities offered by a destination;
- Ensuring that future local adaptation strategies are readily applicable in the specific region;
- Visualizing future scenarios based on current tourism product portfolios by using the same technique;
- Deducing systematic profiles, and showing tourism-related strengths and weaknesses of the destination;
- Creating a basis for discussions in various strategy-development and decision-making contexts (local workshops and superregional institutions).

Tourism-oriented product portfolios show both the current structure of the tourism supply within a des-

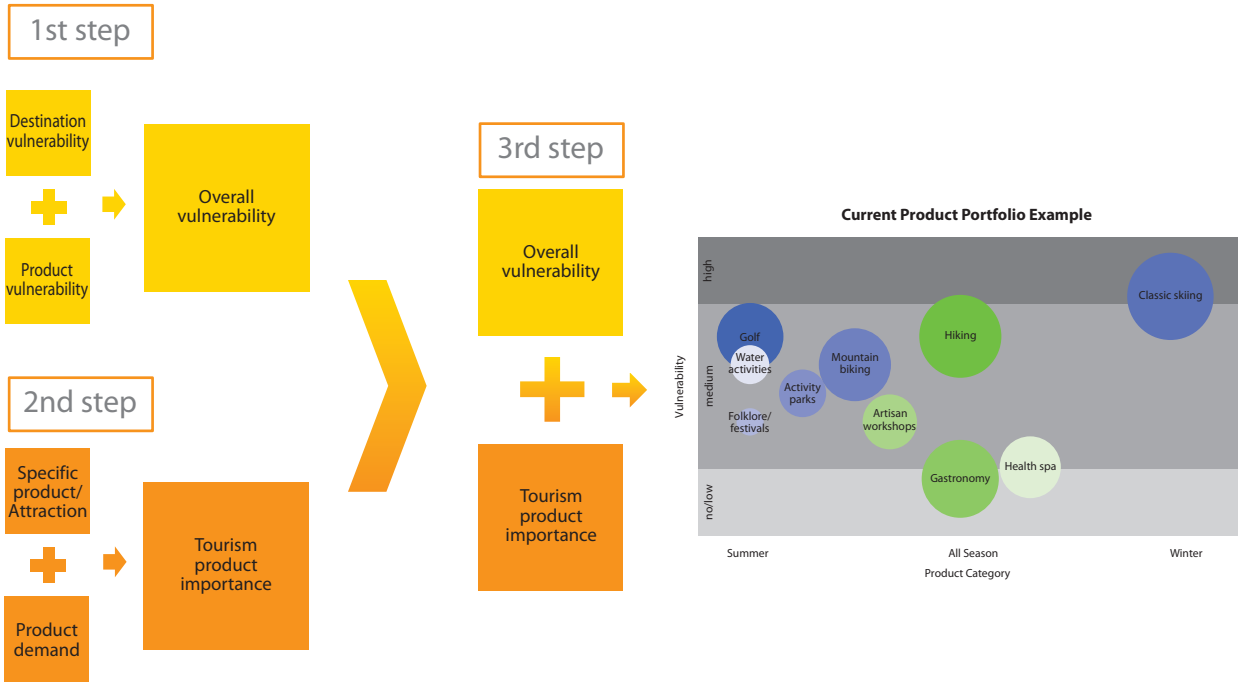


Figure 2.4.1: Development steps for pilot site product portfolios.

tination and vulnerability in future climate change conditions.

The portfolio method has a strong economic focus because the regional tourism business is being analyzed. However, ecological and social impacts of climate change are also considered (as a common procedure in the ClimAlpTour project).

2.4.2 Product portfolio development steps

The development of product portfolios is a complex process because many parameters must be taken into consideration, measured, analyzed, and combined so that a comprehensive portfolio can be created. Within ClimAlpTour, the portfolios were produced in order to show the most important tourism products with regard to their vulnerability level within the specific destination. The portfolios were developed in a three-step approach.

1st step: Consisting of both destination and product vulnerability, the overall vulnerability of each pilot site was first estimated. In the graph the overall vulnerability is shown in three classes (high, medium, and low) on the *y*-axis.

2nd step: Then the most relevant tourism products of the pilot sites were named and categorized into summer, winter, or all-season tourism products. This categorization is shown on the *x*-axis. The importance of these products was estimated for each pilot site either by simple ranking or by sales figures. In the graph this is visualized by the size of each bubble.

3rd step: Finally both the overall vulnerability and the tourism product importance were combined in the graph (categorized by season focus) and a product portfolio could be created for each pilot site (see Figure 2.4.2). The further a bubble enters the dark grey area, the more vulnerable the product is.

The process of creating the portfolios (steps 1 through 3) is explained in detail in the following sections.

2.4.3 Assessing vulnerability

One challenging task was assessing the vulnerability of both the destination and tourism products.

In the research literature it is difficult to find consistent descriptions of vulnerability. There is no common understanding of vulnerability in the sense of what it describes, what factors constitute it, or how it can be measured. Definitions of vulnerability vary depending on the context (economic, environmental, or social) in which it is seen. However, two fundamentally different approaches can be distinguished: the "risk or natural hazard approach" from the perspective of nature or climate, and the "social vulnerability approach" from the perspective of society and economics. The former describes vulnerability as a dose-exposure relation in which the external incident determines the degree of vulnerability, whereas the latter mainly con-

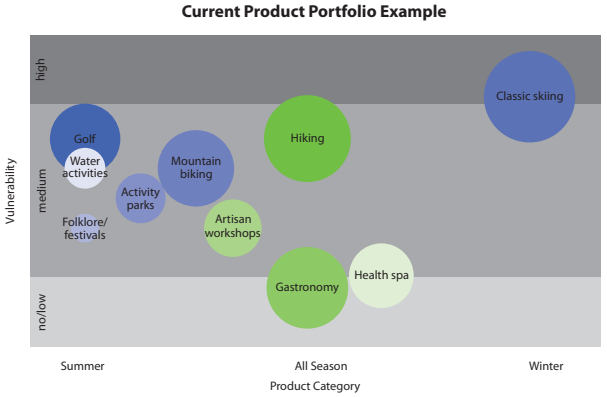


Figure 2.4.2: Example graph for product portfolio development.

siders socioeconomic and structural parameters without the necessity of an external incident. An integrated approach should consider both the determining impact of an external event and the socioeconomic factors (Dietz 2006). Because of this socioeconomic component, a variety of data must be collected from various sources in order to measure vulnerability. Whereas climate data may be available for specific points over a given landscape, socioeconomic and demographic data are often only available at geopolitical levels (national, state, or local government jurisdictions), so that information needs to be collected at different scales and comes in different forms (e.g., quantitative vs. qualitative) (Preston 2008).

According to Preston (2008) "some of the core challenges that emerge in attempting to map vulnerability are the identification of appropriate information and indicators to define biophysical and social/ecological vulnerability and the manner in which information should be integrated" (Preston 2008).

Vulnerability can be divided into the economic vulnerability of a country or a business, ecological vulnerability of a region or ecosystem, and social vulnerability of a population group. However, there is no clear definition of the boundaries between economic, ecological, and social vulnerability (Dietz (2006).

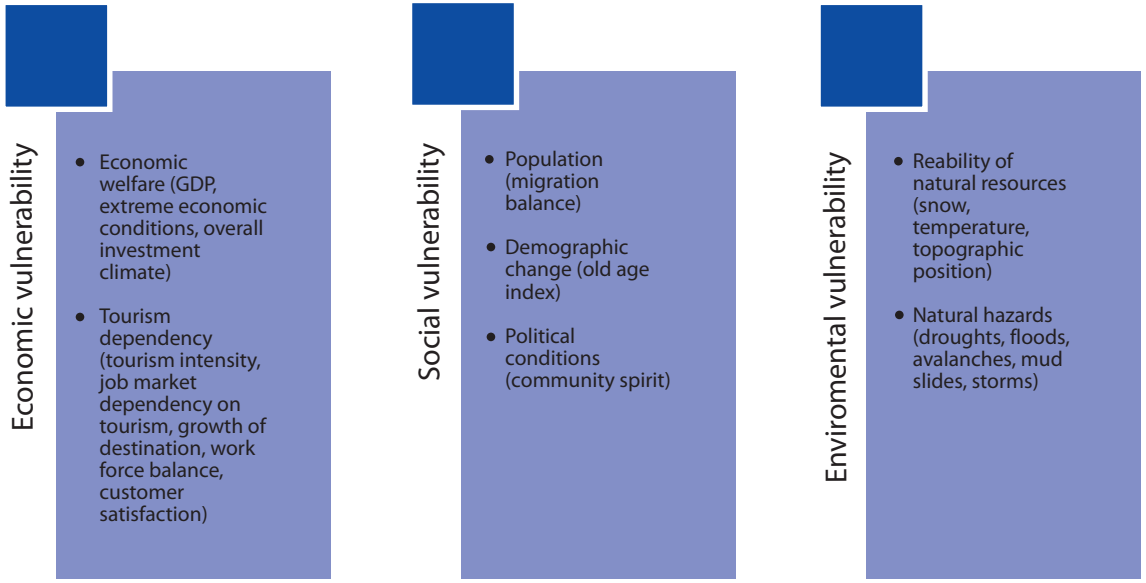


Figure 2.4.3: Three pillars of vulnerability measurement.

In order to examine the vulnerability of the tourism industry and tourism products in the ClimAlpTour pilot sites, the following sections explain the approach for creating product portfolios and give an overview of today's situation in the destinations addressed. The actual product portfolios of the ClimAlpTour pilot sites are presented as well (as far as data were available and sales figures were provided). These portfolios can be used to initiate discussions in the pilot sites or give important hints for possible adaptation strategies for specific products and the destination itself.

Assessing destination vulnerability (economic, ecological, and social)

As mentioned above, there are three areas of vulnerability that need to be considered when trying to define the vulnerability of a country, region, or community:

- Economic vulnerability
- Ecological vulnerability
- Social vulnerability

In the context of these very heterogeneous parameters, tourism can be seen as a bridging interface.

Economic vulnerability

In the first step, the economic situation of each pilot site was evaluated and the following indicators for

The destination vulnerability consists of a combination of economic, social and environmental vulnerability (parameters taken from primary and secondary data collection). Each parameter is weighted and given a vulnerability estimation from 1–5. All parameters are added and a weighted destination vulnerability is calculated.

"Direction": – lowers vulnerability and + raises vulnerability.

"General": Given by HM.

"Relevant": Only those considered for which data was available in the resp. pilot site.

"Standardized": standardized to 100.

Estimated by HM according to pilot site figures.

Calculated: importance x vulnerability estimation.

Destination vulnerability	Parameter	Exact question	Indicator number	Data collection	Direction of impact	Importance/ weighting (general)	Importance/ weighting (relevant)	Importance/ weighting (relevant) standardized	Pilot site	Pilot site vulnerability estimation	Pilot site vulnerability estimation (weighted)
Economic vulnerability	Overall economic development (GDP)	Real GDP growth rate; growth rate GDP within the last 5 years (trend 2002–2008)	A1	Secondary	–	10%	10%	13%	Figures from data collection	1–5	calculated
	Extreme economic conditions	Reports of extreme economic events such as bankruptcies and scandals in the destination have increased over the last five years Reports of extreme economic events such as bankruptcies and scandals in the destination are likely to increase over the next five years.	A11i, A11ii	Primary	+	2%	2%	3%	Figures from data collection	1–5	calculated
	Overall investment climate	The investment conditions for new ecological projects in the region have been generally favourable over the last five years. The overall investment climate in the region has been generally favourable over the last five years.	A4i, A4ii	Primary	–	4%			Figures from data collection		calculated
	Tourism intensity	Ratio: Tourist nights / (resident population * 100) => Interpretation: TI>1: Tourism industry is dominant in destination	D30	Secondary	+	14%	14%	18%	Figures from data collection	1–5	calculated
	Job market dependency on tourism	Ratio: (number of employees subject to income tax in trade, hotel & restaurant industry and transport + tourist nights / 500) / 2/ total number of employees subject to income tax	A3	Secondary	+	10%	10%	13%	Figures from data collection	1–5	calculated
	Growth of destination	Total number of bed places available for tourists (accommodation) within the last eight years (2000–2008)	D9	Secondary	+	7%	7%	9%	Figures from data collection	1–5	calculated
	Workforce balance (Migrant vs. Local – authenticity)	Approximately what percentage of the workforce in the destination comes from outside the destination country – in summer? Approximately what percentage of the workforce in the destination comes from outside the destination country – in winter?	A7i, A7ii	Primary	+	5%	5%	6%	Figures from data collection	1–5	calculated
	Customer satisfaction	"How satisfied were you with your stay at the destination? Existing or new research and visitor questionnaires.	D37	Primary and Secondary	–	9%			Figures from data collection		calculated
Social vulnerability	Migration balance	Migration balance (residents moving into the destination/ residents moving out) 2002–2008	A12	Secondary	–	7%	7%	9%	Figures from data collection	1–5	calculated
	Old age Index	Demographic change (ageing / rejuvenating society) 2008	A13a	Secondary	+	8%			Figures from data collection		calculated
	Community spirit	The destination has a strong community spirit, permanent/ local residents cooperate and support each other.	A5i	Primary	–	4%	4%	5%	Figures from data collection	1–5	calculated
Environmental vulnerability	Environmental vulnerability	Average snowfall, minimum snowfall, winter temperatures, altitude of bottom of resort, average altitude of ski area, orientation of slopes, topography, geographic position	WP 4 Analysis	Secondary	+	14%	14%	18%	Figures from data collection	1–5	calculated
	Natural hazards	Occurrence of extreme natural hazards	C14	Secondary	+	6%	6%	8%	Figures from data collection	1–5	calculated
					Summen:	100%	79%	100%			

Table 2.4.1: Comprehensive table for measuring destination vulnerability.

Vulnerability estimation categories (according to Chaix (2010) vulnerability categories)
5 = high, 4 = reasonably high, 3 = medium, 2 = low, 1 = no,

economic welfare and tourism dependency were considered and analyzed:

- GDP as one of the key indicators for measuring economic welfare[8]
- Extreme economic conditions: shows the overall economic situation
- Overall investment climate: shows investors' interest in a region
- Tourism intensity:[9] shows the economic importance of tourism in a region
- Job market dependency on tourism:[10] shows the importance of the tourism industry for the job market
- Growth of destination: shows the region's development over the last few years
- Workforce balance: shows the dependence of the destination on migrant workers
- Customer satisfaction: gives an impression of guests' perception of the destination

Social vulnerability

The second pillar of the destination's vulnerability measurement concerns the social aspect. The following indicators were considered and analyzed:

- Migration balance: shows if a population is growing or shrinking
- Old age index: shows the demographic change
- Community spirit: shows the cooperation and support of the local community

Environmental vulnerability

The environmental aspect is the third area of interest when looking at a destination's vulnerability. Two parameters were taken into consideration:

- Environmental vulnerability: estimated from the average snowfall, minimum snowfall, winter temperatures, elevation of bottom of resort, average elevation of ski area, orientation of slopes, topography, and geographic position[11]
- Natural catastrophes: shows the frequency/occurrence of extreme natural hazards

Assessing product vulnerability

After assessing the economic, ecological, and environmental vulnerability of the pilot sites, it is necessary to transfer this knowledge to a detailed product level. Even if it has been very common in the climate change discussion in the past, a general approach separating only "winter tourism" and "summer tourism" does not make sense. Because the variety of climate vulnerability in the group of summer tourism products is immense, it is necessary to take a closer look at the products themselves. Thus, the development of product portfolios is not only based on the common understanding of vulnerability, but also takes into account the vulnerability of individual tourism products. This product vulnerability is then related to the general vulnerability indicators for the specific destination. In order to do this, a similar approach as in the Austrian StartClim-project (Fleischhacker & Formayer 2006) was chosen and adjusted to ClimAlpTour's specific

All of these parameters were taken into consideration when defining the destination´s vulnerability. Parameters were taken from primary and secondary data collection. Each parameter was weighted and given a vulnerability estimate from 1 to 5 (the same scale as used by Chaix (2010) in his assessment of the vulnerability of ski areas to climate change – see 2.2.2). All parameters were then added up and a weighted destination vulnerability was calculated.

[8] For many project partners it was not possible to retrieve the exact GDP for such a special territorial area as the ClimAlpTour pilot sites. This is why estimates had to be made; for example, by taking into account the NUTS 2 level GDP and converting it to the pilot site area. This means that the reported figures can only serve as an approximation.

[9] Tourism intensity is the ratio of tourist nights / (resident population • 100). TI > 1 indicates a high dependency on tourism or that tourism is a dominant industry in the region (Bausch 2009; Harrer & Scherr 2002).

[10] Job market dependency of tourism: assumption: 500 tourist nights generate one tourism-related job (in trade, the hotel and restaurant industry, and transport). Ratio: (no. of tourism-dependent employees subject to income tax + guest nights / 500) / 2 / total no. of employees subject to income tax (Bausch 2009; Harrer & Scherr 2002). This figure must be handled with care because it can easily be overestimated (in destinations with few hotels, but many secondary or privately rented homes) or underestimated (in destinations with many hotels and few second or privately rented homes).

[11] Environmental vulnerability measured and categorized by Chaix (2010): 5 = high, 4 = reasonably high, 3 = medium, 2 = low, 1 = none.

needs. A product list with tourism products categorized by winter, summer, and all-season products was established. Then each product was evaluated regarding its weather sensitivity and its natural resource requirements.[12] Furthermore, the cost structure was taken into consideration (fixed cost, variable cost, and return on investment). For estimating the vulnerability of these parameters, the same scale was also applied as by Chaix (2010) for the environmental vulnerability analysis. Only the return on investment scale had to be turned upside-down because the direction of impact is reversed. Then these parameters were weighted (based on HM estimation) and added up to give the product vulnerability of a specific product, thus showing whether a product is "high maintenance" or can be offered without great financial and weather-specific risk.

Assessing overall vulnerability

The overall vulnerability consists of the **destination** and **product** vulnerability (see Figure 2.4.3), both given equal weighting (50%, 50%) (Figure 2.4.4).

2.4.4 Assessing the importance of a tourism product

The second step estimated the importance of the main tourism products. Each pilot site was asked to name the top ten products of its destination and to provide sales figures for each specific product or attraction. When sales figures were not available, a simple ranking had to be used alternatively based on estimates by the destination itself. In order to include another perspective, the work package 5 leader HM carried out a website analysis to determine which products or activities are promoted the most[13] and compared this information with the data gathered in the pilot sites. Different bubble sizes were used to visualize the importance of the product for the region; the largest bubble represents the most important product, and the smallest for the

Product	Weather sensitivity or natural resource Requirements* very high = 5 high = 4 medium = 3 low = 2 none = 1	Cost structure/ Investment			Product vulnerability estimate Ø
		Fixed costs very high = 5 high = 4 medium = 3 low = 2 none = 1	Variable costs very high = 5 high = 4 medium = 3 low = 2 none = 1	Return on investment none/insignificant = 5 low = 4 medium = 3 high = 2 very high = 1	
1					
2					
3					
4…					
Weight:	**40%**	**20%**	**20%**	**20%**	

* Based on StartClim (2006, 19), but adjusted to vulnerability categories according to Chaix (2010).
** Based on HM estimation.

Table 2.4.2: Product vulnerability estimate.

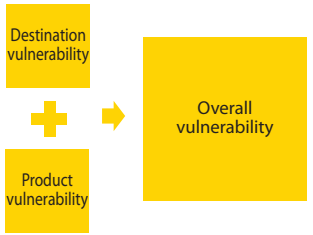


Figure 2.4.4: Assessing the overall vulnerability.

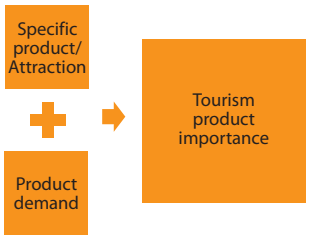


Figure 2.4.5: Assessing tourism product importance.

[12] Scale from 1 (no requirements) to 5 (very high requirements).
[13] Website accessed March 2010.

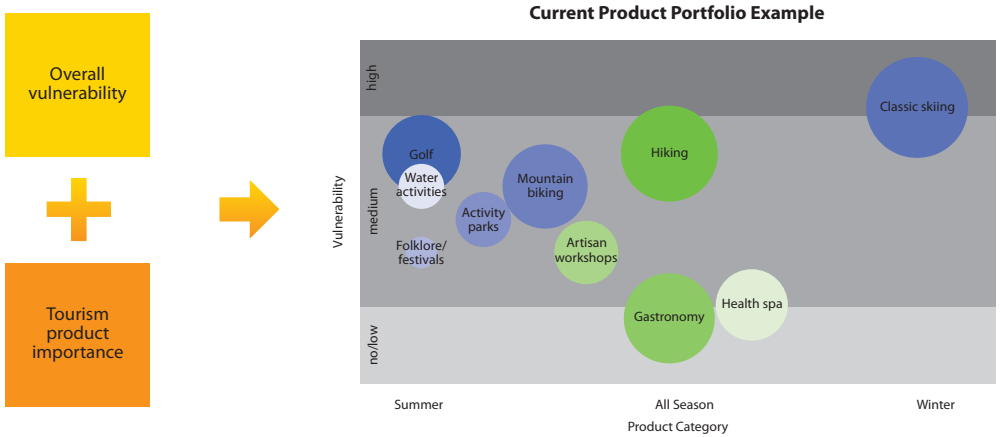


Figure 2.4.6: Generating pilot site product portfolios.

least important product within the main tourism activities offered.

2.4.5 Generating pilot site product portfolios

In order to generate the product portfolios, the tourism products were linked to their vulnerability level within the specific destination, their season-focus, and their importance. The product importance is shown in form of bubble sizes and the overall vulnerability of the product is shown by the location of the bubble within the graph. The further a bubble enters the red area, the more vulnerable the product is.

2.5. Alpine-wide adaptation strategies

2.5.1 Winter tourism in the Alps: critical factors and challenges

In the last few decades, the growing trend in tourism has decreased in Alpine destinations and the average duration of visits has substantially decreased. Many destinations have reached their maturity stage and the market is now saturated (ONT 2009). From 1990 to 2006, the increase in overnight hotel stays leveled off almost everywhere, confirming the trend cited above, and started to increase again only recently (BAK 2007; astat 2010).

This crisis is apparently not due to the economic downturn, although the 2008–2009 economic crisis did greatly affect the tourism sector; rather, it has structural origins (Keller 2005). The market is changing: globalization has brought about an overall increase in competitors, increasingly demanding tourists are a constant incentive to achieve quality standards in tourism, and information and communication technology have provided a certain degree of transparency for the market and changed marketing strategies related to promotion and trading, emphasizing the need for innovation within this sector.

In Alpine areas, these changes in the tourism market are compounded by structural problems such as limited space, limited scope for boosting the selection of tourism options, difficult access, and climate change (Macchiavelli 2006a; Swiss Confederation 2010).

Climate change in particular seems to play a vital role: the last few winter seasons have shown that good snow conditions are a fundamental prerequisite for good operation of ski-lift networks and ski resorts. Proof of this is the strong increase in the number of skiing days and ski passes sold in recent winter seasons compared to previous ones, which were characterized by poor snowfalls.[14] This variation was clearly visible at lower- and medium-elevation resorts in particular (Vanat 2009).

[14] The figures are collected on a yearly basis by Vanat for Swiss, Austrian, French, American, and Canadian ski resorts.

Because winter sports are the most important income source for many Alpine areas, the guaranteed presence of snow becomes one of the key elements of what they can offer tourists. However, climate change has always been neglected by tourism professionals because the effects of these variations will mostly become apparent in the long run. Moreover, the heavy snowfalls of the last few winter seasons have surely contributed to pushing the issue further into the background.

Nonetheless, climate models show that warming of the Alpine area has been and will probably remain higher than the global average (IPCC 2007; EEA 2009). In this case, it is quite likely that the natural snow limit will shift upwards as a direct consequence of the higher temperatures and the variation related to the condition and frequency of snowfalls (EEA 2009; OECD 2007). In addition, climate change is resulting in increasingly intense phenomena that may produce a lot of snow at low temperatures, as in recent seasons, but may also result in rapid melting of snow when temperatures increase.

This is therefore a serious threat to Alpine tourism, particularly in winter, because it will have long-lasting consequences for the resorts involved. This need not only be negative for the sector, but can also be an opportunity if adequately foreseen.

2.5.2 Strategies for alpine destinations

The tourism function of an area is never a single option, but one of many possible functions. In order to avoid internal competition among the various functions they need to be harmonized. Integrating and harmonizing the various functions is necessary, above all where space is limited, as in the case of Alpine valleys. For tourism, keeping the quality of the landscape intact and the proper development of manufacturing and residential neighborhoods, particularly in relation to vacation homes, are challenges that can be addressed through proper urban and rural planning.[15] This planning must be integrated with the management of tourism destinations and, in general, with the administration of the public and private entities working in them.

First of all, destination management means building networks. Integrated management of both destinations and territory allows the achievement of a dual goal: integrating the differences between destinations to counter the tendency towards homogenization of activities available to tourists, and increasing the visibility of marginal areas. This, in turn, can foster the development of not only local identities and cultural heritage but also any possible aspect of the range of tourism activities (sports, environment, leisure, etc.) at the various resorts. Second, focusing on promoting the best-known resorts will help boost interest in other less well-known places. Therefore, exchanging resources among the various destinations within a single geographical area can enhance the de-localization of tourist flows, with a positive impact on sustainability in the best-known destinations, promoting knowledge of natural and cultural heritage and increasing tourists' average length of stay (Viganò & Mottironi 2010).

The need to overcome the skiing "monoculture" and foster the diversity of resources available in mountain areas, promoting still undeveloped resources, can be translated into strategic approaches that consider replacing, integrating, or complementing skiing in relation to the elevation of the various destinations. Elevation represents a differentiating element in terms of both tourism relevance and sensitivity to climate change: The best-known tourism destinations in the Alps are situated at the highest elevations, within the most important ski complexes, and are less sensitive to climate variations.[16]

[15] For example, the Tyrolean program for cableways and ski areas (the *Tiroler Seilbahn- und Skigebietsprogramm*) is a ten-year integrated planning program to harmonize various planning policies (for towns and countryside), exploit Alpine areas, and foster development and transportation (CIPRA 1998).

[16] Similar strategies are currently being used in France, where the government has promoted the diversification of tourism attractions at several territorial levels based on the elevation of the resorts through the *Contrats de Plan Etat Région* (Rhône-Alpes region), *Plan de Tourisme de Savoie* 2007–2013 (Savoy department), and *Contrats de Développement Diversifié* (Isère department).

Lower-elevation resorts:
alternatives to skiing

Stop investing in skiing. The evident barrier for minor Alpine destinations to be more competitive is due both to structural factors, such as the lower diversity and quality of available services, and to situational factors, such as a higher sensitivity to climate variations (Bieger 2006). These elements should lead to the development of alternative medium- or long-term strategies that do not consider skiing the primary resource of these areas. This does not mean that skiing must be completely abandoned because in many cases it is still the main activity, but investments and activities related to this sport should be reduced in the future. In order for investments to be economically sustainable, they should not be aimed at strengthening skiing opportunities, but should focus on improving existing infrastructure and/or building new ski lifts that can also be used in the summer; for example, to transport hikers or mountain bikers. Using such infrastructure on a two-season basis would also increase the draw of the destination in the summertime, thus reducing its dependence on winter tourism.

Characterization and specificity. Given the impossibility of competing in the diversity of services offered, these resorts can characterize what they offer in a way that could allow them to differentiate themselves from the others and act as an enticement.[17] The marketing of tourism must be primarily focused on that particular differentiating element and will be addressed to potential customers to rouse their interest.

Build a network with high-elevation resorts. Cooperation between lower- and higher-elevation resorts will lead to mutual advantages: the first, acting on wide market segments, could offer activities and services that complement skiing and cheaper accommodation facilities, whereas the second, thanks to cooperation with less well-known resorts (that are, however, often characterized by a richer cultural identity), can expand and differentiate what they offer.

Medium-elevation resorts:
complementary activities to skiing

Flexible strategy. The scenario for medium-elevation mountain destinations is far more complex. Some are internationally renowned and base their prestige on skiing. It is therefore unthinkable to greatly reduce or abandon skiing, but it is better to adopt a very flexible strategy that can be revised in the medium term and adapted to any possible climate variations. Under a complementary perspective, skiing would become one of the attracting elements of these destinations together with other resources.[18]

Looking at new resources. Broadening the range of winter leisure activities can prove useful, both when a temperature increase is foreseen and in order to adapt destinations to the changing market. Against this background, it is necessary to identify potential resources for tourism, such as cultural and natural heritage or the wellness segment, and to make them viable. In a number of destinations, there is a demand to focus more on valuable local resources (local products and traditions, natural resources, etc.) for both tourists and local stakeholders.

Internal and outward-oriented integration. Integrated management of destinations will be useful to connect the various components of the local tourism activities. At the same time, it will be necessary to develop new connections with outside and exchange resources: in fact, diversification can also be achieved by integrating what better-known destinations offer with the selection at less well-known destinations, creating a synergy to meet tourists' diverse needs.

[17] For example, Germany's Achental area decided to invest in sustainable tourism with a special emphasis on the natural environment, thus halting development of ski facilities (CIPRAInfo July 2006).
[18] For example, Kitzbühel, an Austrian resort, is increasing and developing its higher-elevation activities, despite the low elevation where ski facilities are located, while also diversifying what is available during the winter season, focusing on wellness in particular (Zimmerl 2001).

Higher-elevation resorts: developing skiing, diversifying activities and integration

Consolidating activities. The core tourism activities at the highest-elevation destinations are ski facilities. They have a dual competitive advantage: the higher elevation allows them to not only be less sensitive to climate variations, but also gain from the reduction in activities and the possible closure of ski facilities at lower elevations. In order to maintain this market advantage, it is necessary to maximize primary resources by strengthening the skiing infrastructure, which remains the most attractive element, and to complement what they offer with other snow activities, thus integrating downhill skiing.[19]

Outward-oriented integration. Increasing selection can be achieved not only through diversifying the activities at the destination (although this is limited because it is linked to the area's resources), but especially through cooperation with other destinations under an integration approach. The resulting advantage is mutual: higher-elevation resorts will expand their range of activities and attractions, and the lower-elevation ones will benefit from the market attraction created by the others.

[19] Serfaus (Tyrol), one of the most important Austrian ski resorts, and many other resorts have integrated their ski activities with attractions for children (including playgrounds and dedicated spaces). In contrast, St. Moritz (Switzerland) focused on cultural heritage, proposing the Albula/Bernina area as a UNESCO World Heritage site.

Climate change as a stimulus to renovate

Climate change will not only have negative impacts on winter tourism in the medium to long term. Changes to the natural environment and weather conditions can also be seen as opportunities to more rapidly implement the structural change that is necessary for dealing with the current crisis that the tourism sector is experiencing. The survival of the ski industry is not in question, but the "one-way exploitation" of mountain areas is. Such a process can be planned and managed in advance if it is remembered that the climate, even though it can experience permanent changes, will not change precipitously (Macchiavelli 2006a).

B. Erhartič

Figure 2.5.1: Winter wonderland.

climalptour

M. Pavšek, Geografski inštitut Antona Melika ZRC SAZU

3

PILOT ACTIVITIES

3.1 Auronzo di Cadore

Figure 3.1.1: A view of the town of Auronzo di Cadore with the most characteristic feature of the municipality, Tre Cime di Lavaredo, in the background.

Location: Italy
NUTS 2: ITD3 Veneto
NUTS 3: ITD3 Belluno

Area: 220 km^2
Size of resident population: 3,584 (2008)
Population per square km: 16.2
Minimum and maximum elevation: 800/2,999 m
Administrative center and its elevation: Auronzo di Cadore, (864 m)

Nearest motorway access: Longarone (47 km)
Nearest railway station: Calalzo di Cadore (20 km)
Nearest international airports: Treviso (118 km), Venice (138 km)

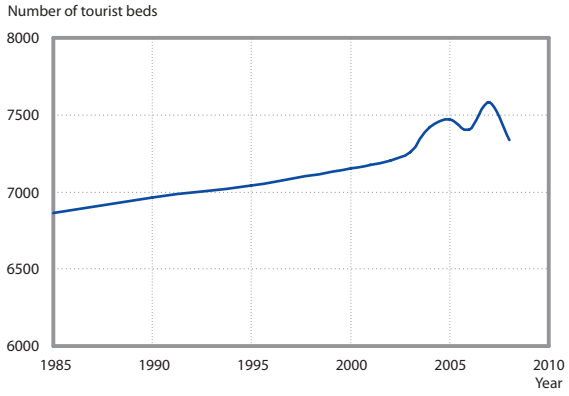


Figure 3.1.2: Growth of the destination in terms of number of beds from 1985 to 2008 in Auronzo di Cadore.

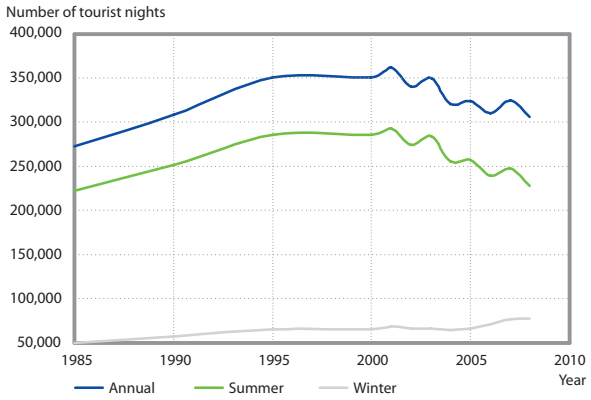


Figure 3.1.3: Annual, summer and winter tourist nights between 1985 and 2008 in Auronzo di Cadore.

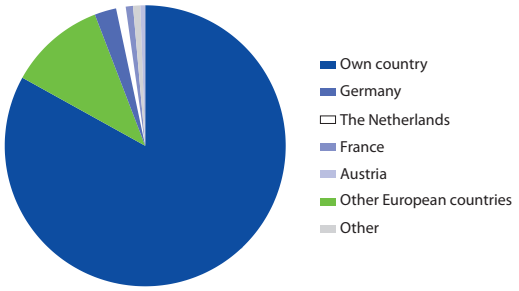


Figure 3.1.4: Origin of summer visitors in 2008 in Auronzo di Cadore.

3.1.1 SWOT analysis

Strengths	Weaknesses
• Beauty and uniqueness of location: UNESCO site, 85% of land is classified as "natural" or "forest," 65% of land is subject to environmental protection • Water availability for artificial snow • Increase in winter tourism • Local traditions related to tourism (since 1930) • Good opportunities for summer tourism (trekking, hiking, mountain biking, lakes, etc.) • Competitive prices (hotels, restaurants, ski passes)	• Outgoing migration balance moderately increasing • Older population • Low technological quality • Deficient public transport within and to the municipality • Low-quality hotels • Presence of fairly well-developed low-elevation ski area and an underdeveloped high-elevation ski-area • Brevity of summer and winter tourism seasons • Lack of a shared planning perspective
Opportunities	**Threats**
• Potential connections with neighboring ski areas (Cortina d'Ampezzo, Super Ski Dolomiti) • Relatively easy to access • Growing tourism demand for both summer and winter seasons • Large range of activities and emerging sports to promote • Environmentally friendly initiatives/UNESCO site	• Many and much better developed neighboring competitors • Very strict environmental regulations in force • Climate and demographic change • Global economic crisis: high risk for financial investments • Environmental and landscape impacts of new infrastructure • Slow adaptation to new tourism demand

Table 3.1.1: SWOT analysis for pilot site Auronzo di Cadore.

3.1.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Auronzo di Cadore is estimated at 2.51[20] and is thus rather low, whereas the overall vulnerability levels range from 2.46 (mountain biking) to 3.06 (cross-country / off-piste-skiing).[21] The product portfolio of Auronzo di Cadore is very sports oriented and comprises activities in Alpine summer sports as well as traditional winter sports. Combined with the vulnerability of the various tourism products, winter sport activities show the highest vulnerability levels, and are thus most at risk.

The economic parameters show stable development, and the most vulnerable parameters concern social and environment aspects. With an old-age index of 170.53%, Auronzo di Cadore has a quickly ageing society. The environmental vulnerability level of 4.5 shows that the reliance on natural resources (especially with regard to winter sports) must be reconsidered.

Auronzo di Cadore has a medium adaptation elasticity (3.25).[22] However, awareness of dangers due to climate change is rather low. If measures for more alternative (snow-independent) tourism activities are taken, visitors state that they would even accept a price increase. This opinion is not shared by the tourism experts in the region, who instead fear that this would cause the number of guests to decrease. Gastronomy (local products), management of mineral/thermal waters, winter and summer hiking (snow shoeing), and horseback riding were suggested as relevant alternatives for diversification. Moreover, camping areas for young people could be developed. Better promotion of the destination itself (publicizing its potential in terms of nature and landscapes) was also mentioned.

Guests state that the most important factors influencing their choice of vacation destination are service quality, the variety of activities and outings, and hospitality

[20] For all pilot sites in Chapter 3, vulnerability estimate scale according to Chaix (2010): 1 = none, 2 = low, 3 = medium, 4 = reasonably high, 5 = high vulnerability level.
[21] Comprehensive data set available; 13 out of 13 parameters were delivered by the project partner.
[22] For consistency, the same scale is used for all pilot sites in Chapter 3 as for the vulnerability estimate: 1 = none, 2 = low, 3 = medium, 4 = reasonably high, 5 = high adaption elasticity.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Cross-country skiing	Alpine winter sports	2.51	3.60	**3.06**	9
Off-piste skiing	Alpine winter sports	2.51	3.60	**3.06**	2
Swimming pools	General outdoor sports	2.51	3.60	**3.06**	1
Downhill skiing	Alpine winter sports	2.51	3.40	**2.96**	10
Rock climbing	Alpine summer sports	2.51	3.40	**2.96**	7
Water activities	General outdoor sports	2.51	3.20	**2.86**	6
Heritage sites	Arts and culture	2.51	3.00	**2.76**	4
Hiking	Hiking/walking	2.51	2.80	**2.66**	8
Ice skating	Alpine winter sports	2.51	2.80	**2.66**	5
Mountain biking	Alpine summer sports	2.51	2.40	**2.46**	3

Table 3.1.2: Overall vulnerability estimate for Auronzo di Cadore.

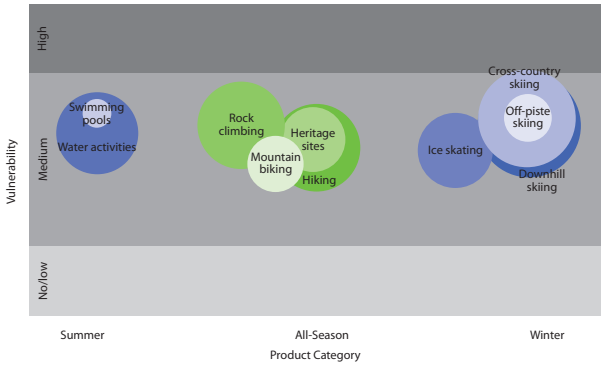


Figure 3.1.5: Current product portfolio for Auronzo di Cadore.

and how warmly they are welcomed. Reliability of the weather (snow in the winter, sun in the summer) is rated as important by guests, whereas experts evaluate this parameter as rather unimportant.

3.1.3 Adaptation strategies

Number of workshops held: 2

Topic of the first workshop: strategies for winter tourism development in the municipality of Auronzo di Cadore.

Topic of the second workshop: ClimAlpTour DSS/e-tool: presentation of the project's preliminary results.

Aims and goals

The main goal is to increase the attractiveness of Auronzo di Cadore's winter season to winter tourists in the short, medium, and long terms. Secondary objectives are to augment tourist arrivals while reducing seasonality.

Strategies developed

Stakeholders identified four development strategies:

- Everything remains the same: no new investments
- Ski-intensive: high-tech downhill ski center: construction of new lifts, few new hotels and restaurants, etc., to frame ski activities
- Alternative skiing: new ski resort typology of free-ride skiing, nordic skiing, and snowshoeing, few new hotels and restaurants, etc., to frame ski activities
- Beyond snow: abandonment of investments in downhill ski infrastructure (and artificial snow), Auronzo di Cadore becomes a resort specializing in wellbeing, shopping, gastronomy, and family tourism: more non-snow-related infrastructure (spas, sport center, etc.)

The dominant strategy has been "beyond snow". Results show that a development strategy detached from snow-related activities, but focusing on the quality of hospitality structures and on indoor activities, is likely to produce better outcomes, in particular regarding competitiveness and the mass of tourists attracted. This result is consistent across various future scenarios and is mainly related to the capacity of this strategy to build on the bulk of existing tourism, while dealing with possible climate, demographic, and competition changes. However, a "beyond snow" strategy should be linked to enhancing public transport, and particularly

that connecting the two poles, because the in-destination transfer needs of tourists may significantly increase.

Evaluation

Initial strategies proposed by the facilitators were refined by stakeholders during the first workshop. However, more emphasis should be placed on transport. Stakeholders themselves judged the strategies according to several indicators, which included innovativeness and feasibility (protected areas affected and investment costs). Alternative skiing "won" in terms of innovativeness.

Further steps in the destination and after the projects' closure

Adaptation to climate change should not be considered in isolated terms. Climate change is just another pressure adding to an already stressed tourism system with specific strengths and weaknesses. Although tourism demand is adaptive and tourists' behavior is rapidly evolving, the tourism supply needs more time to plan activities that respect social, economic, and environmental constraints. There certainly are autonomous activities (e.g., artificial snow, ski slope design, etc.) that can be undertaken by tourism suppliers, but the most crucial part of the adaptation effort will be played by "planned adaptation". Nonetheless, a prerequisite must be in place: Auronzo di Cadore needs to build on the synergies of the various institutions involved in the destination management and to integrate the already fragmented human and financial resources.

I. Valjavec

Figure 3.1.6: Tre Cime – a landmark of the Dolomites.

3.2 Presolana-Monte Pora

L. Garbellini

Figure 3.2.1: View of the Presolana mountain range from Monte Pora.

Figure 3.2.2: Growth of the destination in terms of number of beds in hotel accommodation only from 2000 to 2008 in Presolana-Monte Pora.

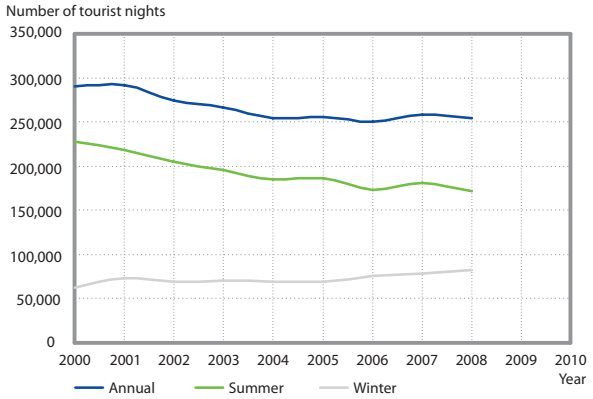


Figure 3.2.3: Annual, summer, and winter tourist nights in hotel accommodation only between 2000 and 2008 in Presolana-Monte Pora.

Location: Italy
NUTS 2: ITC4 Lombardia
NUTS 3: ITC46 Bergamo, ITC47 Brescia

Area: 219 km^2
Size of resident population: 43,660 (2008)
Population per square km: 199
Minimum and maximum elevation: 185 m/2,521 m
Administrative centers and their elevation: Castione della Presolana (870 m); Darfo Boario Terme (218 m)

Nearest motorway access: Seriate (49 km from Castione della Presolana), Rovato (49 km from Darfo Boario Terme)
Nearest railway station: Darfo Corna (29 km), Bergamo (45 km)
Nearest international airports: Bergamo (47), Milan (103)

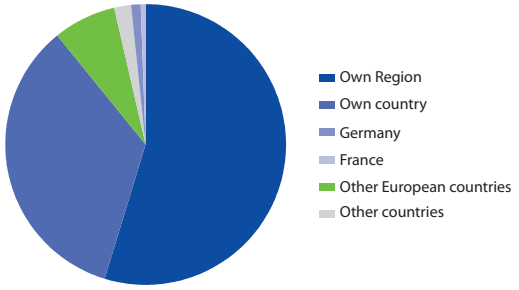


Figure 3.2.4: Origin of summer visitors in hotel accommodation only in 2008 in Presolana-Monte Pora.

3.2.1 SWOT analysis

Strengths • The area is traditionally marked by tourism, in close connection to the ski area • Presence of valuable landscapes and rich environmental resources • Presence of two spa towns • Considerable presence of the industrial sector (textile and construction companies) in the resorts closer to the valley • Widespread entrepreneurial spirit • Good attractiveness (positive migration balance) • Close to the cities of Bergamo and Milan and to the Orio al Serio International Airport	**Weaknesses** • Ski areas are located at lower elevations and are thus strongly dependent on snowfalls • Poor systemic integration of activities and services provided to tourists • Lack of high-quality accommodation facilities • Hotels seem to have a poor ability to raise capital and this in turn makes it difficult for them to invest • Strong influence of self-catering accommodations and vacation houses • Number of tourists and average time of stay have decreased over the last ten years • High *digital divide* • Industries are facing a structural crisis due to international competition
Opportunities • Enhancement of natural resources and characteristic agricultural products • Opportunity to integrate forestry and farming with the tourism sector • Opportunity to promote tourism in mountain areas together with spa tourism and natural-cultural tourism • There is a higher than average presence of young people living in this area and this can be a favorable condition for dynamic, modern entrepreneurial development • Enhancement of the Orio al Serio International Airport, which acts as a vital hub for tourists both from Italy and abroad	**Threats** • Tourism services are less competitive than in other similar areas • Delay in adapting the range of services to changes affecting the tourism market • Tourism entrepreneurship lacks energy • The lack of financial resources affecting municipalities could foster an increase in vacation houses • High risk of landslides and floods due to a lack of adequate preventive measures • Risk of being marginalized on the market because of low technological innovation, an insufficient level of vocational training, and greater vulnerability to the crisis affecting the industrial sector • Traffic congestion

Table 3.2.1: SWOT analysis for pilot site Presolana-Monte Pora.

3.2.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Presolana-Monte Pora is estimated at 2.22 and is thus rather low, whereas the overall vulnerability levels range from 2.60 (spa) to 3.40 (downhill skiing).[23] The product portfolio of Presolana-Monte Pora is very diverse and includes activities in Alpine winter sports, arts and culture, wellness, and nature experiences. Combined with the vulnerability of the various tourism products, winter sports show the highest vulnerability levels and are therefore most at risk. Critical parameters can be pointed out in all three fields of vulnerability (economic, social, and environmental). Although the destination is growing quickly (a 40% increase in the number of beds from 2002 to 2008), experts assess the overall investment conditions as well as investment conditions for new ecological projects as rather poor. According to the experts, the community spirit and cooperation within the destination could be improved. Moreover, with an assessment of 3 or 4 (depending on the ski resort), the destination has an above-average vulnerability level concerning its reliance on natural resources.

Presolana-Monte Pora's adaptation elasticity is slightly below average (2.91). Around 40% of the visitors are aware of possible increasing dangers caused by climate change. At least 23% would be willing to accept higher costs for tourism services in order for adaptation measures

[23] Non-comprehensive data set available: 12 out of 13 parameters were delivered by the project partner.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Downhill skiing	Alpine winter sports	2.22	3.40	**2.81**	10
Snow park	Alpine winter sports	2.22	3.40	**2.81**	9
Artisan workshops	Old customs/traditions	2.22	3.20	**2.71**	6
Darfo Health spa	Wellness/spas/health	2.22	3.00	**2.61**	8
Heritage sites	Arts and culture	2.22	3.00	**2.61**	5
Folklore and festivals	Arts and culture	2.22	3.00	**2.61**	4
Nature trails	Nature experience	2.22	2.80	**2.51**	3
Angolo Health spa	Wellness/spas/health	2.22	2.60	**2.41**	7

Table 3.2.2: Overall vulnerability estimate for Presolana-Monte Pora.

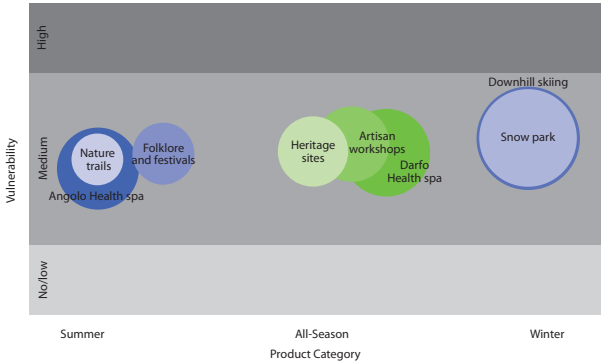


Figure 3.2.5: Current product portfolio for Presolana-Monte Pora.

to be taken. Gastronomy (local products and event gastronomy), valorization of Alpine pastures, and further development of tourism products for young people were mentioned as relevant alternatives for diversification.

Guests state that the most important factors influencing their choice of vacation destination are cost (in contrast to the price elasticity addressed above), quality of service, and hospitality and how warmly they are welcomed. Recommendations from others are rated between less important and important by guests, whereas experts believe that this parameter is very important when choosing a vacation destination.

3.2.3 Adaptation strategies

Number of workshops held: 2

Topic of the first workshop: development of tourism strategies and measures in low- and medium-elevation alpine destinations in Lombardy.

Topic of the second workshop: identification of tourism development strategies for the pilot area.

Aims and goals

This area has attracted family vacations as a tourist resort for many years: the summer was characterized by long stays, especially in vacation cottages, and the winter was characterized by ski vacations and shorter stays that targeted specific areas. On the one hand, changes in tourist trends and expectations require the local population and tour operators to become more aware of tourists' new needs; on the other hand, greater investment capacity is needed to make new services and infrastructure available, given the trend of decreasing income from tourism in recent years.

To this end, the strategies being implemented have three main aims:

- To enhance the cultural awareness and professional skills of operators and the local population as a prerequisite to improving the area's ability to receive tourists;
- To promote existing resources that have not been suitably exploited in the current management model;
- To offer a broader variety of services – which, however, must suit the area's investment capacity.

Strategies developed

Shaping a culture of welcome:

- Training offered to the local population, including utilizing the local media and competitions to promote greater care for the aesthetics of the resort (e.g., the balcony with the best flowers, the best shop window, etc). Collaboration with schools to disseminate this culture among young people.
- Training offered to tour operators, utilizing local educational tours to encourage more in-depth and

diversified knowledge of the local culture and landscape, including using technologies and benchmark tours to other resorts with a similar market position.

Decongesting traffic in and to the area by promoting new forms of soft mobility:

- Better access to the area. Improving public transport efficiency (in terms of timetables, connections, and information) as much as possible and incentivizing closer coordination between private operators (e.g., hotel owners) for managing connections to and from Milan's international Orio al Serio airport.
- Services inside the area. Developing initiatives to discourage the use of private vehicles for transport (e.g., by closing the historical centers to traffic, contracted fees for taxis or shuttle buses carrying tourists to main attractions, and a possible cable-car connection between the municipality of Castione della Presolana and the Monte Pora ski resort).

Characterizing the resort and diversifying activities by networking the tourist attractions in the territory:

- Identifying a range of diversified attractions located in the area and networking them (under the themes of culture, environment, food and wine, and sports), and at the same time promoting a specific theme to characterize the area. This will make it possible to concentrate resources to add value to the tourist attractions offered, and investments could also be targeted solely to the areas that are likely to be more profitable.
- Diversifying the range of activities offered by teaming up with nearby resorts (e.g., ski resorts or lakeside resorts in neighboring areas).

Increasing productivity by acting on the number of beds available in hotels and especially in self-catering units:

- Discontinuing season-bound hotel offers and moving them towards specific activities that might feasibly be organized (e.g., cultural events, conferences, etc).
- Introducing new organizational and marketing models to promote shorter vacation cottage rentals, also by directly involving owners. The aim is to increase the turnover of tourists at the resort.

Evaluation

With the exception of the cable car, which will require accurate feasibility and sustainability studies, the strategies and initiatives envisaged in sections I and II above require limited investment and can easily be achieved in the short to medium term, as long as they are supported and shared by local operators.

The characterization of the resorts and the diversification of attractions achieved by teaming up with nearby resorts can only be pursued in the medium/long term. The cost of these initiatives will be rather high and will necessarily have to be guided by a public-private partnership. Nevertheless, networking resources are the only means of ensuring high-quality services and more diversity in terms of tourist attractions.

The aim of de-seasonalizing hotel availability is partly associated with initiatives that can be achieved through the measures described above, although its effectiveness is broadly linked to the ability of individual hoteliers and/or consortia to manage and promote the strategy. Vacation cottages, which have strongly affected this area for decades, are clearly restricting the area's tourist development. The effectiveness of initiatives to increase the productiveness of these units must rely on new restrictions or limitations on building vacation cottages by individual municipalities and the direct involvement of owners.

Further steps in the destination and after the projects' closure

An essential prerequisite for implementing and executing the strategies listed above is greater collaboration between public and private operators in the area, aimed at pursuing joint strategies. For this to happen, it will be necessary to identify a process leader that will:

- Act as legitimate interlocutor acknowledged by all parties concerned;
- Coordinate the joint strategies shared by all main stakeholders;
- Ensure that all concerned can and do participate in implementing these strategies;
- Monitor their execution and results.

3.3 Renon/Ritten

A. Andreis

Figure 3.3.1: Landscape of Renon/Ritten.

Location: Italy
NUTS 2: ITD1 Provincia Autonoma Bolzano/Bozen (Trentino-Alto Adige/Südtirol)
NUTS 3: ITD 10 Bolzano/Bozen
Area: 111 km^2
Size of resident population: 7,430 (2008)
Population per square km: 67
Minimum and maximum elevation: 256/2,260 m
Administrative center and its elevation: Renon/Ritten (1,198 m)

Direct access with cable car from Bolzano/Bozen city center
Nearest freeway access: Bolzano/Bozen (17 km)
Nearest railway station: Bolzano/Bozen (11.5 km)
Nearest international airports: Bolzano/Bozen (13 km), Innsbruck (116 km), Verona (179 km)

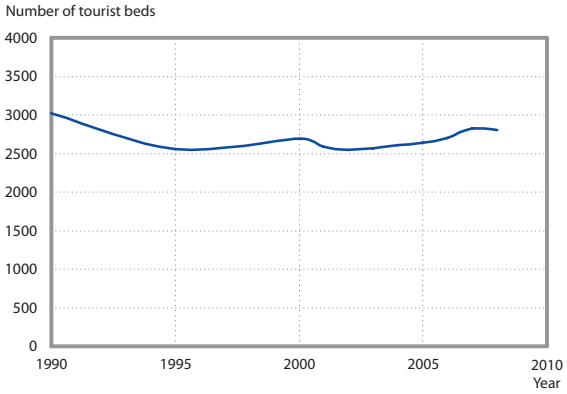


Figure 3.3.2: Growth of the destination in terms of number of beds from 1990 to 2008 in Renon/Ritten.

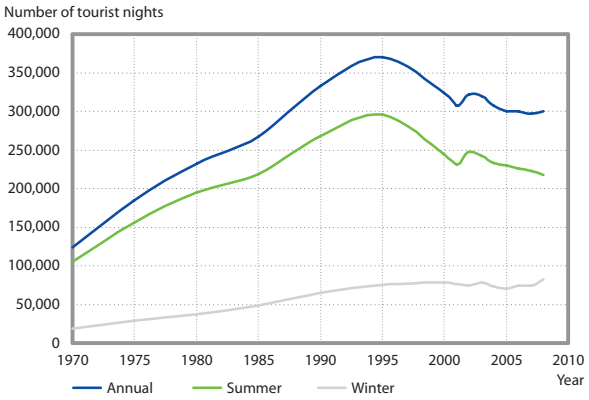


Figure 3.3.3: Annual, summer and winter tourist nights between 1970 and 2008 in Renon/Ritten.

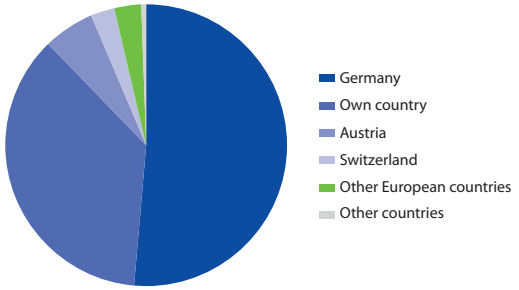


Figure 3.3.4: Origin of summer visitors in 2008 in Renon/Ritten.

3.3.1 SWOT analysis

Strengths • A long, consolidated tradition in summer tourism, favored by the climate and low precipitation in summer (similar to other areas in South Tyrol) • The ski area is located in the highest part of the destination • Winter tourism has so far been developed as "soft" tourism, for families and with a range of non-ski-related activities offered • The location of the destination offers unique views of the surrounding mountains • The destination is accessible without using private vehicles via a modern cable car	**Weaknesses** • Winter precipitation has not been constant in recent years • The tree line is constantly moving up in elevation • The destination is affected by a lack of water resources • The destination has so far not completely developed its artificial snow-production potential
Opportunities • Higher temperatures in the valley will favor increased visitors in the summer season • The location of the ski area at a high elevation will reduce the risk of lack of snow; there will also be the possibility of expanding the ski area, bearing in mind the summer-oriented role of the destination • The topic of sustainable mobility and car-free vacations will be promoted	**Threats** • Uncertainty regarding future precipitation could affect flora and fauna • Higher temperatures, combined with the lack of water resources at the destination, mean that making artificial snow will be more challenging than today • Other areas that have so far been too cold in summer will become competitive in the market for "refreshing" wellness summer holidays

Table 3.3.1: SWOT analysis for pilot site Renon/Ritten.

3.3.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Renon/Ritten is estimated at 2.11 and is therefore rather low.[24] The overall vulnerability levels range from 2.26 (mountain biking / gastronomy) to 2.86 (sports competitions) and are rather close together. The product portfolio of Renon/Ritten is very sports oriented and comprises activities from Alpine/general summer and winter sports as well as sports competitions. Combined with the vulnerability of the various tourism products, sports competitions and downhill skiing show the highest vulnerability levels and are therefore most at risk.

At only 5%, the GDP growth rate between 2002 and 2008 was very low and increases the destination's vulnerability. Most other parameters (social and environmental) lower the vulnerability level. However, unfortunately not many parameters could be taken into consideration, which makes this vulnerability estimation very vague. One interesting fact is the destination's rejuvenating society (with an old age index of 76.67%), which contrasts with most other pilot sites.

Renon/Ritten has slightly above-average adaptation elasticity (3.28). Strategy changes arising from sustainability and environmental considerations are seen as an opportunity to move the destination forward.

[24] Non-comprehensive data set available: 8 out of 13 parameters were delivered by the project partner.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Sports competitions	Sport competitions/events	2.11	3.60	**2.86**	1
Downhill skiing	Alpine winter sports	2.11	3.40	**2.76**	8
Health spa	Wellness/spas/health	2.11	3.00	**2.56**	7
Folklore and festivals	Arts and culture	2.11	3.00	**2.56**	6
Horse riding	General outdoor sports	2.11	3.00	**2.56**	4
Hiking	Hiking/walking	2.11	2.80	**2.46**	10
Nature trails	Nature experience	2.11	2.80	**2.46**	2
Ice skating	Alpine winter sports	2.11	2.60	**2.36**	3
Gastronomy	Fine dining	2.11	2.40	**2.26**	9
Mountain biking	Alpine summer sports	2.11	2.40	**2.26**	5

Table 3.3.2: Overall vulnerability estimate for Renon/Ritten.

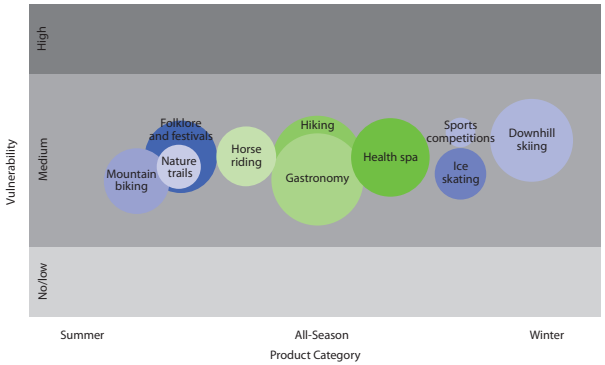


Figure 3.3.5: Current product portfolio for Renon/Ritten.

3.3.3 Adaptation strategies

Number of workshops held: 1

Topic of the workshop: strategy and product development.

Aims and goals

The summer season is traditionally the most important one: the people in the hot Bolzano Valley have known Renon/Ritten as a summer health destination (offering *Sommerfrische*, 'summer freshness') for many years. Winter tourism is relatively weak. The small ski resort at Corno del Renon/Rittnerhorn is frequented by locals from the Bolzano area and by family tourists. Climate change has already had negative effects on winter tourism, and the cross-country ski slopes have been moved from lower areas to the top of Corno del Renon/Rittnerhorn. The workshop participants want to maintain winter tourism at Corno del Renon/Rittnerhorn but they also stress that further development should focus on summer tourism. Here, the good climate with summer maximum temperatures below 30 °C and the destination's easy accessibility are seen as key factors for future success.

Strategies developed

During the strategy workshop, among other things such as the maintenance of the winter season, three highly relevant topics under the umbrella of "soft summer holidays" were identified: health, mobility, and gastronomy. These will be the focus of further strategic planning and product development.

Health: To position Renon/Ritten as a health destination, the members of the strategy workshop see the need for further strategic product development. One task is to improve cooperation between agriculture and tourism, which is seen as the basis for further improving healthy nutrition for tourists and residents. Furthermore, developing extensive activities involving supervised exercise for healthcare is foreseen. To position the pilot site as a health and "Alpine Wellness" destination, Alpine-related treatments such as grass baths will be offered in the future. As a basic condition, Renon's/Ritten's "therapeutic" landscape and healthy environment must be protected.

Mobility: Renon/Ritten is accessible by a modern high-capacity cable car from the center of Bolzano.

There is also a historic tram connecting the main settlements of Renon/Ritten and the cable car to Corno del Renon/Rittnerhorn. A recently launched mobility card allows tourists to travel within the destination and throughout South Tyrol at no additional cost. This will motivate tourists to travel without a car. Public bus transport and even taxi availability will therefore be further improved. To position Renon/Ritten better as a soft mobility destination an e-mobility rally is planned. Gastronomy: Decision-makers stressed that transparency and security are increasingly important to people. Regional cuisine and regional products are one way to respond to these demands, which may also help strengthen local and regional economic cycles. To differentiate the area from neighboring destinations, local specialties such as beef and dishes using dried pears (known as *Kloatze*) will be developed.

Evaluation

The strategy presented here was worked out at the destination several months ago. In the meantime, the first important steps were taken to reach the goals set, such as introducing the mobility card mentioned above. Cooperation between the municipality, the tourism association, and service providers is working very well. Strategic planners have defined eight working groups that will work intensively on strategic product development over the next month. Thus, the outlook for reaching the goals set can be considered very good.

Further steps in the destination and after the project closure

Tourism stakeholders and the municipality will continue their work, following the defined topics. There is still much work to do for in the coming years to further develop new and existing topics. Cooperation between agriculture and tourism, although the high benefit for both is obvious, has often failed at other destinations because it lacks mutual understanding, for example. A mediator might be needed to structure and monitor the mutual learning process.

B. Erhartič

Figure 3.3.6: Alpine freshness.

3.4 Valgrisenche

D. Camisasca, RAVA archives

Figure 3.4.1: Panoramic view of the Valgrisenche reservoir.

Location: Italy
NUTS 2: ITC2 Valle d'Aosta/Vallée d'Aoste
NUTS 3: ITC20 Valle d'Aosta/Vallée d'Aoste

Area: 113 km^2
Size of resident population: 188 (2008)
Population per square km: 1.6
Minimum and maximum elevation: 1,510/3,660 m
Administrative center and its elevation: Valgrisenche (1,660 m)

Nearest motorway access: Aosta (23 km)
Nearest railway station: Arvier (15 km)
Nearest international airport: Turin (147 km)

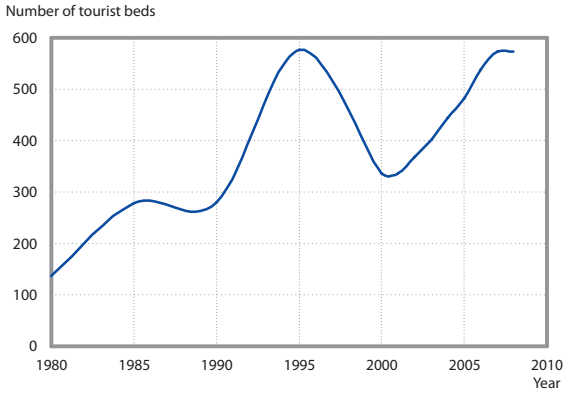


Figure 3.4.2: Growth of the destination in terms of number of beds from 1980 to 2008 in Valgrisenche.

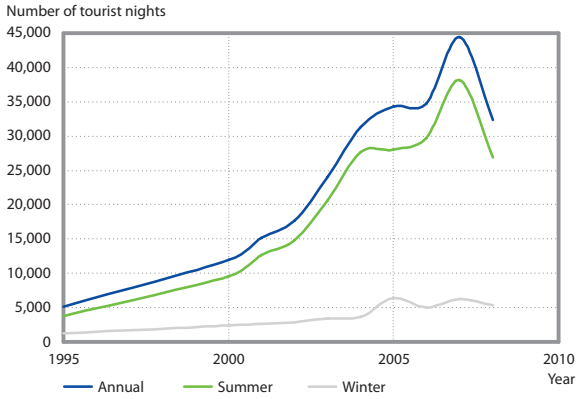


Figure 3.4.3: Annual, summer and winter tourist nights between 1995 and 2008 in Valgrisenche.

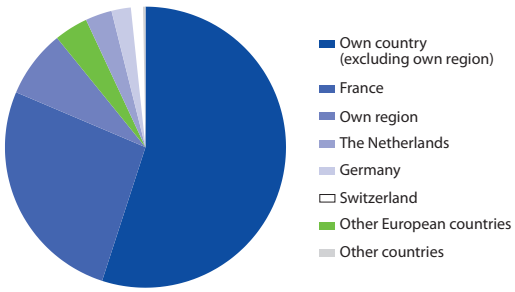


Figure 3.4.4: Origin of summer visitors in 2008 in Valgrisenche.

3.4.1 SWOT analysis

Strengths	Weaknesses
• Location near the main valley and the nearest famous location: Gran Paradiso, mountain community of Valdigne–Monte Bianco • Ruitor Glacier • Wonderful Heliski domain • Summer hiking • Natural wild environment • Hiking paths and camps • Low-cost activities for family tourism • Tranquility of the site • Crafts, tradition, and traditional *drap* woven cloth • Wonderful winter climate • A human relationship between tourists and locals (no mass tourism) • Making artificial snow • Positive trend of summer tourism • Theme tours • Strong organization of sports events • Many local associations and clubs • Niche product	• Snow not guaranteed (no snow-making systems) • Night life • No promotion synergy or strategies • Lack of private tourism entrepreneurs • No public transport on Sunday and no on-demand services • Old hotels and accommodation structures • Need for investments to renew accommodation stock • No Wi-Fi internet services • Lack of synergy between tourism operators • Weak winter tourism • Lack of local young tourism entrepreneurs • Elderly population and progressive depopulation • No young resident families because of the lack of preschools and job opportunities • Cold summer climate • Remoteness of primary services • Short stay
Opportunities	**Threats**
• Dam area development • Off-road mountain biking • High level of sports competitions and activities • Networking existing resources • Developing niche products • Networking tourism operators and stakeholders • Rural tourism • Final arrangement and improvement of cross-country ski trail • Lift replacement • New typical product design and production • Reassessment of the dam area • Foreign guides and customers in spring and summer (broad market) • Tour guide coordinators • Better exploitation of vacation cottages • More synergies with other municipalities • Significant cultural and contemporary artistic heritage (many artists on site)	• Gran Paradiso National Park does not include the site • Income is not guaranteed • Cost of living in the location is too high (fuel and heating) • Conditions after demolition of the dam • Customers' lack of money • Unfavorable position regarding access to main roads and cities • Local tourism tax

Table 3.4.1: SWOT analysis for pilot site Valgrisenche.

3.4.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Valgrisenche is estimated at 3.30 and is therefore above average, whereas the overall vulnerability levels range from 2.45 (local products) to 3.55 (heli-ski).[25] The product portfolio of Valgrisenche is very sports-oriented and comprises activities in Alpine summer and winter sports as well as hiking activities. Combined with the vulnerability of the various tourism products, Alpine winter sports activities show the highest vulnerability levels and are therefore most at risk.

Valgrisenche had a negative GDP growth rate from 2002 to 2008, which adds to its economic vulnerability. The number of beds grew rapidly between 2002 and 2008 (71%). In combination with its high tourism intensity and the large number of employees working in the tourism industry, the destination shows a great economic dependence on tourism. With an old age index of 277.78%, it has a very old and ageing society, increasing its social vulnerability level.

Valgrisenche has a low adaptation elasticity (2.29), which especially results from the economic situation of the destination. However, stakeholders believe that changes in the local tourism strategy caused by climate

[25] Comprehensive data set available: 13 out of 13 parameters were delivered by the project partner.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Heli-ski	Alpine winter sports	3.30	3.80	**3.55**	10
Off-piste skiing	Alpine winter sports	3.30	3.60	**3.45**	5
Sports competitions	Sports competitions/events	3.30	3.60	**3.45**	3
Rock climbing	Alpine summer sports	3.30	3.40	**3.35**	4
Artisan workshops	Old customs/traditions	3.30	3.20	**3.25**	1
Via ferrata	Theme hiking	3.30	3.00	**3.15**	2
Hiking	Hiking/walking	3.30	2.80	**3.05**	9
Nature trails	Nature experience	3.30	2.80	**3.05**	7
Mountain biking	Alpine summer sports	3.30	2.40	**2.85**	6
Local products	Fine dining	3.30	1.60	**2.45**	8

Table 3.4.2: Overall vulnerability estimate for Valgrisenche.

Figure 3.4.5: Current product portfolio for Valgrisenche.

change concerns would have a beneficial influence on their organization and that existing regulations to protect the environment are having a positive impact on new development projects. The role of environmental and social NGOs was also assessed positively.

3.4.3 Adaptation strategies

Number of workshops held: 2

Topic of the first workshop: developing possible adaptation strategies to climate change and its impact on Alpine tourism using NetSyMod workshops, SWOT analysis, and DSS/e-tool application[26]) by Cà Foscari University of Venice, supported by RAVA Env and RAVA Tour.

Topic of the second workshop: development of a tailored strategy for an Alpine tourism location already affected by climate change using NetSyMod workshops, SWOT analysis, and DSS/e-tool application by Cà Foscari University of Venice, supported by RAVA Env and RAVA Tour.

Aims and goals

The specific adaptation strategies are aimed at balancing the tourism seasons. The strengths of the pilot site can be summarized in the wild nature of the area, in the site position, in the elitist character of tourist flows, and in the living folk traditions and crafts. Valgrisenche is currently most oriented toward summer tourism and this discourages investment in the tourism sector. The development of adaptation strategies is aimed at solving this problem, taking into account climate changes.

In the social and economic domain, the goal of the adaptation strategies is to prevent depopulation of the countryside by seeking sustainable solutions to create job opportunities.

Adaptation strategies are also targeted at improving public transport inside and outside the location to support expected growth.

[26] More information about the DSS/e-tool available on the project web site.

Strategies developed

By applying the SWOT analysis and the DSS/e-tool, local actors identified possible projections of tourism and economic development of their area in a future affected by climate change.

Three main strategies for tourism development were identified: the first strongly oriented toward sports promotion (Valgrisenche: sports paradise), one oriented toward cultural and traditional issues (Valgrisenche: simply beautiful), and the last one addressed to families (Valgrisenche: for everybody).

Local stakeholders highlighted the value of alpine tourism's more sustainable aspects (e.g., nature, culture, gastronomy, and wellness). They also showed the value of strong relationships between citizens, associations, and institutions.

Soft development strategies prevail over more aggressive ones because of long-term sustainability and lower environmental impacts.

Evaluation

A weighted evaluation of the strategies was made according to the following parameters: economic costs with environmental effects on the local economy, effects on the tourism sector, innovation, environmental impact, feasibility, and sustainability.

The analysis highlights the priority of improving and integrating the range of tourism activities. Strengthening the ski resort should take place alongside promoting local products, cultural tourism, and sustainable mobility. Tourism development may become compatible with long-term sustainability.

Promoting local products is necessary to ensure the immediate positive impact on the site's economy; the expansion of elite sports tourism (already in place) seems to be the best solution for generating concrete effects on the local system and avoiding depopulation of the areas.

Further steps in the destination and after the project closure

Stakeholders outlined the following guidelines:

- Consider climate change as an important component of tourism and territorial planning;
- Improve the transportation system to ensure efficient connections, both for tourism purposes and for ordinary services;
- Promote and improve the location in the range of regional tourism activities.

Participants were very interested in the project; workshops also raised public awareness of climate change and enabled useful contact between stakeholders.

3.5 Zgornje Posočje

M. Lenarčič, LTO Sotočje.

Figure 3.5.1: Most na Soči and Tolmin: gateway to the Zgornje Posočje.

Location: Slovenia
NUTS 2: SI02 Zahodna Slovenija
NUTS 3: SI021 Goriška

Area: 941 km^2
Size of resident population: 19,700 (2008)
Population per square km: 21
Minimum and maximum elevation: 109/2,864 m
Elevation of administrative centers: Bovec (460 m), Kobarid (235 m), Tolmin (201 m)

Nearest motorway access: Nova Gorica (40 km from Tolmin)
Nearest railway station: Jesenice (68 km from Bovec), Most na Soči (7 km from Tolmin)
Nearest international airport: Ljubljana (92 km from Tolmin)

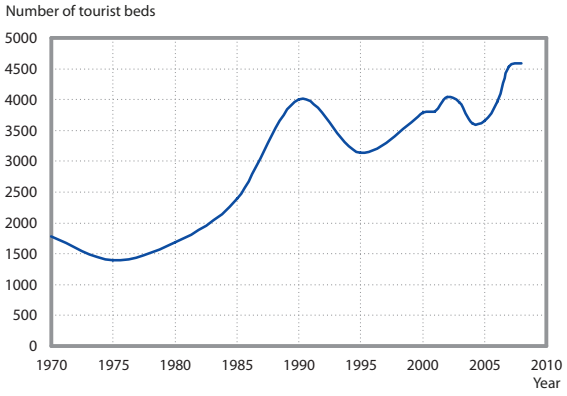


Figure 3.5.2: Growth of the destination in terms of number of beds from 1970 to 2008 in Zgornje Posočje.

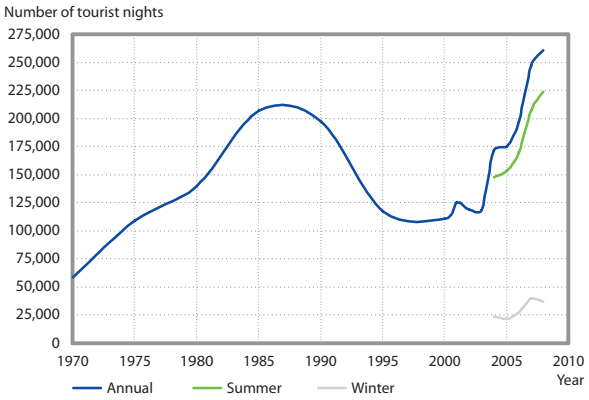


Figure 3.5.3: Annual, summer and winter tourist nights between 1970 and 2008 in Zgornje Posočje.

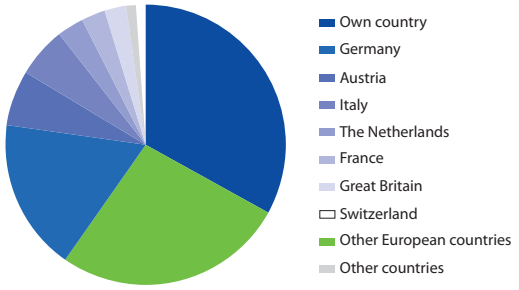


Figure 3.5.4: Origin of summer visitors in 2008 in Zgornje Posočje.

3.5.1 SWOT analysis

Strengths • Climate changes will have no significant impact with regard to lack of snow at the high-mountain Kanin ski center • Connection of the high-mountain Kanin ski center with the Italian Sella Nevea ski center • Intense growth in the number of tourist nights • Summer tourism strongly dominates over the winter tourism season • Developing programs for active vacations and outdoor sports (water, fishing, paragliding) • Developing incentive programs for groups • Rich and diverse flora • Historical First World War heritage	**Weaknesses** • Older and rapidly aging population • Poor accessibility with the rest of Slovenia • Poor public transport • Great dependence on the summer season • Outdated ski infrastructure and unprofitable operations at the high-mountain Kanin ski center • Low occupancy rate for tourists • Lack of tourism products in the case of poor weather • Poor communication and cooperation among those involved in tourism and among municipalities within the destination • Lack of programs for individuals • Excessive focus on water sports on the Soča River
Opportunities • Investor with a concept for the Kanin ski center and expanding ski runs there • The municipalities of Tolmin and Kobarid must be actively included in the Kanin ski center • Expanding the selection of winter tourism activities across the border in Italy too • New tourism products to fill empty tourism capacity • Interpretive guided tours of natural points of interest and historical heritage • Transfer of good practices among local tourism organizations within the destination	**Threats** • Incomprehensible and unresponsive development policy by local communities • Change in the Soča River's hydrological regime regarding tributaries due to climate changes and influence on water sports • Natural hazards • Danger that the development of tourism will only be based on new tourism accommodations rather than new tourism products

Table 3.5.1: SWOT analysis for pilot site Zgornje Posočje.

3.5.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Zgornje Posočje is estimated at 2.03 and is therefore relatively low, whereas the overall vulnerability levels range from 1.81 (local products) to 2.71 (downhill skiing / paragliding)[27]. The product is very diverse and comprises activities in Alpine winter and summer sports as well as arts and culture, nature experience, and fine dining. Combined with the vulnerability of the various tourism products, Alpine winter and summer sports activities (downhill skiing / paragliding) show the highest vulnerability levels and are therefore most at risk. However, in contrast to other regions the overall vulnerability level is relatively low.

Although GDP growth is very stable (34% from 2002 to 2008), other economic parameters are judged to be more critical. People feel that extreme economic events such as bankruptcies and scandals have increased over the last five years and they are not sure what to expect in the future. Another vulnerable parameter is the old age index of 162.21%, which shows that society is ageing quickly.

Zgornje Posočje has an adaptation elasticity of 2.85. Although the overall investment conditions are rated positively, the investment conditions for new ecological projects are judged as being less favorable. However, NGOs seem to be playing a significant role at the

[27] Comprehensive data set available: 13 out of 13 parameters were delivered by the project partner.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Downhill skiing	Alpine winter sports	2,51	3,40	**2,71**	8
Para / hang gliding	Alpine summer sports	2,51	3,40	**2,71**	5
Water activities	General outdoor sports	2,03	3,20	**2,61**	10
Heritage sites	Arts and culture	2,51	3,00	**2,51**	6
Folklore and festivals	Arts and culture	2,51	3,00	**2,51**	4
Hiking	Hiking/walking	2,51	2,80	**2,41**	9
Nature trails	Nature experience	2,51	2,80	**2,41**	2
Mountain biking	Alpine summer sports	2,51	2,40	**2,21**	7
Gastronomy	Fine dining	2,51	2,40	**2,21**	3
Local products	Fine dining	2,51	1,60	**1,81**	1

Table 3.5.2: Overall vulnerability estimation for Zgornje Posočje.

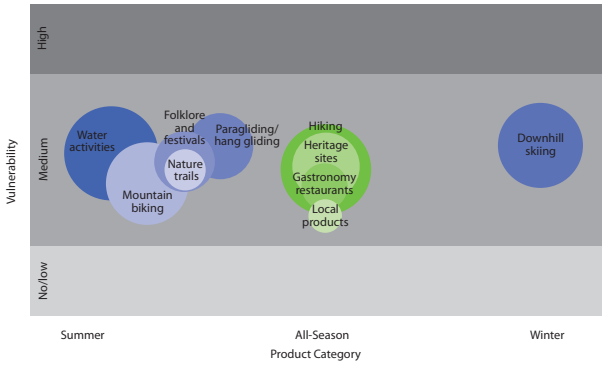


Figure 3.5.5: Current product portfolio for Zgornje Posočje.

destination and people are aware of the dangers arising from climate change so there could nonetheless be a good chance for adaptive measures. Alternatives for diversification include local and culinary products (local crafts and cuisine) and activities for tourists interested in historical events (the First World War museum and memorial sites).

Guests state that the most important factors influencing their choice of vacation destination are the large variety of activities and excursions as well as the authenticity of the region. Experts rate the importance of cost much higher than visitors to the destination.

3.5.3 Adaptation strategies

Number of workshops held: 2

Topic of the first workshop: identifying potential tourist products for Zgornje Posočje with regard to adaptation to climate changes.

Topic of the second workshop: creating detailed potential tourist products for Zgornje Posočje with regard to adaptation to climate changes products.

Aims and goals

In Zgornje Posočje the summer tourism season clearly predominates over the winter tourism season. The dependence on the summer season could be diversified through more successful operation of the high-mountain Kanin ski center. This is not threatened by climate changes in the sense of a lack of snow, but instead by its outdated ski infrastructure and constantly unprofitable operations. This also did not improve after trans-border ski connections were established with the Sella Nevea ski center in Italy. It is critical that the summer season reorient itself from the mass-market "rafting monoculture" on the Soča River to other tourism products.

Strategies developed

Local stakeholders in tourism identified forty-three ideas or measures in the broader sense important for developing the Zgornje Posočje tourism destination with special regard to climate changes. Five measures were selected for further work using the Nominal Group Technique method: interpretive guided tours of natural and cultural heritage, spas, workshops for producing local products, entertainment-based school

camps, and building on the current selection of sports activities. Stakeholders identified possible developments in tourism and economics through the long-distance application of DSS/e-tool (developed by Cà Foscari University of Venice) using questionnaires. A weighted evaluation of the strategies was made according to the parameters including economic costs with environmental effects on the local economy, effects on the tourism sector, innovation, environmental impact, feasibility, and sustainability. Stakeholders worked out in greater detail a proposal for strategies to develop interpretive guided tours of natural and cultural heritage.

Evaluation

Stakeholders are aware that in the future climate changes may affect the tourism economy at the destination due to potential effects on the hydrological regime of the Soča River, which is an important generator of sports tourism. It is necessary now to become aware of the fact that tourism is based not only on beds available, but also on tourism products. Along with the growing volume of tourism accommodation, it is necessary to develop new tourism products. Alongside strengthening paragliding and the Soča Valley Peace Trail, a challenge for further work is setting up a better public transport network within the destination, educating tourism workers, developing tourism programs for the off season, and defining the winter range of activities in the valley.

Further steps in the destination and after the project closure

A condition for further developing adaptation strategies is overcoming the lack of agreement and unresponsive developmental policy of the local communities. The competition among the three local communities and two local tourism boards within the destination must develop into cooperation. The cable-car to the high-mountain Kanin ski center should receive regular state subsidies as basic infrastructure.

B. Erhartič

Figure 3.5.6: Autumn splendor.

3.6 Zugspitze-Karwendel

W. Ehn

Figure 3.6.1: View of Grainau from the northeast with the Zugspitze in the background.

Location: Germany
NUTS 2: DE21 Oberbayern
NUTS 3: DE216 Bad Tölz-Wolfratshausen, DE21D Garmisch-Partenkirchen

Area: 49.38 km^2 (Grainau) + 654.8 km^2 (Karwendel region) = 704.18 km^2
Size of resident population: 3,589 (Grainau) + 25,621 (Karwendel region) = 29,210 (2008)
Population per square km: 73 (Grainau), 39 (Karwendel region)
Minimum and maximum elevation: 680/2,963 m
Administrative centers and their elevation: Grainau (758 m), Karwendel region: Mittenwald (923 m), Krün (875 m), Wallgau (866 m), Kochel am See (Walchensee) (803 m), Jachenau (800 m), Lenggries (680 m)

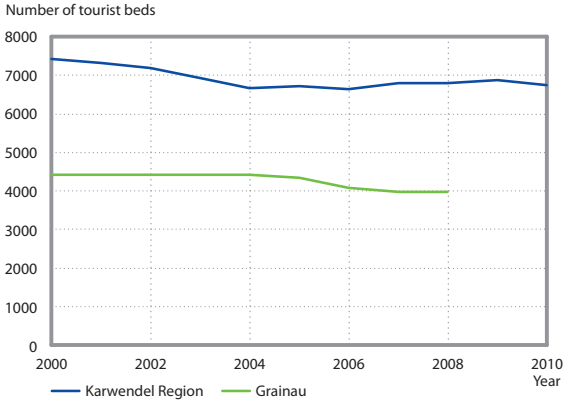


Figure 3.6.2: Growth of the destination in terms of number of beds from 2000 to 2010 in Zugspitze-Karwendel.

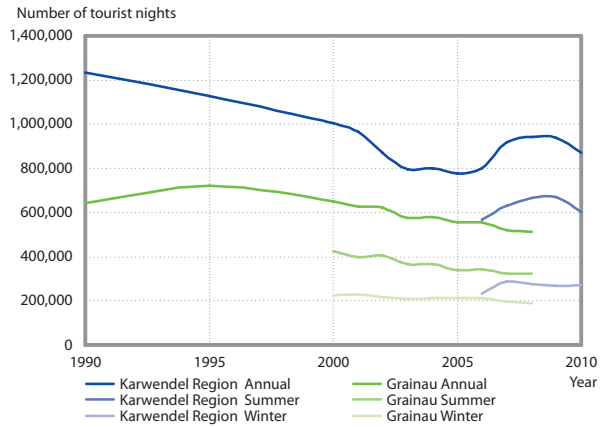


Figure 3.6.3: Annual, summer and winter tourist nights between 1990 and 2010 in Zugspitze-Karwendel.

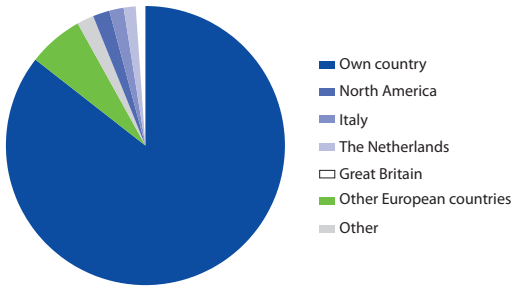


Figure 3.6.4: Origin of annual visitors in Grainau in 2008 in Zugspitze-Karwendel.

Nearest motorway access: from Grainau: Eschenlohe (23 km), from the Karwendel region: Großweil/Murnau (22 km to Kochel/Walchensee)
Nearest railway station: railway line going through the entire pilot region

Nearest international airports: Innsbruck (63 km from Grainau and 37 km from Mittenwald), Munich (130 km from Grainau and 100 km from Lenggries)

3.6.1 SWOT analysis

Strengths • High variety of landscapes and unspoiled nature • Large and diversified variety of several recreational tourist attractions for winter and summer • Well developed network of cross-country ski trails, bicycle routes, and hiking trails	**Weaknesses** • Small ski resorts lacking snow reliability due to low elevations (most slopes around 800 to 1,700 meters) • Cross-country skiing areas are not snow-reliable • Insufficient high-quality accommodations • Low endogenous innovation • Inadequate infrastructure connections between municipalities of the Karwendel region
Opportunities • In the long run, advantages of climate change compared to destinations in southern Europe • Professional regional cooperation between municipalities in order to implement common regional and tourism development strategies (e.g., through a supra-regional natural park) • Development of alternative snow-independent winter / all-season tourism products	**Threats** • High competition from nearby Tyrol, Austria • The snow reliability of ski resorts and cross-country skiing areas will be greatly affected by climate change

Table 3.6.1: SWOT analysis for pilot site Zugspitze-Karwendel.

3.6.2 Adaptation strategies

Subproject Grainau
Number of workshops held: 7
Topics of the workshops: Developing possible adaptation strategies, developing Alpine Nature Experience Park.

Subproject Karwendel
Number of workshops held: 5
Topic of the workshops: Feasibility study for the Nature park in Karwendel.

Aims and goals

With most of the pilot site's ski resorts and cross-country slopes located between 700 and 1,800 meters, the snow reliability will be highly affected by climate change and traditional winter sports in the region are endangered. Thus the municipalities in the pilot site are looking for an opportunity to sustainably develop and position themselves. In this context, all-season attractiveness is seen as a success factor for the future, aiming at the establishment of all-season, climate-independent attractions and products as well as sensitization to climate change. Responding to altered consumer wishes and creating these new products, the existing natural environment will be sustainably enhanced with a focus on developing means of actively experiencing Alpine nature instead of continuously promoting traditional winter sports.

Strategies developed

For the Municipality of Grainau, an Alpine Nature Experience Park (*Alpiner Naturerlebnispark*) is being developed, in which typical elements of Alpine nature and landscape in Grainau, shaped by the local cultural influence, will be presented and their variation over the course of time (also considering climate change) will be pointed out. The concept consists of several components, the main element being nature trails (including a climate change trail) with information and activity stations offering hands-on experience. The trails will be complemented by an exhibition, guided tours by specially trained guides, and web presentation. Special focus is placed on reaching various target groups and on offering products according to the season that are available the whole year round. Thus a new all-season product, offering the opportunity to experience and learn about nature and raising awareness of climate change, is being created.

In the Karwendel region the six municipalities of Mittenwald, Krün, Wallgau, Kochel am See, Jachenau, and Lenggries have been discussing opportunities to sustainably position themselves for some time, focusing on strategies moving away from traditional winter sports tourism towards an active, Alpine nature experience and sustainable enhancement of the existing natural environment. In this context, within the ClimAlpTour project the idea of establishing the Karwendel, Bavaria (*Bayerischer Karwendel*) nature park as an instrument for sustainable regional development and a common marketing network was brought up. As part of a step-by-step realization of the nature park, AFI carried out a feasibility study as a first step in cooperation with local stakeholders to examine the potentials and risks of a nature park in the region. Based on the results, the municipalities decided to develop a plan for a nature park as a next step. Completing the development plan, which will be achieved within the ClimAlpTour project, will provide many of the preconditions for establishing a nature park.

Evaluation

The strategies chosen for the Zugspitze-Karwendel pilot site concentrate on establishing new climate- and snow-independent products, moving away from traditional winter sports-oriented attractions. Both approaches enhance existing nature in a sustainable way, focusing on actively experiencing nature by using the potentials of the existing natural landscape without installing large-scale technical infrastructure and thus exploiting nature. The new products offer all-season attractions and are fit to raise awareness of nature and climate change, and thus can contribute to a new understanding of the issue.

Further steps in the destination and after the project closure

For the Municipality of Grainau, the development of the Alpine Nature Experience Park will be steadily extended after project closure because it consists of various elements that will not be completely implemented within the project's runtime. Furthermore, much marketing needs to be done to make the product popular. For the Karwendel region, based on the feasibility study and the development plan the municipalities will decide if the nature park is to finally be implemented. If so, further steps will be made to set up the nature park.

3.7 Comunità Montana Alto Tanaro Cebano Monregalese


M. Fossati

Figure 3.7.1: The Ligurian Alps from the border between Piedmont and Liguria.

Location: Italy
NUTS 2: ITC1 Piemonte
NUTS 3: ITC16 Cuneo

Area: 646 km^2
Size of resident population: 19,493 (2008)
Population per square km: 31
Minimum and maximum elevation: 302/2,634 m
Administrative center and its elevation: Ceva (386 m)

Nearest motorway access: Ceva
Nearest railway station: Ceva
Nearest international airports: Cuneo (51 km), Turin (126 km)

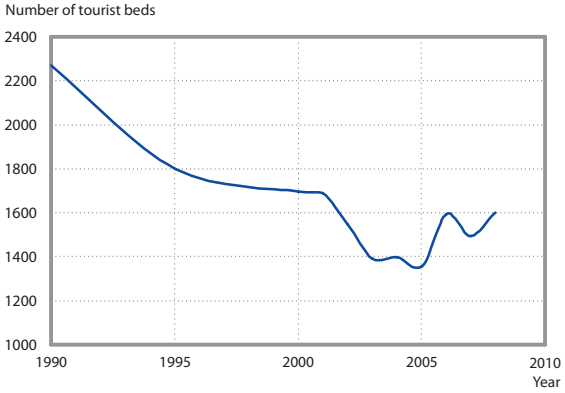


Figure 3.7.2: Growth of the destination in terms of number of beds from 1990 to 2008 in Comunità Montana.

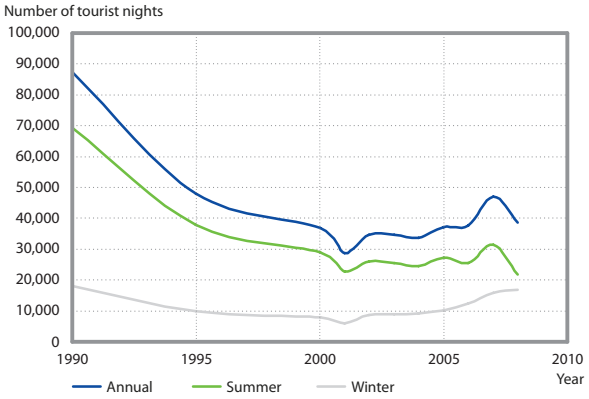


Figure 3.7.3: Annual, summer and winter tourist nights between 1990 and 2008 in Comunità Montana.

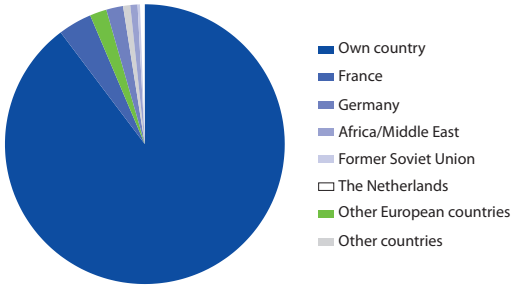


Figure 3.7.4: Origin of annual visitors in 2008 in Comunità Montana.

3.7.1 SWOT analysis

Strengths	Weaknesses
• The presence of regional nature parks nearby (the Upper Pesio and Tanaro Valleys Park and the Ligurian Alps Park) and many Natura 2000 protected areas very close to the ski area • Presence of large areas with morphology and solar exposure suitable for both alpine and Nordic skiing • Presence of environmental quality-areas suitable for winter and summer sports • Presence of a historical mountain railway connection still in use serving the entire Upper Tanaro Valley • Potential accessibility to large catchment areas (Turin, Cuneo, western Liguria) • Potential landscape and structures (towns and villages) that have largely been abandoned represent new opportunities for tourism • Tourism opportunities both in winter (skiing) and in summer (walking, landscape) • Rural landscape quality • Presence of spas and thermal springs • Well-preserved natural environment and landscape, characterized by a harmonious coexistence between man and nature	• Lack of coordination and fragmentation of economic actors • Abandonment of large areas of farmland and large areas of agricultural territory, especially in mountain areas • Fragility of the territory in terms of its hydrological and geological instability along with a progressive lack of environmental maintenance • Tourist visits concentrated into short periods of the year • Few further development possibilities • Lack of initiatives aimed at strengthening synergies between the actors in the area, including participatory decision-making • Weak marketing • Many hotels closed in the area and lack of a consolidated tourism market • Run-down, abandoned buildings and structures around the ski stations represent an environmental hazard • Weak public transport system • Poor communication and promotion of the territory and its features beyond its borders
Opportunities	**Threats**
• Agriculture and forestry potential as a driving force to promote new forms of sustainable economic development with impact on tourism and the local community • Macro area territorial strategy, using the "image effect" of the vicinity of various regional and national natural parks (the Maritime Alps Park, the Upper Pesio and Tanaro Valleys Park, the Ligurian Alps Park, and the Mercantour Park) • Sustainable low-impact tourism (see the Ceva-Ormea railway, which serves the Upper Pesio and Tanaro Valleys Park and Ligurian Alps Park, at the Ormea and Garessio stations) • Environmental and nature-based tourism promotion • Winter activities such as "low-impact tourism" especially for ski touring and snowshoeing in the entire macro Ligurian Alps–Maritime region • Existing ski stations (Garessio 2000 and Viola St. Gree) as "eco-stations" within a larger natural and protected natural area • Conservation of biodiversity and traditional processes that generate a competitive advantage for the local economy • Local agricultural production and short-chain farmers' markets (Community Supported Agriculture) • Policies able to adequately promote and protect the set of valleys and ridges between Piedmont and Liguria (the Alps-Apennines bio-corridors), through appropriate planning mechanisms integrating new development projects in the energy sectors (industrial wind farm, biomass production, etc.) and infrastructure (new roads, railways, etc.) with rural development, agriculture, and tourism, limiting their impact on the landscape and environment.	• Degradation of the significance of the landscape and environmental features, with parallel weakening of the quality of life and attractiveness to tourists • Loss of expertise and knowledge related to traditional products and processes • Depletion of human resources (due to ageing and migration to urban areas) especially in mountain areas, resulting in the abandonment of agricultural and forestry-related jobs • Lack of awareness of local administration and, more generally, the local community towards environmental and rural values • Critical development of roads, highway infrastructure, and energy projects (industrial wind farm, biomass production, etc.) in the area without full analysis of the possible environmental and social impact costs • Underutilization or abandonment of the local tourist resources such as the "spa-complex" in the Garessio area or the many hotels that are now closed • Fragility of the territory in relation to hydro-geological instability together with a progressive lack of environmental maintenance • Population ageing and widespread deterioration in the demographic structure • Insufficient investment in the rural and agricultural sector • Lack of initiatives and dedicated human resources in the municipalities aimed at strengthening synergies between the actors in the area, including participatory decision-making • Failing to understand tourism as an economic opportunity for the area

Table 3.7.1: SWOT analysis for pilot site Comunità Montana.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Off-piste skiing	Alpine winter sports	2.55	3.60	**3.08**	8
Sports competitions	Sport competitions/events	2.55	3.60	**3.08**	1
Rock climbing	Alpine summer sports	2.55	3.40	**2.98**	5
Heritage sites	Arts and culture	2.55	3.00	**2.78**	6
Health spa	Wellness/spas/health	2.55	3.00	**2.78**	4
Hiking	Hiking/walking	2.55	2.80	**2.68**	10
Nature trails	Nature experience	2.55	2.80	**2.68**	9
Gastronomy	Fine dining	2.55	2.40	**2.48**	3
Mountain biking	Alpine summer sports	2.55	2.40	**2.48**	2
Local products	Fine dining	2.55	1.60	**2.08**	7

Table 3.7.2: Overall vulnerability estimate for Comunità Montana.

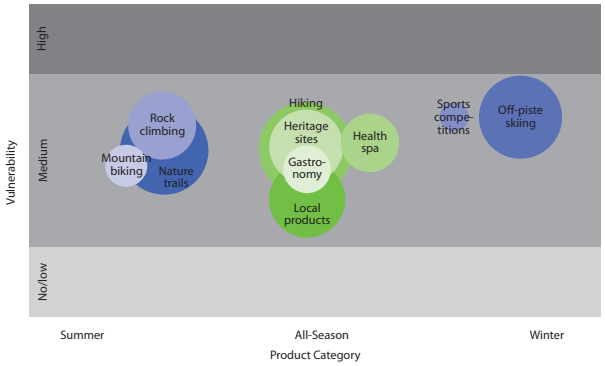


Figure 3.7.5: Current product portfolio for Comunità Montana.

3.7.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Comunità Montana is estimated at 2.55 and is therefore rather low, whereas the overall vulnerability levels range from 2.08 (local products) to 3.08 (off-piste skiing / sports competitions).[28] Comunità Montana has a diversified product portfolio with a focus on Alpine summer and winter sports. Combined with the vulnerability of the various tourism products, Alpine sports show the highest vulnerability levels and are therefore most at risk.

The economic parameters are stable except for the number of beds, which decreased by 6% from 2002 to 2008. The most vulnerable parameters concern social and environmental aspects. The environmental vulnerability level of 4.5 shows that the destination is vulnerable with regard to its snowfall, average temperatures, elevation of ski areas, geographic position, and topography. Regular natural hazards add to this vulnerability.

Comunità Montana has an adaptation elasticity that is slightly below average (2.90). Nevertheless, the awareness of dangers due to climate change, expected benefits from strategy changes arising from climate change concerns, belief in good investment conditions, and the opinion that there are viable alternatives for developing tourism show the potential for adaptation.

Both guests and stakeholders feel that the service quality, variety of activities and excursions, and hospitality and warmth of welcome are very important factors influencing the choice of vacation destination. The importance of cost is rated differently by guests and stakeholders. As at other destinations, stakeholders show a tendency to overestimate the importance of cost.

[28] Non-comprehensive data set available: 11 out of 13 parameters were delivered by the project partner.
[29] Relevant also for Entracque. (page 66)

3.7.3 Adaptation strategies[29]

Number of workshops held: 2

Topic of the first workshop: presentation of initial data, discussion and definition of winter/summer tourism critical issues, and main opportunities.

Topic of the second workshop: the European Awareness Scenario Workshop (EASW) on mountain tourism: "Mountain tourism at 360°: strategies in a changing context" (in collaboration with the WWF).

Aims and goals

The identification of themes to consider in the strategies for Piedmont was achieved through various methods addressing both the demand side (EASW workshops, focus groups, and questionnaires) and the supply side (site analyses and collection of representative figures). These made possible an overview of the needs, current state, and potential of the sites. Because the range of tourism activities there seems rather poor and inappropriate, the chief goal is to change the current approach to tourism. A central issue is for management to take place on a larger scale (at least at the valley level) and involve several stakeholders, which need to be coordinated in their actions and take part in education programs including elements to improve the climate resilience of the local system and its flexibility.

Strategies developed

All the workshops and meetings held in the two pilot areas of Entracque and Ceva-Garessio produced relevant outputs in term of possible improvement and development strategies related to climate change. The most interesting results came from the EASW workshop held in Ceva in collaboration with the WWF. This was the main interactive event and saw the participation of representatives from both pilot areas; it also represented an opportunity for collaboration and exchange between the two areas. At the end of the EASW workshop, the four multi-stakeholder groups suggested five possible project ideas as outcomes. In the final discussion some common points were also identified; as a result, the main strategy resulted in the creation of an integrated tourism website for the Comunità Montana. This was identified as an area with several relevant shortcomings concerning the range of tourism activities, whereas in many respects Entracque represents a "best practice" for the concerned area. The website development is still in progress. Its objective is to clearly and attractively display the year-round tourism opportunities in the valley. Under the guidance of UNCEM Piemonte, the website is likely to associate the goal of coordination among local operators with promoting multi-season tourism to visitors, going beyond the winter period, as was historically the case with the Ceva region. Setting this up requires the active participation of the relevant stakeholders in the pilot area (local authorities, NGOs, tour operators, researchers, etc.).

Evaluation

The chosen strategy pools goals linked to site-specific needs: innovation, flexibility, changed climate conditions, economic growth, and tourism development. A permanent operators' committee cooperating in managing a website and other shared initiatives is likely to enrich the variety of tourism activities and improve awareness of the endogenous potential of the local (valley-level) tourist system. The inclusion of experts and skilled authorities on the committee makes it possible to assess the local impacts of climate change and decide on implementing suitable adaptation, relying on the support of a huge number of local stakeholders, experts, and constant updating, in cooperation with the mountain community.

Further steps in the destination and after the project closure

Success factors include proper establishment of a permanent operators' committee, provision of tourist and climate education to local residents, and updating the website to ensure that it reflects the actual situation. A growing interest exists in applying novel tools locally in order to select policies consistent with adaptation needs. The project's outcomes, knowledge, and indications will enable the mountain community to better capitalize on the local range of tourism activities. In the long run, visitors can rely on a professional and attractive source of information that is aware of regional climate-induced change.

3.8 Entracque

Comune di Entracque

Figure 3.8.1: Aerial view of Entracque.

Location: Italy
NUTS 2: ITC1 Piemonte
NUTS 3: ITC16 Cuneo

Area: 160 km^2
Size of resident population: 878 (2008)
Population per square km: 5
Minimum and maximum elevation: 904/3,297 m
Administrative center and its elevation: Entracque (904 m)

Nearest motorway access: Sant'Albano Stura (42 km)
Nearest railway station: Roccavione (14 km), Borgo San Dalmazzo (15 km), Cuneo (25 km)
Nearest international airports: Cuneo (43 km), Turin (140 km), Nice (141 km)

Figure 3.8.2: Growth of the destination in terms of number of beds from 1990 to 2008 in Entracque.

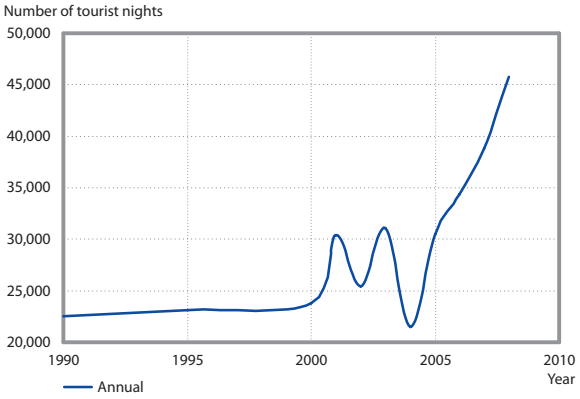


Figure 3.8.3: Annual tourist nights between 1990 and 2008 in Entracque.

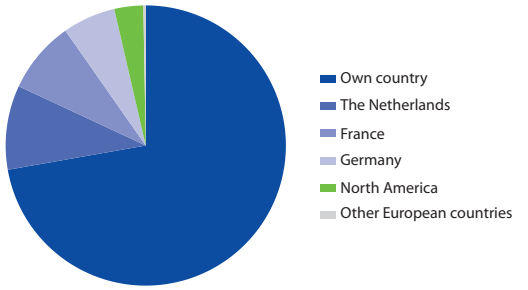


Figure 3.8.4: Origin of summer visitors in 2008 in Entracque.

3.8.1 SWOT analysis

Strengths	Weaknesses
• Composition of agricultural production lines already in existence • Extensive attractive landscapes and natural features, indicated by the presence of the Regional Natural Park of the Maritime Alps • Increasing sensitivity towards environmental and rural values • Widespread rural fabric offering hospitality to guests, local agricultural produce, and quality artisan products • Relatively good relations with Piedmont urban centers • Presence of large areas with morphology and incline suitable for alpine and Nordic skiing • Tourist resorts that are relevant at the regional level, resulting in a fairly structured system of tourist accommodation • Strengthening relations between companies and institutions • Widespread forest cover • Considerable number of businesses operating in different economic sectors • Presence of institutionally managed quality environmental areas (parks), areas suitable for winter sports and spas • Still-widespread perception of cultural roots and values • Significant presence of museums and documentation structures	• Underutilization of forest and pasture • Persistent decreasing population trend in the interior parts of the valley • Ageing population • Reduction of local business neighborhoods in small villages • Significant drop in agricultural employment as a main activity and the impact of this, including environmental issues • Tourist presence concentrated in short periods of the year and a significant share of visitors that only come for day visits • Downward trend in the number of jobs in industry and SMEs • Lack of functional connections between tourist centers • Still-widespread tendency toward individualism in business behavior • Difficulties in building networks of stable relationships between the various parties
Opportunities	**Threats**
• Environment and rural heritage as a relevant factor in the process of integrated sustainable development • Increased sensitivity of general public administration and, more generally, the local community in relation to environmental values • Enhancement of local environmental and natural resources as important factors of sustainable and integrated development • Reputation that has led to a significant winter tourism economy with at least regional significance (Nordic skiing) • Relatively dynamic social context as signs of vitality that are not duplicated in other mountain areas • Development of rural production activities related to the environment and natural resources typical of the area • Possibility of combining some aspects of the local economy (e.g., tourism, handicrafts, quality agricultural produce) • Considerable development opportunities in the tourist industry, starting from a situation far more favorable than that found in other alpine valleys • Experience in running programmes that involve a range of stakeholders both public and private (Territorial Pact, Leader, PTI, PISL, Interreg) • Development of initiatives aimed at strengthening synergies between actors in the area	• Decline of environmental significance also due to the process of de-ruralization • Degradation of forests and pastures particularly due to the presumed lack of profitability of maintenance and improvements along with simultaneous weakening of the quality of life and attractiveness for tourists • Continuing trend towards shorter tourist visits • Fragmentation of the tourist product range, with spatial dispersion of the reasons for stays/visits. Resulting publicity is not always sufficient to promote the real potential of the area • Weakening of internal relations within the local community also connected, in some areas, to the fragility of the demographic structure • Difficulties in the process of sharing purposes and joint strategies agreed to by various socioeconomic actors • Increasingly challenging competition with other resorts with similar tourist activities • Still-widespread tendency toward individualism in business behavior

Table 3.8.1: SWOT analysis for pilot site Entracque.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Cross-country skiing	Alpine winter sports	2.68	3.60	**3.14**	9
Sports competitions	Sports competitions/events	2.68	3.60	**3.14**	6
Downhill skiing	Alpine winter sports	2.68	3.40	**3.04**	8
Rock climbing	Alpine summer sports	2.68	3.40	**3.04**	1
Folklore and festivals	Arts and culture	2.68	3.00	**2.84**	7
Swimming pools	General indoor/outdoor sports	2.68	3.00	**2.84**	3
Nature trails	Nature experience	2.68	2.80	**2.74**	10
Activity parks	Other outdoor leisure activities	2.68	2.60	**2.64**	4
Gastronomy	Fine dining	2.68	2.40	**2.54**	5
Mountain biking	Alpine summer sports	2.68	2.40	**2.54**	2

Table 3.8.2: Overall vulnerability estimate for Entracque.

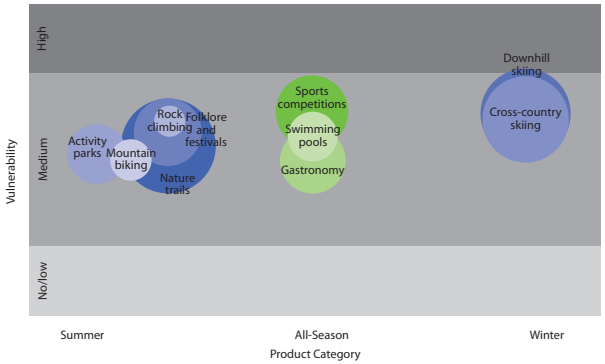


Figure 3.8.5: Current product portfolio for Entracque.

3.8.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Entracque is estimated at 2.68 and is therefore rather low, whereas the overall vulnerability levels range from 2.54 (mountain biking) to 3.14 (cross-country skiing / sports competitions).[30] The product portfolio is very sports-oriented. Combined with the vulnerability of the various tourism products, Alpine winter sports activities show the highest vulnerability levels and are therefore most at risk.

All economic parameters show below-average vulnerability levels with the exception of the pace at which tourism infrastructure is growing. From 2002 to 2008 the number of beds increased by 64%, which is positive on the one hand, but must be managed carefully on the other. Especially with regard to the rather low tourism intensity of 0.52, the destination must ensure that the investments pay off. Environmental vulnerability (reliance on natural resources for winter sports) is rated very high. This should be taken into consideration when developing the destination further.

Entracque has a relatively high adaptation elasticity (3.54). Stakeholders show a positive attitude towards climate change considerations within the destination's development process. They believe that their organizations would benefit from strategy changes arising from climate-change issues. They believe in good investment conditions for new organic projects, and even visitors find that environmental considerations enhance the activities offered at the destination. Possible alternatives for developing tourism include the hotel sector, rural vacations, vacation cottages, and sports competitions for young people and children.

[30] Non-comprehensive data set available: 10 out of 13 parameters were delivered by the project partner.

The quality of service and the variety of activities and excursions were judged as the most important factors for the choice of vacation destination (by both experts and visitors).

3.8.3 Adaptation strategies[31]

Number of workshops held: 2

Topic of the first workshop: winter tourism in the pilot area: "Snow and winter tourism: what prospects for the future?"

Topic of the second workshop: "Mountain tourism at 360°: strategies in a changing context" (in collaboration with the WWF).

Comune di Entracque

Figure 3.8.6: Entracque in winter.

[31] Refer to chapter 3.7.3: Adaptation strategies for Comunità Montana.

3.9 Heidiland / Pizolbahnen

Figure 3.9.1: View of the 5-lakes-tour hiking route below the Pizol peak, which can be reached with the Pizolbahnen.

Location: Switzerland
NUTS 2: CH05 Ostschweiz
NUTS 3: CH055 St. Gallen

Area: 676 km^2
Size of resident population: 49,660 (2008)
Population per square km: 73.5
Minimum and maximum elevation: 400/3,056 m
Administrative center and its elevation: Sargans, 480 m

Nearest motorway access: motorway going through the entire pilot region
Nearest railway station: railway going through the entire pilot region
Nearest international airport: Zürich (85 km)

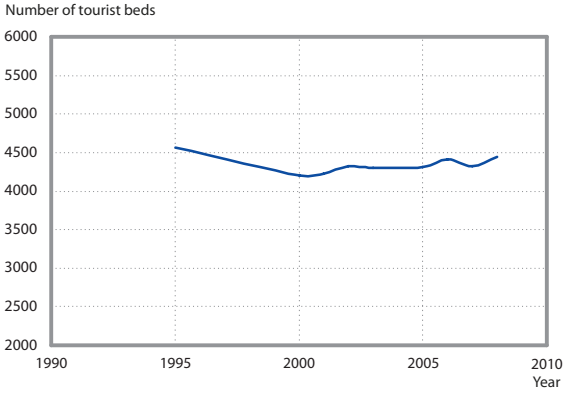


Figure 3.9.2: Growth of the destination in terms of number of beds from 1995 to 2008 in Heidiland/Pizolbahnen.

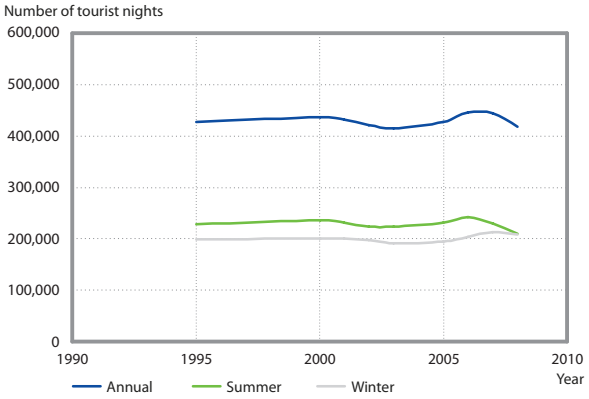


Figure 3.9.3: Annual, summer and winter tourist nights between 1995 and 2008 in Heidiland/Pizolbahnen.

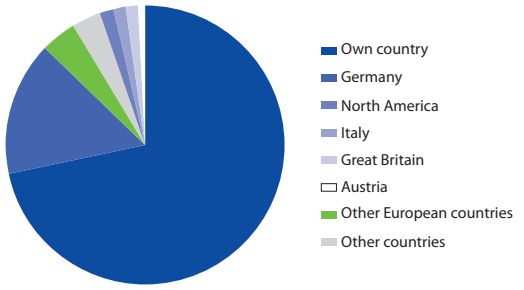


Figure 3.9.4: Origin of summer visitors in 2008 in Heidiland/ Pizolbahnen.

3.9.1 SWOT analysis

Strengths • Comparatively good initial position (focus on summer tourism, good diversification) • Close to Zurich (day trips) and Graubünden (biggest tourism region in Switzerland) • Good public transport in international comparison • Integration of climate risks in spatial planning in Switzerland • Good willingness for cooperation and perception of its importance • Financially strong tourism partners • Relatively high level of sensitization of stakeholders	**Weaknesses** • New destination strategy has to be established; cooperation of stakeholders under destination leadership still too weak • Low local initiative for projects • Awareness-raising still too weak • Disadvantages compared to competitors (e.g., Vorarlberg) in terms of prices and proximity to agglomerations in southern Germany
Opportunities • Strengthening four-season tourism • Strengthening the tourist range in lower-elevation areas (summer and winter, e.g., Bad Ragaz Wellness Center) • Concentration of profitable snow-guaranteed winter sport infrastructure/areas • Consolidation of the destination and its tourist products and services • Concentration on the strengths of the region, on climate--relevant and sustainable tourism opportunities • Chance to promote sustainable products linked to the UNESCO World Heritage "Swiss Tectonic Arena Sardona" and human-powered mobility	**Threats** • Large investment necessary and hard to achieve • Competition situation • Weakening of small, low-elevation ski areas

Table 3.9.1: SWOT analysis for pilot site Heidiland/Pizolbahnen.

3.9.2 Adaptation strategies

Number of workshops held: 3

Topic of the first workshop: information about ClimAlpTour, initial position of the region in the context of climate change, formulation of region-based needs and objectives.

Topic of the second workshop: development of concrete action fields, collection of approaches for solutions.

Topic of the third workshop: identifying and concretizing projects from the action fields developed.

Aims and goals

The destination is seeking to identify its initial position and particularly its strengths and special characteristics. Based on this it is seeking to develop strategies for tourism to remain attractive and competitive in times of climate change. The strategies of Pizolbahnen and other tourism service providers are to be embedded in the destination development strategy for Heidiland.

Strategies developed

The Heidiland destination possesses a comparatively good initial position for adapting to climate change. This because summer tourism in the region already has relatively high importance, and the region is significant as an popular day-tourism destination from the greater Zurich area. Moreover, the range of tourism activities in the region is diversified and offers various links to the adaptation. The outcome of this was a general strategy that takes existing structures and prod-

ucts as starting points, as well as the advantages of the region. This especially represents a strengthening of summer and four-season tourism.

Evaluation

The strategies developed are particularly applicable because they build on the special characteristics and strengths of the tourist region and try to find a consistent approach under the destination development strategy of Heidiland. However, the realization of this consistent approach remains potentially challenging because it is a young destination that may not yet be able to completely assume this role and offer the necessary support to individual service providers.

Further steps in the destination and after the project closure

The strategies and measures developed within the ClimAlpTour workshop series helped sensitize the tourism stakeholders to climate change, its impacts, and the necessary adaption. On the basis of this information, the Heidiland destination as well as the Pizolbahnen service provider identified various directions of impact and will develop various new products and projects relevant for adapting to climate change, and whose development was favored by the workshop series.

Pizolbahnen AG

Figure 3.9.5: Ski paradise in Pizolbahnen.

3.10 Alta Pusteria / Hochpustertal

M. Schönegger, Consorzio Turistico Alta Pusteria

Figure 3.10.1: Landscape: Tre Cime / Drei Zinnen.

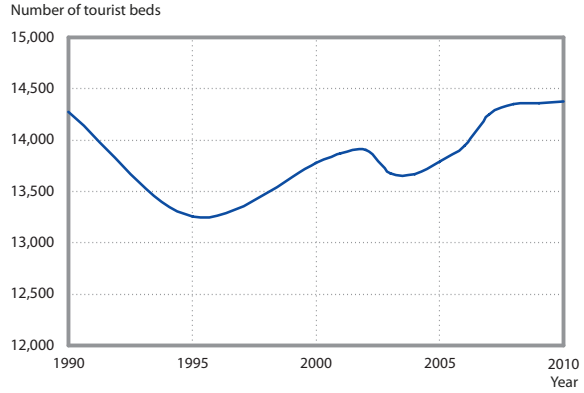


Figure 3.10.2: Growth of the destination in terms of number of beds from 1990 to 2010 in Alta Pusteria/Hochpustertal.

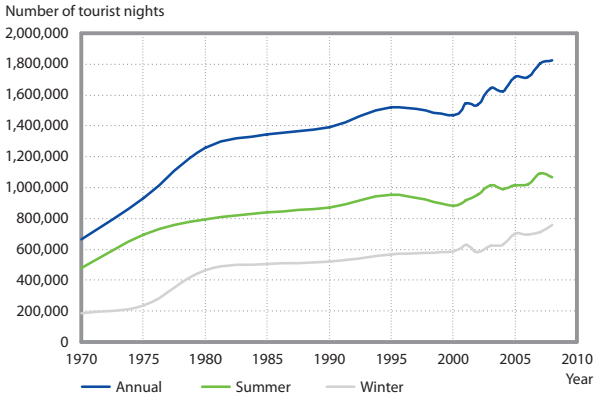


Figure 3.10.3: Annual, summer and winter tourist nights between 1970 and 2008 in Alta Pusteria/Hochpustertal.

Location: Italy
NUTS 2: ITD1 Provincia Autonoma Bolzano/Bozen (Trentino-Alto Adige/Südtirol)
NUTS 3: ITD10 Bolzano/Bozen

Area: 394 km^2
Size of resident population: 12,485 (2008)
Population per square km: 32
Minimum and maximum elevation: 1,111/3,139 m

Nearest motorway access: Bressanone/Brixen (60 km)
Nearest railway station: railway line goes through the region
Nearest international airports: Bolzano/Bozen (107 km), Innsbruck (132), Verona (173 km)

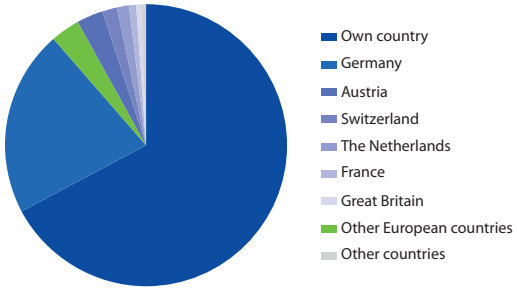


Figure 3.10.4: Origin of summer visitors in 2008 in Alta Pusteria/Hochpustertal.

3.10.1 SWOT analysis

Strengths • There is a significant presence of renewable energy sources at the destination and the destination is well known in Italy for its ecological standards • Very good public transport infrastructure • So far, the destination has not experienced serious problems with a lack of snow. Snow is reliable at the destination in comparison to others • Technologies for making artificial snow are well developed and temperatures still allow snow production	**Weaknesses** • Off-season tourism is still not developed to its full potential • Some parts of the destination, despite the good public transport system, still have accessibility problems
Opportunities • The ecological sensitivity of the destination can be further advertised and become an decisive factor for tourists' choice • Some parts of the destination could benefit from climate change because the summer could become milder, with positive effects on summer tourism	**Threats** • It is difficult to imagine a winter season without skiing • Competition in the market with other ski destinations • Rising costs of making artificial snow • The dynamics of price-dumping at other destinations threaten the quality of the activities offered

Table 3.10.1: SWOT analysis for pilot site Alta Pusteria/Hochpustertal.

3.10.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Alta Pusteria/Hochpustertal is estimated at 2.28 and is therefore very low, whereas the overall vulnerability levels range from 1.94 (local products) to 2.94 (cross-country skiing / downhill skiing).[32] The product portfolio is diversified and comprises activities in Alpine summer and winter sports, fine dining, wellness, nature experience, and arts and culture. Combined with the vulnerability of the various tourism products, Alpine sports show the highest vulnerability levels and are therefore most at risk.

At 55%, the job market dependency on tourism is rather high. In addition, tourism intensity is above average, making tourism the dominant industry in the region. With an old age index of 102.70%, the region has a society that is evenly distributed across all age groups.

The adaptation elasticity is above average (3.39). Lift company sales are high, as is the average amount of daily expenditure. Approximately 37% of land is still undeveloped and provides an opportunity for further growth.

Guests state that the most important factors influencing their choice of vacation destination are the quality of service, easy transport links, authenticity, and regional gastronomy and products.

[32] Non-comprehensive data set available: 8 out of 13 parameters were delivered by the project partner.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Cross-country skiing	Alpine winter sports	2.28	3.60	**2.94**	5
Downhill skiing	Alpine winter sports	2.28	3.40	**2.84**	8
Rock climbing	Alpine summer sports	2.28	3.40	**2.84**	3
Health spa	Wellness/spas/health	2.28	3.00	**2.64**	9
Folklore and festivals	Arts and culture	2.28	3.00	**2.64**	2
Hiking	Hiking/walking	2.28	2.80	**2.54**	10
Nature trails	Nature experience	2.28	2.80	**2.54**	7
Gastronomy	Fine dining	2.28	2.40	**2.34**	6
Mountain biking	Alpine summer sports	2.28	2.40	**2.34**	4
Local products	Fine dining	2.28	1.60	**1.94**	1

Table 3.10.2: Overall vulnerability estimate for Alta Pusteria/Hochpustertal.

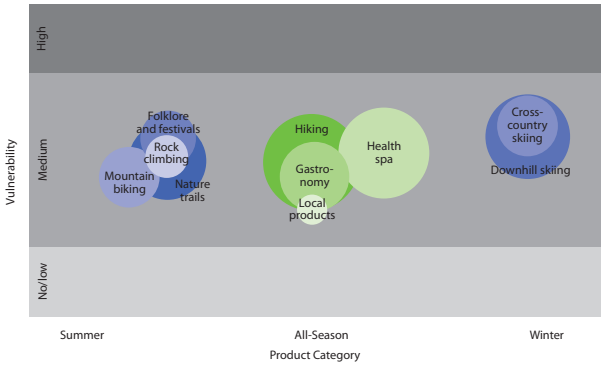


Figure 3.10.5: Current product portfolio for Alta Pusteria/Hochpustertal.

3.10.3 Adaptation strategies

Number of workshops held: 1

Topic of the workshop: Strategy and Product Development.

Aims and goals

The region is well known for its long, harsh winters. During recent years regional stakeholders have noticed a slight warming trend, which has led to milder winters and to an extension of the summer season. Both seasons, winter and summer, are very important. Summer arrivals are slightly higher (www.provinz.bz.it/astat), even though the participants in the strategy workshop argue that value creation during the winter season is significantly greater. They agree that the strategy's goal must be to develop and position Alta Pusteria/Hochpustertal as a year-round destination.

Strategies developed

The tourism stakeholders and decision-makers want to develop and position Alta Pusteria/Hochpustertal as a year-round destination for active tourists and families. Furthermore, the destination wants to offer basic conditions for tourists that offer them recreation in a quiet and peaceful atmosphere. These are the aims for the further strategic development of tourism products and services.

Activity: Products for active tourists will be developed for both winter and summer tourism. In winter the traditional and dominant product of alpine skiing will be maintained and developed. This will be done by further improving the quality of the ski slopes. Opportunities for children and families such as childcare will be further developed. In addition to alpine skiing, the members of the strategy workshop want to further develop softer snow-related activities, with a focus on winter hiking and cross-country skiing. To ensure the possibility of cross-country skiing in the future, the slopes should be moved to higher elevations. To increase the attractiveness of winter hiking, thematic routes (the Alps, pleasure routes, etc.) must be developed.

In summer, active tourism will mainly be based on hiking and biking. To further improve the attractiveness

of hiking tourism, the development of several thematic hiking tours has been suggested. Examples are the Dolomites as a UNESCO World Heritage site for tourists interested in geology and routes linking together alpine lodges in the region. For more athletic tourists, fixed rope routes will also be improved by adding new themes. One of these could be the First World War because there are many interesting historical military sites in the mountains in the Alta Pusteria/Hochpustertal area. For improving biking tourism, multiday biking activities will be developed. In addition, e-bikes for elderly people will be provided.

Relaxation: Being active and relaxing are not contradictory; they are strongly linked because the strategy foresees, among other things, traffic-calming solutions in the city centers, improving bicycle routes, and improving public transport. Active and family tourists will profit from these moves.

Evaluation

Alta Pusteria/Hochpustertal benefits from its climate, which will enable stakeholders to maintain and develop both summer and winter tourism within a relevant strategic planning horizon. The topics that tourism stakeholders are pursuing will lead to the desired results.

Further steps in the destination and after the project closure

The region has good resources for winter and summer tourism. The plan to create car-free zones and improve the bus system might be difficult to achieve because car use is strongly entrenched in the habits of residents and tourists. In the past, traffic-calming efforts in other South Tyrolean city centers failed in the face of resistance by shop owners and residents.

B. Erhartič

Figure 3.10.6: Vivid life.

3.11 Kranjska Gora

M. Lenarčič, LTO Kranjska Gora

Figure 3.11.1: Lake Jasna near Kranjska Gora with the Julian Alps in the background.

Location: Slovenia
NUTS 2: SI02 Zahodna Slovenija
NUTS 3: SI022 Gorenjska

Area: 256 km^2
Size of resident population: 5,416 (2008)
Population per square km: 21
Minimum and maximum elevation: 596/2,864 m
Administrative center and its elevation: Kranjska Gora (806 m)

Nearest motorway access: Jesenice (22 km), Tarvisio (15 km)
Nearest railway station: Jesenice (22 km), Tarvisio (15 km)
Nearest international airports: Ljubljana (64 km), Klagenfurt (66 km)

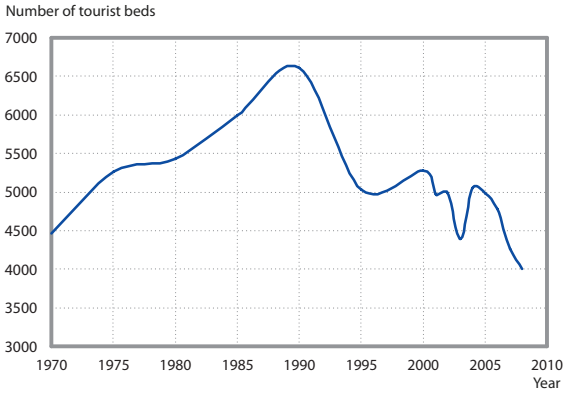


Figure 3.11.2: Growth of the destination in terms of number of beds from 1970 to 2008 in Kranjska Gora.

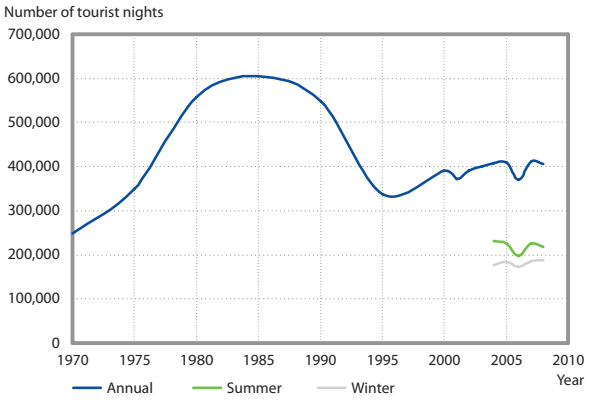


Figure 3.11.3: Annual, summer and winter tourist nights between 1970 and 2008 in Kranjska Gora.

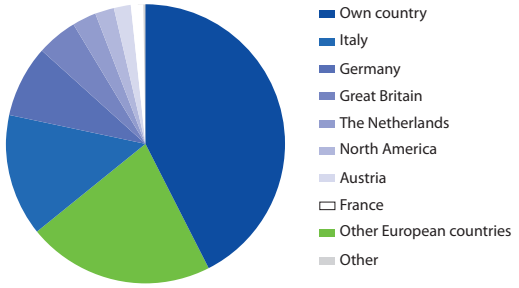


Figure 3.11.4: Origin of summer visitors in 2008 in Kranjska Gora.

3.11.1 SWOT analysis

Strengths • Located on the border of Italy, Austria and Slovenia (multilingualism) and proximity to outgoing European tourism markets • Good accessibility due to low elevation • Tradition of holding two sports competitions in the world cup in winter sports • Based on the number of tourist nights, the summer season is slightly ahead of the winter one • Ethnographic richness; legends and stories (e.g., Golden Horn, Kekec)	**Weaknesses** • Older and rapidly ageing population • Low elevation makes it difficult to achieve 100 skiing days in the winter season • Lack of tourism products in the case of poor weather • Unregulated parking during season peaks • Poor public transport within the destination
Opportunities • The Planica Nordic center: year-round tourism • Alternative resources for cooling ski equipment and simultaneously heating other facilities • Redirecting cableway operators to summer tourism • Regulating parking and public transport within the destination • Rural tourism with a program for schools and families	**Threats** • Shorter winter season • Fall in revenues due to cancelation of winter runs in the world cup • The fall in revenues from winter tourism will be very difficult to replace regardless of investment in developing summer and year-round tourism • Increased erosion due to forest decline as a consequence of pests due to temperature increases • Natural hazards

Table 3.11.1: SWOT analysis for pilot site Kranjska Gora.

3.11.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Kranjska Gora is estimated at 2.97 and is therefore in the medium range, whereas the overall vulnerability levels range from 2.68 (gastronomy) to 3.28 (cross-country skiing).[33] The product portfolio is sports-oriented and comprises many outdoor activities. Combined with the vulnerability of the various tourism products, winter sport activities show the highest vulnerability levels and are therefore most at risk.

Although the job market's dependence on tourism is very high (54%), the number of beds in the destination decreased considerably from 2000 to 2008, adding to the economic vulnerability of the destination. The overall investment climate is rated very poorly by stakeholders. Moreover, the environmental vulnerability level of 5 shows that the reliance on natural resources (especially with regard to winter sports) must be reconsidered.

Kranjska Gora has a medium adaptation elasticity (2.99). Stakeholders show a positive attitude towards climate-change considerations within the destination's development process. They believe that their organizations would benefit from strategy changes arising from climate-change issues and agree with permanent residents playing an active role in the region's governance and decision-making process. As a relevant alternative

[33] Comprehensive data set available: 13 out of 13 parameters were delivered by the project partner.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Cross-country skiing	Alpine winter sports	2.97	3.60	**3.28**	4
Downhill skiing	Alpine winter sports	2.97	3.40	**3.18**	10
Ice climbing	Alpine winter sports	2.97	3.00	**2.98**	1
Hiking	Hiking/walking	2.97	2.80	**2.88**	9
Nature trails	Nature experience	2.97	2.80	**2.88**	2
Casinos and gambling	Other indoor leisure activities	2.97	2.60	**2.78**	7
Weddings and events	Weddings and events	2.97	2.60	**2.78**	6
Activity parks	Other outdoor leisure activities	2.97	2.60	**2.78**	5
Mountain biking	Alpine summer sports	2.97	2.40	**2.68**	8
Gastronomy	Fine dining	2.97	2.40	**2.68**	3

Table 3.11.2: Overall vulnerability estimate for Kranjska Gora.

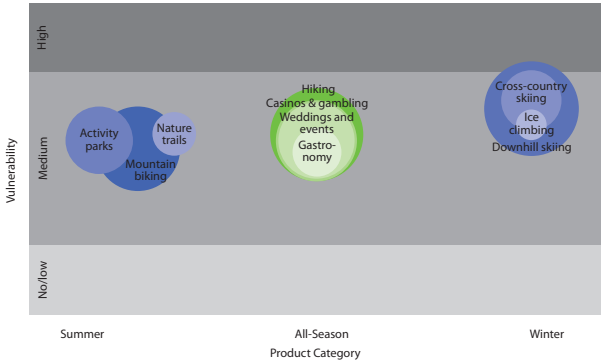


Figure 3.11.5: Current product portfolio for Kranjska Gora.

for further development, tourism activity centered on the world of the literary character Kekec has been suggested to recreate the former lifestyle. In addition, better marketing and promotion efforts are required.

Guests state that the most important factors influencing their choice of vacation destination are the authenticity of the region, hospitality, and warmth of welcome.

3.11.3 Adaptation strategies

Number of workshops held: 2

Topic of the first workshop: identifying potential tourist products for Kranjska Gora with regard to adaptation to climate changes.

Topic of the second workshop: Workshop on creating detailed potential tourist products for Kranjska Gora with regard to adaptation to climate changes.

Aims and goals

Kranjska Gora has a rich tourism tradition. After the intense development of winter tourism in the second half of the twentieth century, today the majority of overnight stays by tourists are seen during the summer season. The average elevation of the ski slopes is 1,000 meters and is therefore the lowest among the pilot regions examined. As a traditional low-elevation ski destination, Kranjska Gora is also very important for Slovenia from the perspective of holding two competitions for the world cup in winter sports. Even though climate changes are recognized and snowless winters have already occurred in the past, the winter season cannot be written off because its collapse would be very difficult to compensate for. The cable-car sector is reorienting itself toward the summer season and additional summer tourism activities are being developed.

Strategies developed

Local stakeholders in tourism identified thirty-two ideas or measures in the broader sense that are important for developing tourism at the Kranjska Gora destination with special regard to climate changes.

Six measures were selected for further work using the Nominal Group Technique method: rural tourism with a program for schools and families, the Planica Nordic

center, an outdoor summer park, five-day tourism products for various age groups, regulating parking, and regulating traffic in the Alpine valleys within the territory of the destination examined.

Stakeholders identified possible developments in tourism and economics through the long-distance application of the DSS/e-tool (developed by Cà Foscari University of Venice) using questionnaires.

A weighted evaluation of the strategies was made according to the parameters including economic costs with environmental effects on the local economy, effects on the tourism sector, innovation, environmental impact, feasibility, and sustainability.

Stakeholders worked out in greater detail a proposal for strategies to develop rural tourism with a program for schools and families, for regulating parking, and for regulating traffic in the Alpine valleys within the territory of the destination examined.

Regulating traffic is not a tourism product in itself, but it is very important as a basis for creating new tourism products.

Evaluation

Stakeholders are aware of climate changes and their effect on the winter season because the low elevation has already led to snowless winters in the past. Possible future expansion of the ski slopes at higher elevations is excluded due to the protected area of Triglav National Park. Kranjska Gora will also be an important winter tourism destination in the future, but it must focus more intensely on developing summer and year-round tourism products. Ideas highlighted for these included an outdoor summer park, holding large-scale sports events, a Kekec Land park (based on a literary character) from Mojstrana to Rateče, and a Kranjska Gora adventure park for poor weather conditions.

Further steps in the destination and after the project closure

Stakeholders and the local tourism organization have shown their willingness to cooperate in achieving the ideas identified for the measures. A municipal traffic study and the findings of the Dynalp project are the basis for regulating parking in the villages and traffic in the Alpine valleys. Paying greater attention to the local community is a condition for implementing rural tourism at the destination, which has potential for many multiplier activities. Stakeholders, the local tourism organization, and the local community must work further on ideas.

3.12 Surselva

T. Luthe

Figure 3.12.1: View from the Oberalp Pass, source of the Rhein, into the Upper Surselva Valley.

Location: Switzerland
NUTS 2: CH05 Ostschweiz
NUTS 3: CH056 Grisons

Area: 463 km^2
Size of resident population: 5,799 (2008)
Population per square km: 12.5
Minimum and maximum elevation: 962/3,328 m
Administrative center and its elevation: Disentis/Mustér (1,130 m)

Nearest motorway access: Tamins (50 km)
Nearest railway station: railway line goes through the region
Nearest international airports: Lugano (110 km), Zurich (147 km), Milan (214 km)

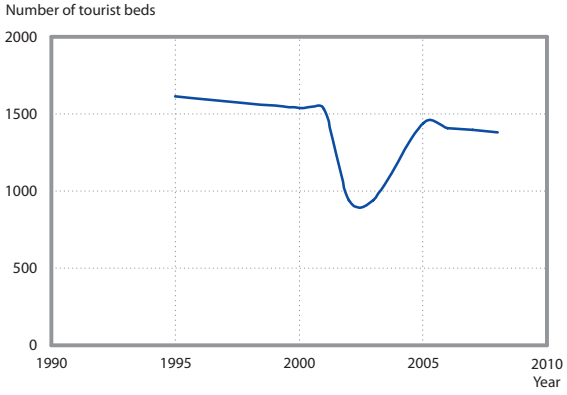


Figure 3.12.2: Growth of the destination in terms of number of beds from 1995 to 2008 in Surselva.

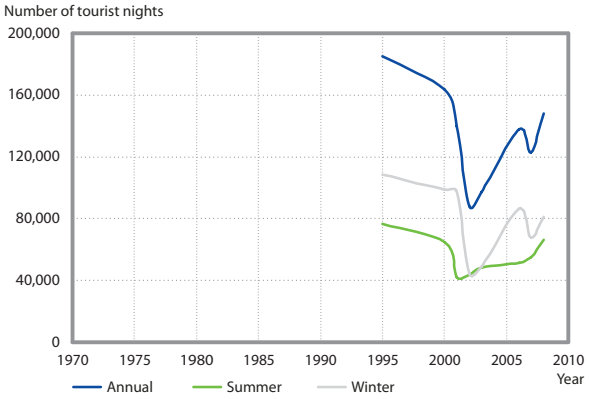


Figure 3.12.3: Annual, summer and winter tourist nights between 1995 and 2008 in Surselva.

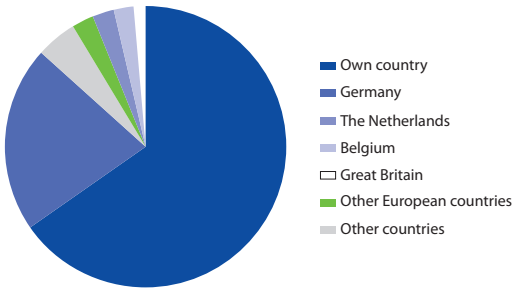


Figure 3.12.4: Origin of annual visitors in 2008 in Surselva.

3.12.1 SWOT analysis

Strengths	Weaknesses
• Located in Graubünden, the leading tourism region in Switzerland • Central position in the Alps with Gotthard as a wild and rural region with a lot of tourism development potential • Good accessibility (individual and public transport) by international standards • Integration of climate risks in spatial planning in Switzerland • Financially strong tourism partners such as Sedrun (25% diversification factor in hydropower, forestry) and new tourism investors in Andermatt • Cultural resources (Disentis Monastery) • Porta Alpina infrastructure (not finished but completed access to NEAT (new rail link through the Alps)) • Regional politicians are aware of situation and secure public funding	• The entire region is in a state of flux, resulting in uncertainty, instability, and delays in development and decision-making • High degree of local political involvement • Tourism marketing organization in transition. No established business planning yet • New destination strategies have to be established; cooperation of stakeholders is lacking as is networking in general • Various smaller tourism stakeholders are de-motivated to engage with politicians due to disappointments in the past • Lack of diversification and products in summer; too much focus on winter • Poor access in winter due to closure of the road (the Oberalp Pass; trains are operational and reliable) • Dependence on public budgets
Opportunities	**Threats**
• Strengthening year-round tourism • Strengthening of the tourism supply chain and products especially during summer • Concentration of profitable guaranteed snow winter sports infrastructure/areas • Development opportunities due to new investor in Andermatt, also investing in Sedrun and related cable-car companies (spillover from Andermatt and incubation of entrepreneurial activity) • Concentration on the strengths of the region, climate, and sustainable tourist products and services • Chance to promote sustainable tourism linked to the rejuvenated St. Gotthard project group • Reactivation of Porta Alpina in the long term • Improvement of cooperation between stakeholders within tourism as well as between actors in the various related sectors	• Significant investment necessary and hard to achieve • Destination remains stuck in decline; no rejuvenation • Incubation of local entrepreneurs and SMTEs fails • Local politics insert themselves into the change process • Destination management gets stuck / fails • Tourism sector lacks support of other stakeholders • Dependence on Andermatt Swiss Alps Project • Weakening of small, low-elevation ski areas • St. Gotthard project failure due to budgeting issues / lack of intercantonal cooperation

Table 3.12.1: SWOT analysis for pilot site Surselva.

3.12.2 Adaptation strategies

Number of workshops held: 3

Topic of the first workshop: information about ClimAlpTour and formulation of region-based needs and objectives.

Topic of the second workshop: fostering interaction between regional stakeholders (based on results of a social network analysis).

Topic of the third workshop: implementation strategies for adaptation measures and future projects.

Aims and goals

The destination is currently undergoing a phase of profound change due to a major outside investment into a new resort village at Andermatt, adjacent to our original pilot site perimeter. The dominant strategy envisaged at the moment to counter climate change effects is a major expansion of the ski infrastructure (lifts and slopes) to connect two formerly distinct ski areas.

Strategies developed

The destination is in a deep stage of decline in the face of the heterogeneous structure of small and medium-sized tourism enterprises. Due to the composition of the core group participating in all three workshops (mainly comprised of administrative staff, small business owners, and transportation representatives), the workshop series mainly focused on two main weaknesses of the region: first, communication between actors from different villages and different sectors and, second,

implementation of bottom-up initiatives, especially for summer and niche products in tourism. Within both thematic blocks, a number of concrete measures were developed.

Evaluation

The main shortcoming of the strategies currently developed is certainly the lack of support from a number of key stakeholders – especially representatives of the local cable-car companies, the local tourism board, key players in the local tourism industry, and some regional politicians. They are too preoccupied with the subject of climate change and the rapid development caused by the aforementioned developments in the region to envisage any alternative or complementary, bottom-up initiatives, and/or innovation processes.

Further steps in the destination and after the project closure

The strategies and measures developed within the ClimAlpTour workshop series will be taken as a basis for further development within a regional economic development program starting in the Gotthard region in 2012, with an emphasis on enabling cross-communal and cross-cantonal initiatives, including in tourism.

B. Erhartič

Figure 3.12.5: Winter forest.

3.13 Wilder Kaiser


TVB Wilder Kaiser

Figure 3.13.1: The village of Going with the famous Wilder Kaiser in the background.

Location: Austria
NUTS 2: AT33 Tirol
NUTS 3: AT335 Tiroler Unterland

Area: 134 km^2
Size of resident population: 9,307 (2008)
Population per square km: 69
Minimum and maximum elevation: 532/2,340 m
Administrative center and its elevation: Ellmau (804 m)

Nearest motorway access: Wörgl (18 km)
Nearest railway stations: St. Johann (10 km), Kitzbühel (10 km), Wörgl (18 km)
Nearest international airports: Salzburg (61 km), Innsbruck (87 km), Munich (101 km)

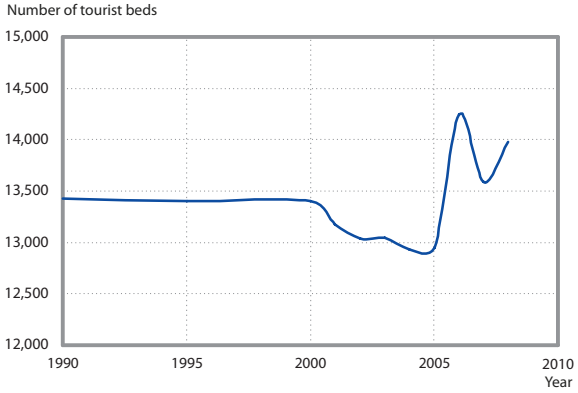


Figure 3.13.2: Growth of the destination in terms of number of beds from 1990 to 2008 in Wilder Kaiser.

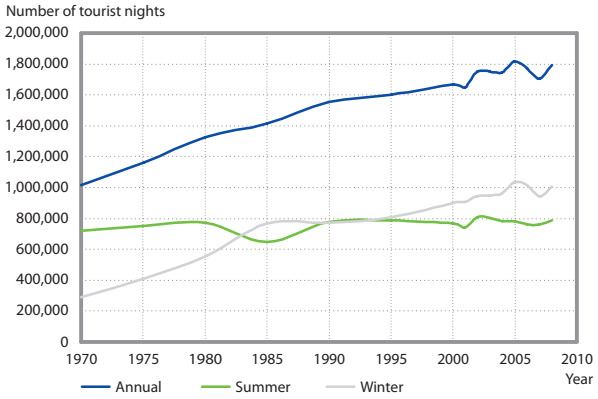


Figure 3.13.3: Annual, summer and winter tourist nights between 1970 and 2008 in Wilder Kaiser.

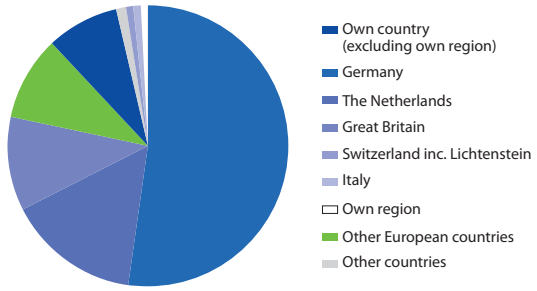


Figure 3.13.4: Origin of winter visitors in 2008 in Wilder Kaiser.

3.13.1 SWOT analysis

Strengths • Unspoiled natural environment • Quality of tourism products and services • Regional tourism products and services • Largest year-round ski resort in Austria • Regional resources • Water supply • Accessibility • Urban structures • Extensive agricultural area • Tourism intensity is only slightly above average	**Weaknesses** • Elevation profile • Dependence on winter tourism • Capacity of regional products and services • Steadily ageing destination population • Dependance on German tourists in summer (66%) • Low occupancy rate (under 40%) compared to the high number of beds available
Opportunities • Strengthening summer tourism • Trends towards demand for higher quality in tourism • Trends towards more short stays • Regionality in tourism product and service supply • Changes in consumer behavior due to climate change • Regional resources • Technological investments • Consumers' increasing ecological awareness • Changes in flora and fauna • Longer summer seasons	**Threats** • Flood risks • Changes in flora and fauna • Natural hazards • Shorter winter seasons • Trends towards more short trips • Political pressure from regions experiencing water shortages • Rising snow line • Rising water-supply costs • Rising cost structures in tourism • Rising travel costs • Credibility regarding snow availability • Lack of snow

Table 3.13.1: SWOT analysis for pilot site Wilder Kaiser.

3.13.2 Adaptation strategies[34]

Number of workshops held: 1

Topic of the workshop: Development of adaptation strategies and implementation options.

Aims and goals

The strategy development process at the Austrian pilot sites aimed to develop long-term strategies regarding the impacts of climate change on tourism destinations. In order to achieve this goal, the process was split into three sections. Tourism stakeholders were first invited to discuss their visions regarding the impacts of climate change and thus express their intrinsic motivations for future adaptation agencies at the destination. Furthermore, the stakeholders were asked to develop mission statements making their visions regarding the influences of climate achievable. In this respect, the mission statement covers the extrinsic motivations encompassing customer needs and motivations as well as the aims and goals of other relevant interest groups for the tourism destination. Next, the stakeholders transferred these aims and goals regarding the impacts of climate change into possible strategies for positioning the tourism market. Finally, necessary measures and concepts for implementation were developed.

Strategies developed

In order to address the impacts of climate change, stakeholders at the Wilder Kaiser destination are striving to implement a broad concept of sustainability in tourism

[34] Aims and goals, Evaluation and further steps in the destination and after the project closure are relevant also for pilot sites Brandnertal and Stubai Tirol.

TVB Wilder Kaiser

Figure 3.13.5: Wilder Kaiser in September.

production. Production should follow an environmentally friendly and resource-protecting path. Furthermore, regionally produced products are at the core of future tourism products and services. Awareness-raising issues targeting tourists as well as other stakeholders seek to strengthen the conscious handling of natural resources. In this respect, climate-damaging emissions should be reduced in the long run. So far, nature at the destination is perceived as being in good order. In terms of infrastructure, the valley is divided into a developed and an undeveloped side because the region is split by a mountain chain. This contrast should be preserved, offering the opportunity to target different customer segments, especially families. At the Wilder Kaiser destination, summer tourism in particular will be strengthened by rejuvenating the "summer freshness" (*Sommerfrische*) concept, which offers a pleasant, fresh break during the hot summer months. In this respect, the stakeholders in the destination developed forty-four measures varying from a shop or a marketplace offering exclusively local products and traffic-calming zones to using water reservoirs for making artificial snow and energy production during summer.

Evaluation

Generally, the motivation of tourism stakeholders to react to impacts of climate change is very low. Although most stakeholders are aware of ongoing climatic change, the time horizon in which impacts will be noticeable in the tourism industry is perceived as too distant. Furthermore, issues related to climate change are hard to grasp and therefore many different issues, such as regionalism in tourism production, environmental, social, and economic sustainability, and so on, are discussed in the light of climate change. Implementing more sustainable tourism concepts is perceived as the most promising strategy in this respect. The strategies developed mainly reflect an expected change in customer awareness and technical adaptation strategies (e.g., making artificial snow). Finally, mitigation measures are mostly expected to be implemented at the governmental level.

Further steps in the destination and after the project closure

The goals, aims, and positioning strategies as well as the ideas and measures need to be presented to the main stakeholders at the destination and discussed. Workable and commonly accepted strategies should be further refined to differentiate the destination from competitors and adapt to climate change. After passing the authorizing committees, the strategies should be presented to the general public at the destinations in order to secure acceptance among all stakeholders. In this respect, a sustainability team should be established concentrating on issues of sustainable tourism production. One success factor here is the appropriate composition of the members of the sustainability team. The measures and ideas developed need to run through a further screening and evaluation phase, ensuring that relevant interest groups are addressed and the measures are in line with the overall strategy of the destination.

3.14 Aletsch

Figure 3.14.1: View of the Aletsch glacier from the Aletsch forest. This is the largest glacier in the Alps (about 23 km²).

Location: Switzerland
NUTS 2: CH01 Région lémanique
NUTS 3: CH012 Valais

Area: 347 km²
Size of resident population: 10,345 (2007)
Population per square km: 29.8
Minimum and maximum elevation: 673/4,274 m
Administrative center and its elevation: Naters (673 m)

Nearest motorway access: Sierre (36 km)
Nearest railway station: Brig (0.5 km)
Nearest international airports: Milan (148 km), Geneva (184 km), Zurich (187 km)

Figure 3.14.2: Growth of the destination in terms of number of beds from 1995 to 2008 in Aletsch.

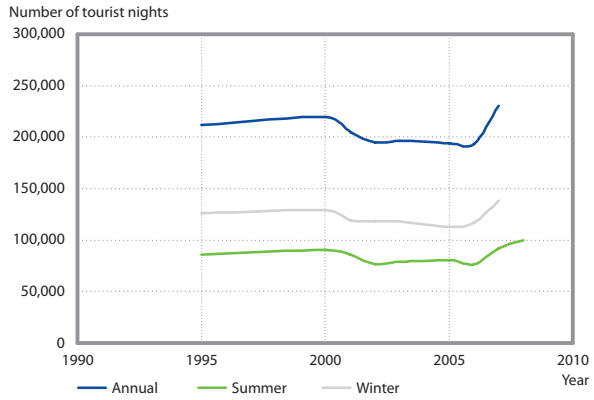


Figure 3.14.3: Annual, summer and winter tourist nights between 1995 and 2009 in Aletsch.

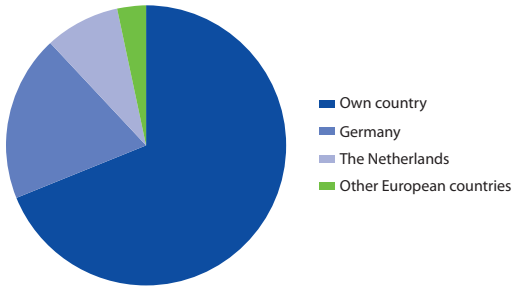


Figure 3.14.4: Origin of winter visitors in 2008 in Aletsch.

3.14.1 SWOT analysis

Strengths • Good skiing conditions (ski area over 1,900 m elevation, snow cannons) • Landscape (UNESCO World heritage Swiss Alps, Jungfrau, Aletsch, enough water resources, sunny balcony) • Good organization and solidarity in the face of extreme natural hazards	**Weaknesses** • Too few alternative activities (non-skiing) • Profitability of ski activities (high fixed costs such as snow-making) • Poor communication on the guarantee of snow • Lack of cooperation • Relatively poor hotel selection
Opportunities • Trend of summer tourism (cool summer weather) • Changing tourist needs (authenticity, nature, culture, etc.) • Readable climate history (better awareness of climate change for tourists for cities) • Alternative tourism (catastrophe tourism, farm getaways)	**Threats** • Natural hazards: negative media reports and image • Frequency reduction (change in glacier landscape, natural hazards) • Better cooperation with competitors instead of actors in the region • High costs of protective measures (for trails, etc.)

Table 3.14.1: SWOT analysis for pilot site Aletsch.

3.14.2 Adaptation strategies

Number of workshops held: 3

Topic of the first workshop: SWOT analysis and state of the art of knowledge of climate change and its consequences on tourism in the Aletsch region.

Topic of the second workshop: state of the art of existing strategies and selecting a few most important adaptation strategies specifically regarding tourism and climate change.

Topic of the third workshop: finding a few concrete measures in order to develop the adaptation strategies discussed in the second workshop.

Aims and goals

The destination still has good conditions for skiing because the ski area is generally above 1,900 meters in elevation and is well equipped with snow machines. However there are too few alternative activities to skiing. The landscape is unique and is part of the Swiss Alps Jungfrau-Aletsch UNESCO World Heritage site. This should be used to promote summer tourism. The glacier also shows a readable climate history and therefore offers better awareness of climate change for tourists to the site. However, its retreat may negatively affect the landscape.

Strategies developed

Eighty percent of the overnight stays at the destination occur in winter. Winter tourism should therefore be secured. A major issue for securing snow sports is

B. Erharič

Figure 3.14.5: Simply beautiful.

artificial snow production. There should therefore be a return on investment. Snow should not be overproduced because of the high costs, but there should still be enough that people will come to the resorts. It is also very important to optimize production so as not to waste energy and water. Consequently, water and energy efficiency are also very important from the economic and ecological points of view and can be retained as a concrete measure.

At the same time as maintaining winter tourism, summer tourism should be developed. The potential of the destination in the future is the summer season, which has been neglected in the past thirty years. Tourists need less money for summer vacations than for winter vacations. Hiking remains the core business in summer (95%). However, it should be more marketable as an experience because trails alone are not sufficient. A concrete measure to enhance this experience is to create a trail with local food and drink specialities. Typical mountain products and culture should be promoted because this difference will be a magnet for urban tourists.

Evaluation

In a general way, this case study highlights the fact that local stakeholders have difficulty giving up the "businesses as usual" model. It means they primarily focus their adaptation strategies on maintaining skiing and snow-related activities, and secondly on hiking activities in the summer. It also highlights the following paradox: the few stakeholders that took part in the workshops did not want a "theoretical" report on tourism and climate change, but at the same time it was difficult to convince them to take responsibility for implementing the selected measures. Even the most motivated stakeholders, who agreed to take responsibility for the concrete projects, were not able to advance their projects since the last workshop in June 2010.

Further steps in the destination and after the project closure

The director of the cable-car company is responsible for measures related to the efficiency of snow production and the director of the tourism office for measures related to the trail with local products. We will remain in touch with them after the ClimAlpTour project in order to follow their progress. However, the municipalities should also be involved because they are key stakeholders that can significantly improve the situation regarding climate change.

3.15 Brandnertal

Alpenregion Bludenz

Figure 3.15.1: The village of Brand surrounded by the mountains at the Brandnertal destination.

Location: Austria
NUTS 2: AT34 Vorarlberg
NUTS 3: AT341 Bludenz-Bregenzer Wald

Area: 78.5 km^2
Size of resident population: 4,318 (2008)
Population per square km: 55
Minimum and maximum elevation: 570/2,965 m
Administrative center and its elevation: Brand (1,036 m)

Nearest motorway access: Bludenz (10 km)
Nearest railway station: Bludenz (8 km)
Nearest international airports: Friedrichshafen (65 km), Innsbruck (143 km), Zurich (163 km)

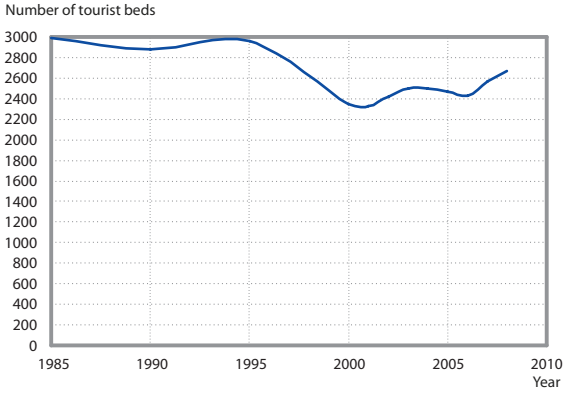


Figure 3.15.2: Growth of the destination in terms of number of beds from 1985 to 2008 in Brandnertal.

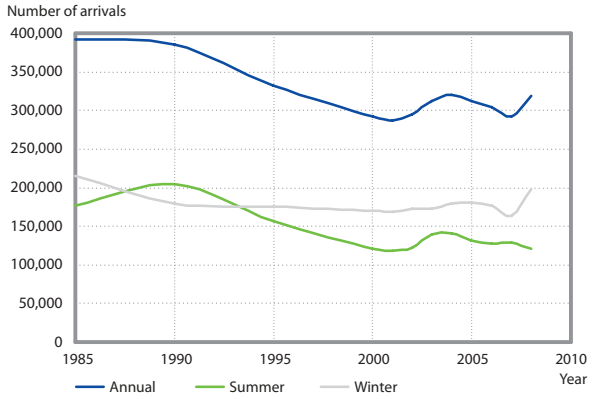


Figure 3.15.3: Annual, summer and winter tourist arrivals between 1985 and 2008 in Brandnertal.

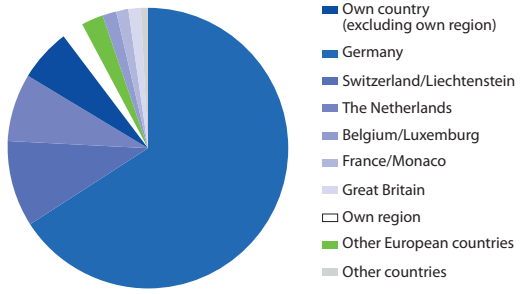


Figure 3.15.4: Origin of winter visitors in 2008 in Brandnertal.

Mostly winter tourism pilot sites

3.15.1 SWOT analysis

Strengths • Unspoiled nature and environment • Quality of tourism products and services • Regional resources (e.g., water) • Local recreation area with many regular visitors • Agricultural and regional products	**Weaknesses** • Elevation profile • Dependence on winter tourism • Little new product development • Lack of cooperation • Lack of international recognition
Opportunities • Strengthening summer tourism • Trends towards more individuality in tourism demand • Changes in flora and fauna • Longer summer seasons • Technical innovations • Trends towards more short stays • Trends towards demand for higher quality in tourism • Regionality in tourism product and service supply • Individual packages in tourism supply • Products and services close to nature	**Threats** • Shorter winter seasons • Lower value creation during the summer season • Flood risks • Variety of flora and fauna • Natural hazards • Rising snow line • Snow shortages • Rising water supply costs • Costs for protective measures • Decreasing general interest in ski sports • Credibility regarding snow reliability

Table 3.15.1: SWOT analysis for pilot site Brandnertal.

3.15.2 Adaptation strategies[35]

Number of workshops held: 1

Topic of the workshop: Development of adaptation strategies and implementation options.

Strategies developed

Nature and nature preservation, regionalism in production, and quality are the core of adaptation strategies in the Brand nertal. Due to the impacts of climate change, seasonality needs to be decreased and all-year and weather-independent tourism products and services, especially for the target-group family, need to be developed. Regarding the impacts of climate change, the Brandnertal area seeks to offer tourists an escape from everyday hassle, which is seen as one of the drivers of climate change. Guests should visit the Brandnertal area because business is done in a sustainable way there. Raising awareness of sustainability is one of the aims in this respect, which should also decrease customers' price sensitivity. Fifty-one ideas and measures were identified for implementing the strategic goals.

[35] For Aims and goals, Evaluation and further steps in the destination and after the project closure refer to chapter 3.13.3: Wilder Kaiser.

3.16 Les Gets

N. Joly, Office de Tourisme des Gets

Figure 3.16.1: The village of Les Gets, Haute Savoie, with Mont Blanc in the background.

Location: France
NUTS 2: FR71 Rhône-Alpes
NUTS 3: FR718 Haute Savoie

Area: 29.83 km^2
Size of resident population: 1,321 (2006)
Population per square km: 44
Minimum and maximum elevation: 1,172/2,002 m
Administrative center and its elevation: Les Gets (1,172 m)

Nearest motorway access: Cluses (22 km)
Nearest railway stations: Cluses (22 km), Geneva (63 km)
Nearest international airports: Geneva (63 km), Annecy (82 km)

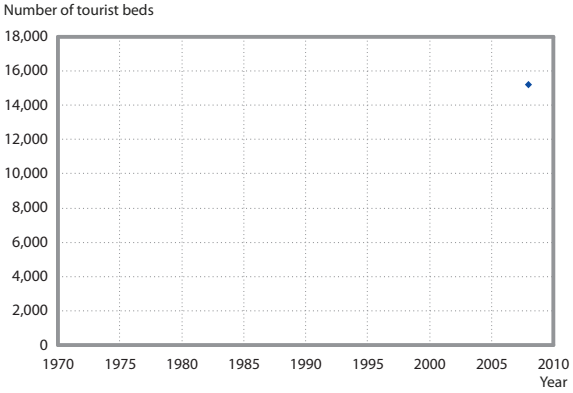


Figure 3.16.2: Size of the destination in terms of number of beds in 2008 in Les Gets.

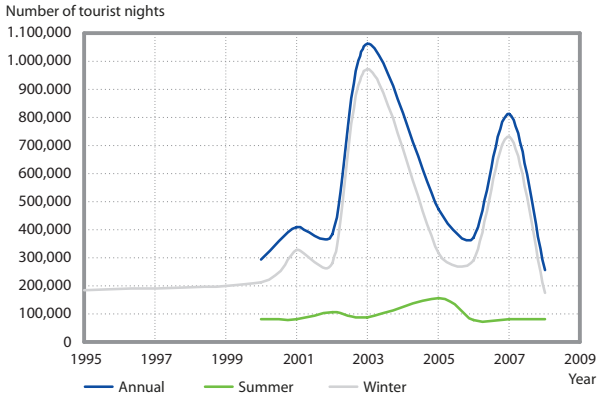


Figure 3.16.3: Annual, summer and winter tourist nights between 1995 and 2008 in Les Gets.

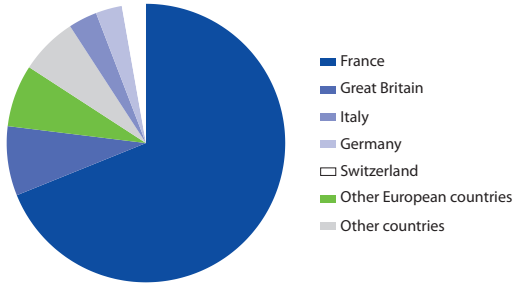


Figure 3.16.4: Origin of winter visitors in 2008 in Les Gets.

Mostly winter tourism pilot sites

3.16.1 SWOT analysis

Strengths • The local population has proven itself to be highly adaptable to change (transformation of the economy from agriculture to tourism) • High degree of local control over the infrastructure, property, and businesses of the resort • Strong sense of identity • Wide range of activities offered for non-skiers in winter • New website in response to feedback from recent study; this demonstrates the capacity of the tourism office to take concrete action • Proximity to Geneva, Annecy, and other wealthy areas • Good momentum for sustainable development and ecologically-oriented activity • Position of Les Gets on the *Route des Grandes Alpes* ensures trade and accessibility	**Weaknesses** • Property prices lead to significant distortions in the property market and resort activities • Strategic vision focused on Les Gets; lack of understanding of the wider context? • The degree of solidarity among the various stakeholders in the resort appears low • Poor understanding of the needs and preferences of British residents and property owners • The resort is still dependant on a mono-industry (winter sports tourism) • Lack of control/monitoring of available tourism accommodation leads to missed potential tourist tax revenues
Opportunities • Open up the resort to other activities; for example, taking advantage of the high-speed broadband connection to develop a remote-working (telework) center close to Geneva, a "Silicon mountain"-type business start-up center, an attractive residential base for city workers • Build on the resort's head start in the area of sustainable development and ecologically-oriented activity • Improve monitoring of tourism activity; for example, introduce an arrivals book to provide greater control and lead to increased tourist tax revenues for financing other projects	**Threats** • Changes in the sociological make-up of the community • A reduced capacity to adapt to changes if the resident population has changed? • Reduced importance / loss of identity of agriculture within the commune • Availability of water • Long-term reliability of snow cover • Stronger competition within the tourism industry, especially in mountain-related tourism activities • Reduction in the number of hotels and thus "hot beds"; increase in the number of "cold beds"

Table 3.16.1: SWOT analysis for pilot site Les Gets.

3.16.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Les Gets is estimated at 2.85 and is therefore a little below average, whereas the overall vulnerability levels range from 2.43 (artisan workshops) to 3.25 (golf).[36] Les Gets' product portfolio is very diverse and comprises activities in Alpine summer and winter sports as well as fine dining, wellness, and old customs and traditions. Combined with the vulnerability of the various tourism products, sports show the highest vulnerability levels and are therefore most at risk.

The rather low GDP growth rate from 2002 to 2008 (12%) is the most vulnerable economic parameter. Both social and environmental vulnerability levels are below average. With an old age index of 78.11%, Les Gets has a rejuvenating society, which is rather rare in comparison to the other ClimAlpTour pilot sites.

Les Gets has an adaptation elasticity that is slightly above average (3.19). Stakeholders show a positive attitude towards climate change considerations within the destination's development process. They believe that their organizations would benefit from strategy changes arising from climate change issues and think that there are relevant alternatives for developing the region. These alternatives are not necessarily tied to tourism. High-quality mountain agriculture and craftsmanship were mentioned along with the suggestion

[36] Non-comprehensive data set available: 10 out of 13 parameters were delivered by the project partner.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Golf	General outdoor sports	2.85	3.60	**3.25**	6
Downhill skiing	Alpine winter sports	2.85	3.40	**3.13**	10
Water activities	General outdoor sports	2.85	3.20	**3.03**	2
Health spa	Wellness/spas/health	2.85	3.00	**2.93**	5
Activity parks	Other outdoor leisure activities	2.85	3.00	**2.93**	3
Folklore and festivals	Arts and culture	2.85	3.00	**2.93**	1
Hiking	Hiking/walking	2.85	2.80	**2.83**	9
Gastronomy	Fine dining	2.85	2.40	**2.63**	8
Mountain biking	Alpine summer sports	2.85	2.40	**2.63**	7
Artisan workshops	Old customs/traditions	2.85	2.00	**2.43**	4

Table 3.16.2: Overall vulnerability estimate for Les Gets.

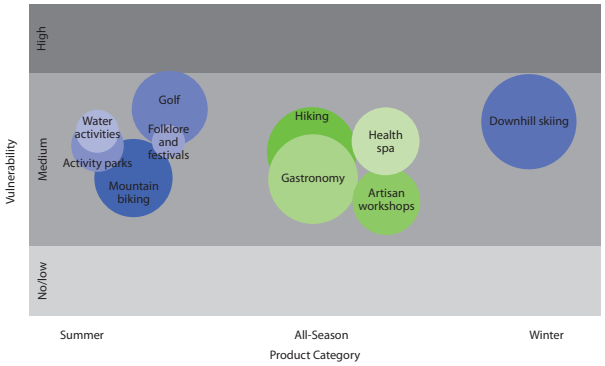


Figure 3.16.5: Current product portfolio for Les Gets.

that the emphasis should be shifted between development strategies that already exist.

For guests, the most important factors influencing their choice of holiday destination are the reliability of weather conditions, the quality of service, and the authenticity of the region. Only one expert answered this question and his assessment corresponds to visitors' evaluation (ratings only slightly higher, but the same direction).

3.16.3 Adaptation strategies

Number of workshops held: 2

Topic of the first workshop: "Innovative lines of work for tourism in Les Gets" – part 1.

Topic of the second workshop: "Innovative lines of work for tourism in Les Gets" – part 2.

Aims and goals

The goal of the workshops was to propose innovative strategies for the overall development of Les Gets. The commune is heavily dependent on tourism, with winter tourism accounting for the majority of the commune's income. The local authority is aware of the risks to future snow cover from climate change and of the potential risks of water shortage. The tourism office is already active in product development, and therefore a more general objective was set to generate innovative proposals for the development of the resort, including the residential community and other potential economic activities.

Strategies developed

Stakeholders identified three main themes to achieve the agreed objective, and then developed specific proposals within each theme:

The "eco-resort" project:

- Promote ecological activities already underway and develop a coherent "eco-resort" strategy: the resort is ahead of many of its competitors with many environmental activities, but these should be better coordinated and publicized.
- Adopt a strategy to become a true "eco-village"; for example, by expanding pedestrian areas and creating parking areas out of town or underground; providing shuttle bus services for residents, especially school

N. Joly, Office de Tourisme des Gets

Figure 3.16.6: The little train carries skiers and tourists through the village of Les Gets.

buses for local children; improving waste recycling by involving the entire chain from residents to the association of communes responsible for waste management; improving the cleanliness of the village; and putting in place a proper environmental charter involving accommodation providers and businesses.

Open the resort year round:

- Gradually move towards year-round tourism, with several "mini-seasons" that can gradually be extended (Easter, summer, All Saints Day, winter).
- Target young retired people that want to escape the city and enjoy their free time in the mountains, either by living or vacationing in the resort.
- Create a year-round business hub based on teleworking in a dedicated center where activities could be mutually strengthening and supportive.

Take control of land in the resort and renovate existing infrastructure:

- Maintain the village's image by preserving its center and ensuring that the size of the village remains consistent with its image.
- Consider making the village center a pedestrian area and creating parking lots on the outskirts, with public transport such as electric buses within the central area.
- Make better use of publicly owned buildings and examine options for redeveloping underutilized public buildings.

Evaluation

The strategies proposed are well focused on the intended objective and have the strong benefit of being coherent with each other.

The third theme (concerning land and infrastructure) is the most difficult to address with realistic propositions because it depends on the will and strategy of the local authority, and also, in the case of privately owned buildings, on the will of private owners to cooperate with the proposed strategy.

For all themes, the participation of the local community is vital to the success of the proposals. Opening the resort all year round requires businesses to be open to tourists and residents. Waste recycling involves the cooperation of accommodation providers and restaurateurs as well as residents.

With political will and strong support from the local community, the suggested strategies could make a significant difference to the direction and quality of the development of Les Gets.

Further steps in the destination and after the project closure

We have been invited to present the results of the workshops to members of the Municipal Council of Les Gets. The municipal councilors will then decide if they wish to carry forward any of the strategies proposed. The task of implementing any strategies adopted would then be passed to existing or new commissions made up of councilors and local stakeholders.

3.17 Les Sept Laux

L. Chaix, Office de Tourisme des Sept Laux

Figure 3.17.1: Prapoutel, one of the three entry points to the Les Sept Laux ski area in Isère, which is easily accessible from Grenoble and the Grésivaudan valley seen below.

Location: France
NUTS 2: FR71 Rhône-Alpes
NUTS 3: FR714 Isère

Area: 128 km^2
Size of resident population: 2,828 (2006)
Population per square km: 22
Minimum and maximum elevation: 320/2,925 m
Administrative centers: Les Adrets (740 m), La Ferrière (940 m), Theys (620 m)

Nearest motorway access: Brignoud/Crolles (17 km)
Nearest railway stations: Chambéry (50 km), Grenoble (35 km)
Nearest international airports: Chambéry (55 km), Lyon (134 km)

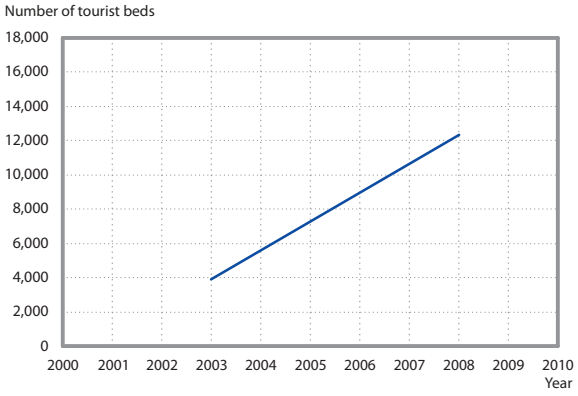


Figure 3.17.2: Growth of the destination in terms of number of beds in 2003 and 2008 in Les Sept Laux.

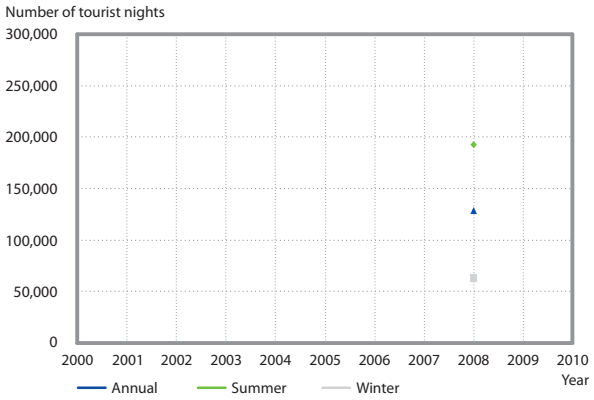


Figure 3.17.3: Annual, summer and winter tourist nights in 2008 in Les Sept Laux.

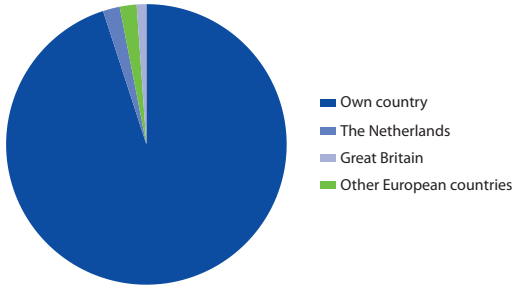


Figure 3.17.4: Origin of winter visitors in 2008 in Les Sept Laux.

Mostly winter tourism pilot sites

3.17.1 SWOT analysis

Strengths • A nearby resort for neighboring urban areas • Easily accessible ski areas (stations and motorways close by) • Young, athletic, and family image in winter • Restructured and modernized ski area • Ski area extends over two mountainsides with different orientations • Good facilities for snow boarders • Impressive, panoramic mountain views • An unspoiled high-mountain environment • Resort based around three locations each with a specific identity and history • A long history of tourism in the Bréda Valley (Le Pleynet location)	**Weaknesses** • Too much small-capacity tourist accommodation (studio apartments) • Not enough tourism accommodation at each location to be economically viable • Little diversification of the range of tourism activities, which is centered on downhill skiing and snow sports (the image of a "skiing factory") • Lack of "all inclusive" tourism products and an adequate structure to market them • Lack of identity and vision for the resort in summer • Poor coordination between stakeholders, especially concerning summer tourism activities • Difficulties in defining and establishing a suitable governance structure across the three locations at the resort • Very limited capacity to invest in new tourism infrastructure
Opportunities • Take advantage of the large pool of potential local demand in both winter and summer • Better promotion of the mountain environment in communication about the resort • Further develop summer activities based on local events • Create new types of vacation packages to differentiate the range of tourism activities • Make better use of the resort's potential as a refuge for those seeking to avoid the city heat in summer • Develop the range of tourism activity in summer based on the territory's specific resources (natural places of interest [lakes, wetlands, etc.], its broad ecological diversity, and its industrial and cultural heritage) • Improve cooperation with stakeholders across the territory and further afield in summer (e.g., open up local pastoral [sheep/cattle] farming to tourism)	**Threats** • Strong dependence on snow, which is expected to become more unreliable • Socio-cultural developments and changes in the behavior and demands of tourists • Visitor numbers in winter at risk from competition from neighboring massifs • Rise of new tourist destinations and increased competition from resorts investing more in infrastructure and services • Potential new regulations concerning the energy efficiency of existing accommodation and public buildings • No specific brand image associated with the Belledonne Massif

Table 3.17.1: SWOT analysis for pilot site Les Sept Laux.

3.17.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Les Sept Laux is estimated at 3.00 and is therefore average, whereas the overall vulnerability levels range from 2.70 (mountain biking) to 3.30 (cross-country / off-piste-skiing and swimming pools).[37] The product portfolio is very sports-oriented and comprises activities in Alpine winter and summer sports and general outdoor sports. Combined with the vulnerability of the various tourism products, winter sports activities show the highest vulnerability levels and are therefore most at risk.

Economic parameters show stable development, whereas the most vulnerable parameters concern social and environmental aspects. With an old age index of 56.04%, Les Sept Laux has a very young/rejuvenating society, but the community spirit and cooperation could be improved. The relatively high environmental vulnerability level shows that reliance on natural resources (especially with regard to winter sports) must be reconsidered.

Les Sept Laux has an adaptation elasticity of 2.76, which is below average. However, stakeholders believe that their organizations would benefit from strategy

[37] Non-comprehensive data set available: 11 out of 13 parameters were delivered by the project partner.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Swimming pools	General outdoor sports	3.00	3.60	**3.30**	8
Off-piste skiing	Alpine winter sports	3.00	3.60	**3.30**	6
Cross country skiing	Alpine winter sports	3.00	3.60	**3.30**	5
Downhill skiing	Alpine winter sports	3.00	3.40	**3.20**	10
Snow park	Alpine winter sports	3.00	3.40	**3.20**	9
Health spa	Wellness/spas/health	3.00	3.00	**3.00**	4
Heritage sites	Alpine summer sports	3.00	3.00	**3.00**	1
Horse riding	General outdoor sports	3.00	3.00	**3.00**	3
Hiking	Hiking/walking	3.00	2.80	**2.90**	7
Mountain biking	Alpine summer sports	3.00	2.40	**2.70**	2

Table 3.17.2: Overall vulnerability estimate for Les Sept Laux.

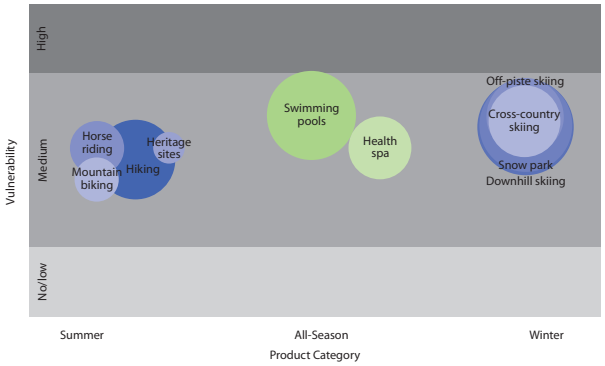


Figure 3.17.5: Current product portfolio for Les Sept Laux.

changes arising from climate change issues and visitors believe that environmental considerations enhance the activities offered rather than restricting them. Possible alternatives for further development include green tourism activity ("away from the 'all ski' concept"), organizing events at the regional level, and better signposting for walking/hiking trails. Moreover, there was a demand to implement long-term strategies and better marketing efforts for products and customs of the Grésivaudan region.

Guests state that the most important factors influencing their choice of vacation destination are cost, hospitality, and warmth of welcome. The reliability of the weather (snow in the winter, sun in the summer) is also rated very high. The greatest discrepancy between guest and stakeholder answers concerns the evaluation of environmentally-friendly policies. Although guests assess this parameter as important, stakeholders give it the lowest rating, stating that this factor is less important or unimportant.

3.17.3 Adaptation strategies

Number of workshops held: 1

Topic of the workshop: "Identifying innovative strategies for the future of Les Sept Laux".

Aims and goals

The Les Sept Laux ski area, accessed from three distinct locations within the resort, primarily serves the local market of day-skiers from Grenoble and Chambery. Developed in the 1970s, the resort's infrastructure has recently been renovated by some private property owners (facades have been renewed). Strategically important investments in ski lifts and snow-making equipment have weakened the finances of the supporting communes, limiting new investment. Furthermore the ski area is at a relatively low elevation, raising questions about the future reliability of natural snow. The stakeholders at the resort are highly conscious of the challenges they face and are actively seeking solutions. The workshop was organized to explore innovative ideas for developing summer tourism in the resort to tap new sources of income and reduce its dependence on winter tourism.

Strategies developed

The local councillors and business stakeholders in Les Sept Laux are starting to define a strategy for summer tourism because it has not been a focus in recent years. Participants in the workshop identified numerous strategies at various levels, including:

Governance:

- Creating a shared vision for Les Sept Laux that everyone can adhere to and support, in order to bring together stakeholders from all three locations with defined and agreed-upon strategic objectives;
- Reinforcing tourism around each location as a way to improve local services for residents and tourists alike;
- Involving all stakeholders (including second home owners, residents, etc.) in the vision for Les Sept Laux to ensure that everyone gives a positive image and warm welcome to tourists and visitors;

Product development:

- Building on the resort's resources, such as the forest, the unspoiled environment, the network of hiking trails that connect various points of interest and the three locations across the resort, and the spa facilities in nearby Allevard;
- Identifying additional activities or services around hiking, which would enable local people to earn a living from summer tourism;
- Aiming for a broad assortment of summer activities that each contribute a little to the local economy rather than one large-scale activity; for example, tours of the area's industrial heritage, the hydroelectric dam or honey producer, gastronomy (local products), and cultural tourism.

Promotion:

- Defining the identity of Les Sept Laux in summer, building on the individual identities of the three locations;
- Learning from successful businesses in the resort (e.g., small, rustic-style hostels) and proposing their business models to other entrepreneurs (where demand exceeds supply);
- Focusing on attracting the local market (Grenoble, Chambery, etc.), which is increasingly likely to seek mountain retreats to escape the summer city heat.

Evaluation

Les Sept Laux has a clear identity in winter. In summer however, the three locations are unconnected and different in character. The first requirement is then to define together and establish the summer identity of Les Sept Laux. No summer activity in the resort can compare with winter skiing in terms of revenues, so summer tourism is not a short-term solution to reducing the resort's dependence on winter tourism. However, it is an important strategy for reinforcing the local communities, promoting the local area, products, and heritage, and attracting tourism service providers to the resort. To achieve the strategies identified, stakeholders in Les Sept Laux, especially local councilors in the three supporting communes, will need to work much more closely together with increased energy and commitment in order to overcome the resort's significant challenges.

Further steps in the destination and after the project closure

Local councillors and managers at the resort will consider the observations and proposals presented in the InstMont's report on project activities at pilot site. Stakeholders will then decide which proposals they wish to explore in greater detail to develop summer tourism. This work could then be taken on by existing 'commissions', which are made up of councilors and local stakeholders, or become part of the continuing cooperation between the resort and the University of Savoie/InstMont.

3.18 Monterosa

D. Camisasca, RAVA archives

Figure 3.18.1: Ski touring around the Monte Rosa mountain range.

Location: Italy
NUTS 2: ITC2 Valle d'Aosta/Vallée d'Aoste
NUTS 3: ITC20 Valle d'Aosta/Vallée d'Aoste

Area: 265 km^2
Size of resident population: 2,454 (2008)
Population per square km: 9
Minimum and maximum elevation: 1,170/4,510 m
Administrative centers and their elevation: Gressoney Saint Jean (1,385 m), Gressoney La Trinité (1,635 m), Ayas (1,700 m)

Nearest motorway access: Pont-Saint-Martin (27 km)
Nearest railway station: Pont-Saint-Martin (33 km)
Nearest international airports: Turin (102 km)

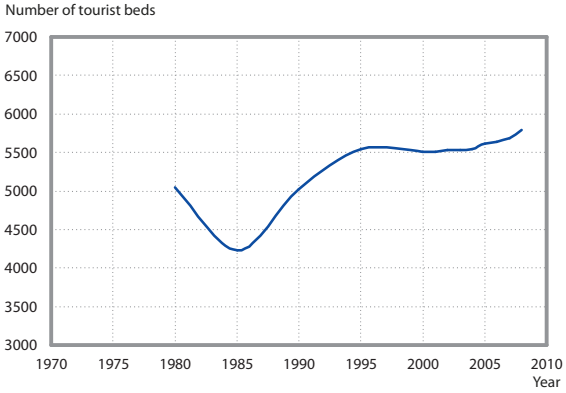


Figure 3.18.2: Growth of the destination in terms of number of beds from 1980 to 2008 in Monterosa.

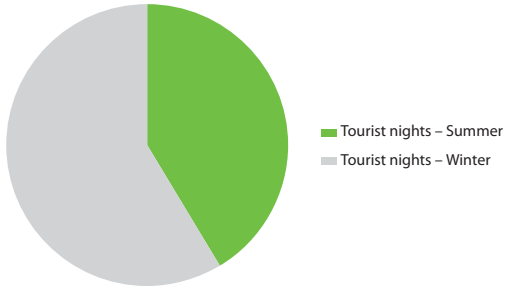


Figure 3.18.3: Importance of summer and winter tourism in 2008 in Monterosa.

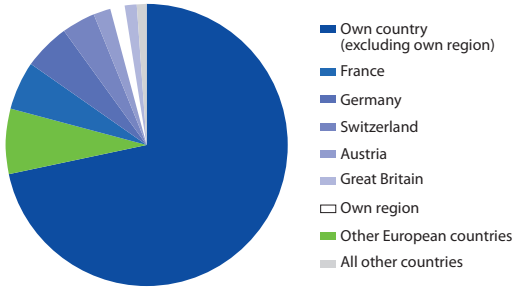


Figure 3.18.4: Origin of winter visitors in 2008 in Monterosa.

Mostly winter tourism pilot sites

3.18.1 SWOT analysis

Strengths	Weaknesses
• Lifts and well-maintained ski slopes • Wonderful wild landscape (and glacier) • Sports (indoor and outdoor) • Famous ski area • Innovative artificial snow-making system • Baby Park • Night skiing (illuminated slope) • Elevation (ski slope over 3,000 m) • Culture and traditions • Proximity to big cities • Wide range of tourist products and services • Ski Institute • Synergies and collaboration between stakeholders • Favorable climate • Gastronomy • Medium/high-quality guest accommodation in some locations	• The slope of the Salati Pass crosses the road (300 m walk) • Public transport system (in the area/outside the area/night transport) • Low-quality guest accommodation in other locations • Young people's entertainment and après-ski activities • Topography: long valleys • Few further development possibilities • Tourism entrepreneurs' and stakeholders' mentalities • Weak marketing • Short-stay tourism • Seasonal tourism • Few hotels and too many vacation homes in some locations • Individualism • English and Scandinavian tourists are the core (niche market) • Lack of tourism strategy • Synergies and collaboration between private stakeholders and public institutions • No business activities in low season • Vacation homes • Construction company speculation • Public institutions' heavy budget constraints for services and investment
Opportunities	**Threats**
• Possibility of building new lifts directly from the village to the Monterosa ski resort in order to reduce private vehicle usage (even in summer) • Expanding the ski resort to new valleys • Summer tourism promotion • Environmentally protected area between the Ayas Valley and Gressoney • Low-environmental-impact tourism: hiking • Walser culture • Gressoney scientific institute • Zermatt/Cervinia link: Monte Rosa Tour • Innovation willingness, collaboration opportunities • Integrated promotion between the three valleys • Courtesy to tourists • Product range development (not only skiing) • Different opportunities in different locations in the Monterosa resort	• Increasing temperature • Risk of losing Walser culture and tradition • Higher development costs • Global competitors (not only mountain sites) • Northern Alps locations' higher quality • Mountain depopulation • Lack of upkeep of pathways • Very rapid market changes, slow tourism culture rhythm • Environmental impact of lifts • Lack of young local entrepreneurs • Divisions between different locations • Policy divisions • Low future growth capacity • Delay on new tourism markets • Lack of investment in non-skiing sectors

Table 3.18.1: SWOT analysis for pilot site Monterosa.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Off-piste skiing	Alpine winter sports	2.85	3.60	**3.23**	9
Golf	General outdoor sports	2.85	3.60	**3.23**	2
Downhill skiing	Alpine winter sports	2.85	3.40	**3.13**	10
Rock climbing	Alpine summer sports	2.85	3.40	**3.13**	7
Folklore and festivals	Arts and culture	2.85	3.00	**2.93**	1
Via ferrata	Hiking/walking	2.85	3.00	**2.93**	6
Nature trails	Nature experience	2.85	2.80	**2.83**	8
Glacier activities	Mountain railways/ mountain experience	2.85	2.60	**2.73**	4
Mountain biking	Alpine summer sports	2.85	2.40	**2.63**	5
Local products	Fine dining	2.85	1.60	**2.23**	3

Table 3.18.2: Overall vulnerability estimate for Monterosa.

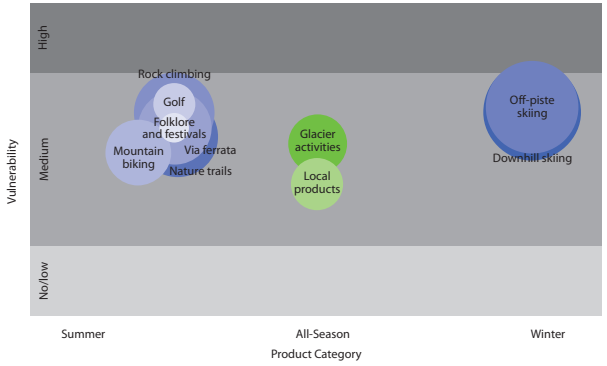


Figure 3.18.5: Current product portfolio for Monterosa.

3.18.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Monterosa is estimated at 2.85 and is therefore a little below average, whereas the overall vulnerability levels range from 2.23 (local products) to 3.23 (off-piste-skiing / golf).[38] The product portfolio is very sports-oriented and comprises activities in Alpine summer and winter sports, arts and culture, and nature experiences. Combined with the vulnerability of the various tourism products, (Alpine) sports show the highest vulnerability levels and are therefore most at risk.

The most vulnerable economic parameters concern investment conditions and job market dependency on tourism, both being considerably high. Environmental vulnerability depends on the specific ski resort, ranging from low to relatively high.

Monterosa has an adaptation elasticity of 3.20, which is slightly above average. Stakeholders believe that their organizations would benefit from strategy changes arising from climate-change issues and that permanent residents play an active role in the destination's governance and decision-making process. Visitors also believe that environmental considerations enhance the activities offered in Monterosa. Possible alternatives for further development include cultural tourism in combination with environmental education activities.

Guests state that the most important factors influencing their choice of vacation destination are the authenticity of the region, service quality, a large variety of activities and excursions, easy transport links, and cost.

3.18.3 Adaptation strategies

Number of workshops held: 2

Topic of the first workshop: developing possible adaptation strategies to climate change and its impact on Alpine tourism using NetSyMod workshops, SWOT analysis, and DSS/e-tool application by Cà Foscari Uni-

[38] Comprehensive data set available: 13 out of 13 parameters were delivered by the project partner.

versity of Venice, supported by RAVA Env and RAVA Tour.

Topic of the second workshop: development of a tailored strategy for an Alpine tourism location already affected by climate change using NetSyMod workshops, SWOT analysis, and DSS/e-tool application by Cà Foscari University of Venice, supported by RAVA Env and RAVA Tour.

Aims and goals

The ambitious goal of the adaptation strategies is reduce the seasonal nature of tourism at the site. To achieve this important result, the strategies plan to integrate the existing site strengths with promotion of an additional range of tourism activities (e.g. appreciation of rural aspects, better organized summer activities, and expansion into new valleys).

Strategies developed

Local actors identified possible developments in tourism and economics by applying DSS/e-tool (developed by Cà Foscari University of Venice). Participants were also supported by a SWOT analysis and by a broad environmental and social database.

Three main tourism development lines were defined. The first is strongly oriented to the development of high-elevation hiking trails and improving cableways (MonteRosa: Tour of Monte Rosa), the second option mainly focuses on sustainability, heritage, and wellbeing (MonteRosa: Zero km), and the last alternative focuses on building a system of inter-valley links (MonteRosa: Three valleys, one name).

In order to reduce the seasonal nature of the site (mostly winter), stakeholders expressed the need to promote basic mountain tourism elements (nature, culture, and health) and the need to coordinate relationships between citizens, associations, and institutions.

The intensive development strategy (MonteRosa: Tour of Monte Rosa) was penalized in the final ranking because of the high weight of its negative environmental impacts despite its positive effect on the local economy.

Evaluation

The proposed strategies were evaluated based on indicators whose importance was defined by the participants themselves. The indicators used are: economic costs with environmental relevance, effects on the local economy, effects on the tourism sector, innovation, environmental impact, the feasibility of different proposals, and their long-term sustainability.

The analysis shows the need to integrate the range of tourism activities as soon as possible; this seems to be the only way to increase the range of activities in the "low" season (summer). The stakeholders consider it necessary to strengthen the promotion of local products and cultural tourism; they also considered it appropriate to integrate the deployment of high-elevation ski connections with a sustainable public transport system.

Further steps in the destination and after the project closure

Stakeholders also want to:

- Consider climate change as an important component of tourism and territorial planning because of its real weight in all ski resort investments;
- Promote more sustainable mobility in order to strengthen the eco-sensitive character of the site and free users from displacement problems and costs within the district;
- Promote and improve cooperation between associations, institutions, and stakeholders.

The workshops showed that effects of climate change are already being seen at the local level; the ClimAlpTour project has been a real opportunity to discuss the development of the areas, ensuring the simultaneous representation of the main economic and tourism categories.

3.19 Stubai Tirol

TVB Stubai Tirol

Figure 3.19.1: The Stubai Valley and its glaciers in the background.

Location: Austria
NUTS 2: AT33 Tirol
NUTS 3: AT332 Innsbruck

Area: 317 km^2
Size of resident population: 12,793 (2008)
Population per square km: 40
Minimum and maximum elevation: 662/3,498 m
Administrative center and its elevation: Neustift (993 m)

Nearest motorway access: Schönberg (11 km)
Nearest railway stations: Patsch (12 km), Innsbruck (23 km)
Nearest international airports: Innsbruck (25 km), Salzburg (196 km), Munich (222 km)

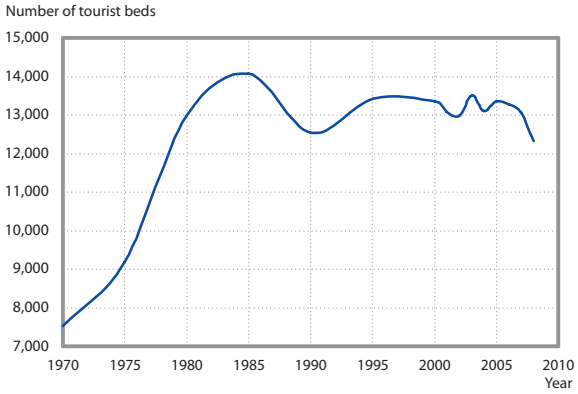


Figure 3.19.2: Growth of the destination in terms of number of beds from 1970 to 2008 in Stubai Tirol.

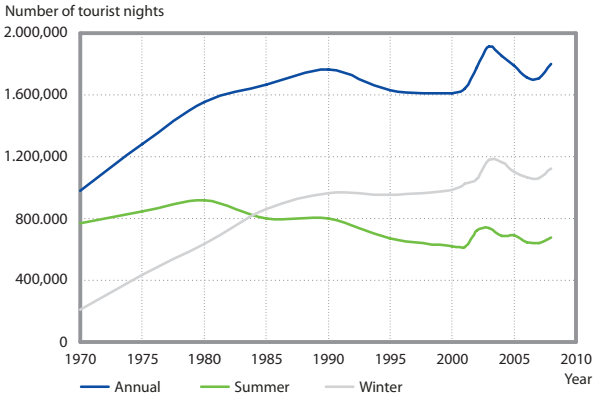


Figure 3.19.3: Annual, summer and winter tourist arrivals between 1970 and 2008 in Stubai Tirol.

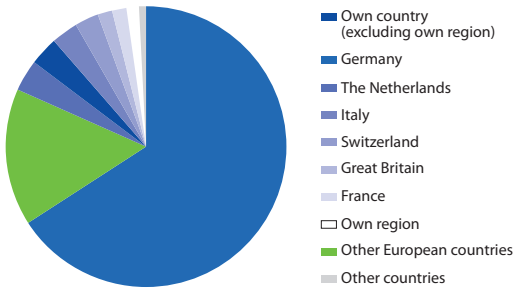


Figure 3.19.4: Origin of winter visitors in 2008 in Stubai Tirol.

Mostly winter tourism pilot sites

3.19.1 SWOT analysis

Strengths • Glacier ski area • Snow guaranteed • Elevation profile • Regional resources • Rising occupancy rates • Extensive forest and natural areas (77.2%) at the destination • Accessibility • Tourism intensity is merely slightly above average	**Weaknesses** • Traffic situation in the destination • Dependence on winter tourism • Steadily ageing destination population • Scant urban structures and agriculture • Availability of building sites • Dependence on German tourists in winter (66%)
Opportunities • Strengthening summer tourism • Glacier ski area • Winter tourism • Innovative concepts for traffic and transportation at the destination • Changing guest structure • Variety of flora and fauna • Migration • Product innovations through cooperation with traditional local industries (e.g., agriculture) • Consumers' increasing ecological awareness	**Threats** • Insufficient traffic management in the destination • Migration • Melting glacier • Flood risks • Natural hazards • Changes in flora and fauna • Melting permafrost • Lack of snow • Overall future traffic burden • Restrictions on available land • Rising water supply costs • Lower value-creation during the summer season

Table 3.19.1: SWOT analysis for pilot site Stubai Tirol.

3.19.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Stubai Tirol is estimated at 2.91 and is therefore slightly below average, whereas the overall vulnerability levels range from 2.66 (mountain biking) to 3.16 (downhill skiing / paragliding / rock climbing).[39] The product portfolio is very sports-oriented and mostly comprises outdoor activities in Alpine summer and winter sports. Combined with the vulnerability of the various tourism products, these outdoor sports activities show the highest vulnerability levels and are therefore most at risk.

Extreme economic events seem to have increased over the last five years and are expected to increase even more in the future. The investment conditions for organic projects as well as the overall investment climate are rated negatively. Furthermore, the number of beds decreased by 8% from 2000 to 2008, thus adding to the economic vulnerability of the destination. Concerning social vulnerability, stakeholders believe that community spirit and cooperation could be improved. Environmental vulnerability (reliance on natural resources) varies between 1 and 5 and greatly depends on the ski area considered.

Stubai Tirol has a medium adaptation elasticity (3.09). The belief that there are alternatives for developing tourism and the opinion that environmental considerations enhance the activities offered at the destination

[39] Non-comprehensive data set available: 10 out of 13 parameters were delivered by the project partner.
[40] For Aims and goals, Evaluation and further steps in the destination and after the project closure refer to chapter 3.13.3: Wilder Kaiser.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Downhill skiing	Alpine winter sports	2.91	3.40	**3.16**	10
Paragliding	Alpine summer sports	2.91	3.40	**3.16**	5
Rock climbing	Alpine summer sports	2.91	3.40	**3.16**	3
Bobsledding	Alpine winter sports	2.91	3.00	**2.96**	9
Stubai Big Family	Family activities	2.91	3.00	**2.96**	6
Summer bobsled run	Alpine summer sports	2.91	3.00	**2.96**	4
Hiking	Hiking/walking	2.91	2.80	**2.86**	7
Mountain experience	Mountain railways/ mountain experience	2.91	2.60	**2.76**	8
Mountain biking	Alpine summer sports	2.91	2.40	**2.66**	2

Table 3.19.2: Overall vulnerability estimate for Stubai Tirol.

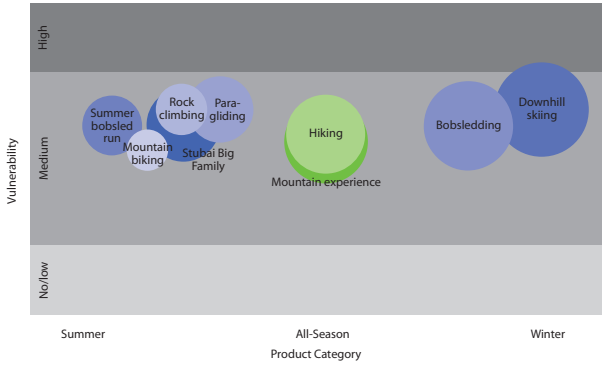


Figure 3.19.5: Current product portfolio for Stubai Tirol.

have a positive influence on adaptation elasticity. All other parameters lie in the medium range.

3.19.3 Adaptation strategies[40]

Number of workshops held: 1

Topic of the workshop: Development of adaptation strategies and implementation options.

Strategies developed

Strategic considerations in the Stubai Tirol area focus on strengthening winter tourism due to the destination's favorable elevation. Winter tourism is perceived as a major strength of the destination, even offering growth potential for competitive advantages due to negative impacts of climate change at lower-elevation destinations. Families and young tourists in particular are future target groups. Furthermore, sustainability, especially regarding ecological and economic issues, will also be strengthened. In this respect, the stakeholders are seeking more regional tourism production and the implementation of nature-preservation measures. Environmentally friendly and resource-protection measures will be developed. Furthermore, the summer season will be strengthened in order to further enhance competitiveness. The stakeholders at the destination developed seventy-nine measures varying from a youth hostel and traffic-calming zones to building a cableway connecting the village at the entry of the valley with the glacier at the very end.

3.20 Val d'Isère

Agence Nuts, Office de Tourisme de Val d'Isère

Figure 3.20.1: At the heart of the world-renowned ski resort of Val d'Isère is the village itself, whose identity is defined by its traditional architectural heritage.

Location: France
NUTS 2: FR71 Rhône-Alpes
NUTS 3: FR717 Savoie

Area: 94 km^2
Size of resident population: 1,753 (2008)
Population per square km: 18.6
Minimum and maximum elevation: 1,850/3,350 m
Administrative center and its elevation: Val d'Isère (1,850 m)

Nearest motorway access: Moutiers (59 km)
Nearest railway station: Bourg St Maurice (22 km)
Nearest international airports: Chambéry (130 km); Geneva (174 km)

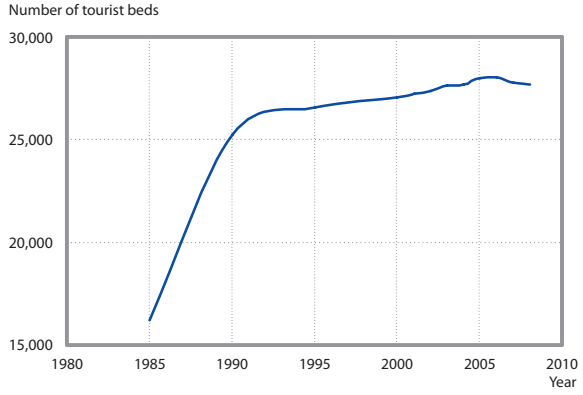


Figure 3.20.2: Growth of the destination in terms of number of beds from 1985 to 2008 in Val d'Isère.

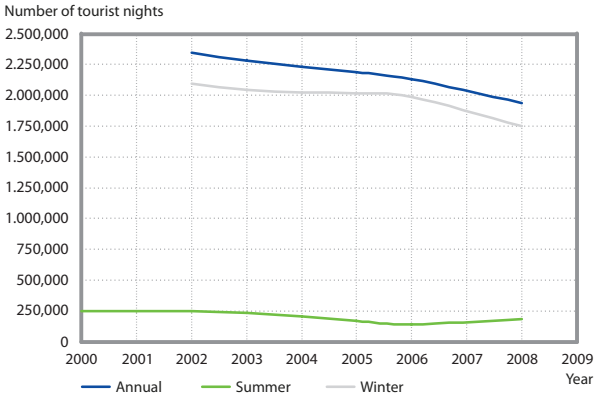


Figure 3.20.3: Annual, summer and winter tourist arrivals between 2000 and 2008 in Val d'Isère.

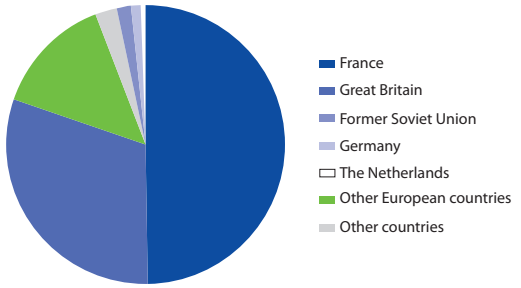


Figure 3.20.4: Origin of winter visitors in 2008 in Val d'Isère.

3.20.1 SWOT analysis

Strengths • A village full of character and well-restored, with important architectural heritage • Environmental surroundings of high natural value (proximity to Vanoise National Park) • Worldwide fame of the resort in winter • High-quality range of tourism activities (accommodation, shops, services) • High-class, well-equipped leisure facilities • Full calendar of sports and cultural events in winter and summer • High degree of organization among local stakeholders based on their know-how and the complementary nature of their various structures.	**Weaknesses** • Winter tourism under pressure from strong competition and focused on snow sports • Heavy dependence on foreign tourists in winter (with a high proportion from Great Britain) • Summer tourism activities hindered by relatively unstable weather conditions • Geographically remote location of the village (a disadvantage in summer) • Local stakeholders' perspectives focused on the commune • Reputation for being expensive, which may put off medium-wealthy tourists in summer • Falling number of "hot beds" and increasingly more "cold beds" • Very little land available for future development
Opportunities • Persuade loyal winter clients to come to the resort in summer • Strengthen and promote the protected area (in cooperation with Vanoise National Park) • Further develop relations with Vanoise National Park to jointly create new tourist packages tailored to meet demand • Expand the public events on which the resort's reputation is based in summer • Develop the range of tourism activities in summer based on the area's specific resources • Improve cooperation with stakeholders across the area and further afield in summer • Strengthen and increase ecologically oriented activities in progress and give greater weight to the national sustainable development charter signed by the resort • Make the most of the resort's position on touring routes to target various types of tourists (cyclists, motorcyclists, hikers)	**Threats** • Socio-cultural developments and changes in tourists' behavior and demands • Rise of new tourist destinations • Up-market clientele in winter capable of moving their activities to other resorts • Significant proportion of economic actors are not locals and may not be very strongly rooted at the resort • Strong dependence on snow • Challenges related to social balances (e.g., among residents, seasonal workers, and second home owners) • Significant imbalances resulting from the very high price of real estate

Table 3.20.1: SWOT analysis for pilot site Val d'Isère.

3.20.2 Current product portfolio and adaptation elasticity

The destination vulnerability of Val d'Isère is estimated at 2.98 and is therefore average, whereas the overall vulnerability levels range from 2.69 (mountain biking) to 3.29 (sports competitions).[41] Val d'Isère has a very diversified product portfolio that includes alpine winter and summer sports as well as arts and culture, wellness, and fine dining. Combined with the vulnerability of the various tourism products, sport competitions and downhill skiing show the highest vulnerability levels and are thus most at risk.

Economic parameters show stable development. Tourism is by far the most dominant industry in Val d'Isère (with a tourism intensity of 11.03), which is emphasized by the high job-market dependency on tourism. With an old age index of 36.05%, Val d'Isère has a society unevenly distributed across the various age groups, with young people making up the largest part of the population.

Val d'Isère has an adaptation elasticity of 2.76, which is below average. However, stakeholders believe that their organizations would benefit from strategy changes

[41] Non-comprehensive data set available: 12 out of 13 parameters were delivered by the project partner.

Tourism products	Classification	Destination vulnerability	Product vulnerability	Overall vulnerability	Product importance
Sports competitions	Sport competitions/events	2.98	3.60	**3.29**	5
Downhill skiing	Alpine winter sports	2.98	3.40	**3.19**	10
Health spa	Wellness/spas/health	2.98	3.00	**2.99**	9
Hiking	Hiking/walking	2.98	2.80	**2.89**	7
Folklore and festivals	Arts and culture	2.98	2.80	**2.89**	4
Gastronomy	Fine dining	2.98	2.40	**2.69**	8
Mountain biking	Alpine summer sports	2.98	2.40	**2.69**	6

Table 3.20.2: Overall vulnerability estimate for Val d'Isère.

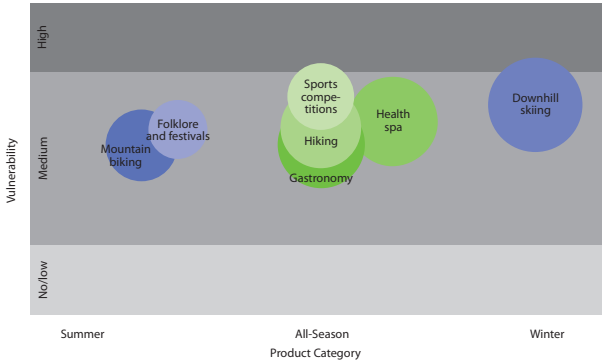


Figure 3.20.5: Current product portfolio for Val d'Isère.

arising from climate change issues and that permanent residents play an active role in the destination's governance and decision-making process. Moreover, they state that social and environmental NGOs make valuable contributions to the region's progress. Establishing a "mountain roundtable" was named as a relevant alternative for further development. Tourism activities with a limited environmental impact should also be promoted. Guests state that the most important factors influencing their choice of vacation destination are the reliability of the weather (snow in the winter season, sun in the summer season) and cost.

3.20.3 Adaptation strategies

Number of workshops held: 2

Topic of the first workshop: Innovation in summer tourism activities in Val d'Isère.

Topic of the second workshop: Innovation in summer tourism activities in Val d'Isère.

Aims and goals

The goal of the workshops was to propose new, concrete strategies for developing summer tourism in Val d'Isère. The commune is very heavily dependent on tourism, especially winter sports tourism for which Val d'Isère is world renowned. Increased competition, the financial crisis, and the weakness of the British pound have impacted tourist numbers during winter because the dominant British market has been weaker. Summer tourism represents only 10% of the resort's annual tourist nights. Its remote location, high elevation, and uncertain weather conditions are disadvantages in summer. The workshops therefore considered new opportunities for developing summer tourism with the goal of increasing overall revenues and reducing dependence on winter tourism.

Strategies developed

From the brainstorming in the first workshop, three representations of summer tourism activities in Val d'Isère emerged. Concrete actions relevant to each of these representations were developed. As a starting point, a "treasure chest" of existing resources was drawn up, highlighting the existing infrastructures, services, and natural and culture heritage available for further product development. Examples of the proposed actions for each representation include:

Val d'Isère as a summer destination in itself:

- Building an art trail with sculptures/statues by an invited artist, combining promotion and information about the local flora and fauna and the landscape with the art.
- Organizing events in the village in collaboration with holiday centers such as Club Med to draw the visitors out of the centers and into the village.
- Creating a panoramic look-out point to make the most of the mountain scenery, which could become a focal attraction for the village.

Val d'Isère as a stopover destination on tour routes:

- Offering half-board room rates at competitive prices, and ensuring the proper infrastructure within the commune for touring visitors; for example, motorcycle and bicycle maintenance services.
- Offering bespoke packages for touring groups and clubs (e.g., classic car clubs, a Ferrari owners' club) to encourage them to make Val d'Isère one of their stopover points.
- Building relationships with tour operators and guidebooks to encourage them to include Val d'Isère as an official stopover village in various itineraries.

Val d'Isère as a gateway to Vanoise National Park:

- Working with tour operators and agencies to offer packages combining accommodation in Val d'Isère with guided hiking in the park.
- Offering photo safaris with photographer guides in the park, with accommodation in Val d'Isère.

Evaluation

The three representations of summer tourism in Val d'Isère were well received by stakeholders. They enable stakeholders to focus on the various client segments associated with each representation more closely and to target the range of tourism activities more specifically to the demands of the various segments. The majority of actions proposed are concrete and realistic, although many require greater participation from local businesses (especially accommodation providers). Their lack of participation in the workshops suggests this may be a constraint. The mayor's participation in the second workshop was invaluable because he is more likely to follow up on the ideas resulting from it.

Further steps in the destination and after the project closure

The municipality intends to transform the work carried out at the resort into concrete activities to develop summer tourism. This work will begin with a presentation of the final results of the project to the municipal councillors and could continue with implementing and regularly monitoring actions identified as a priority. The pilot site also wishes to share and learn from the project's experiences with other pilot sites in France and the rest of the Alpine area, and any adaptation strategies developed.

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Figure 3.20.6: Val d'Isère village.

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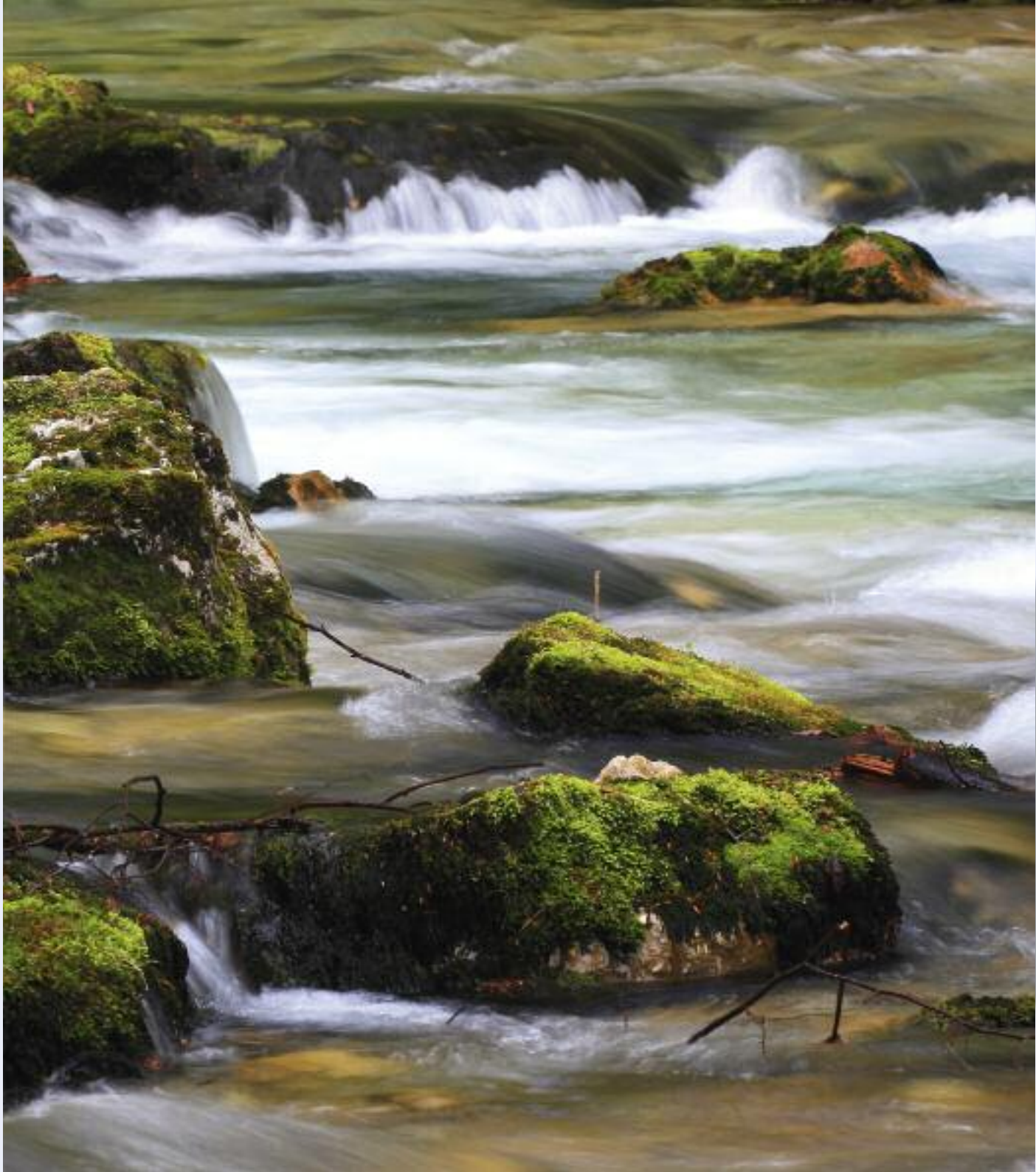

B. Erhartič

4

STRATEGIES, VISIONS AND STRATEGIC DEVELOPMENT

4.1 General adaptation strategies by seasonal structure of ClimAlpTour pilot sites

How pilot sites see their future in terms of adaptation to climate changes is very much connected with their actual situation and seasonality. Based on the adaptation strategies presented in Chapter 3 and following the division into mostly summer, mostly winter, and all-season pilot sites, we created three "tag clouds," one for each group.

A tag cloud is a visual representation of text data. Tags are usually, but not necessarily, single words, normally listed alphabetically, and the importance of each tag is shown through font size and/or color. In other words, a tag cloud is based on the number of repetitions of an individual word or tag. For the purpose of this publication, we further developed the usual manner of creating a tag cloud. We did not create the tag clouds from the raw texts for the adaptation strategies, in which tags would be individual words from the texts. First we converted the text into tags that semantically completely correspond with the original text, but designed so that they give a clearer picture of the adaptation strategies. At the same time, we simplified them because the authors of the adaptation strategies expressed the same notion (e.g., food) in various manners (e.g., food, cuisine, gastronomy, and culinary). Because of the complexity of this material, the adaptation strategy tags are primarily comprised of more than one word. In order for the tag cloud program to understand these as one concept, it was necessary to link the words together, either by writing them together with no spaces or by connecting them with hyphens. We chose the latter option for clarity.

A tag cloud created from adaptation strategies for pilot sites with mostly summer tourism clearly shows a wish for reorientation as a destination with year-round tourism activities, strengthening activities not dependant on snow that will rely on a diversity of activities and will range from gastronomy and natural and cultural heritage to sports. Here it is also important to strengthen cooperation among various stakeholders and connections among the activities offered. When expanding the target groups it is necessary to focus on families in particular. Regarding mobility, there is a need to limit the use of cars and to improve public transport.

A tag cloud created from adaptation strategies for pilot sites with all-season tourism shows a comprehensive perspective, with a wish to strengthen the summer season and to develop winter activities independent of snow. Cooperation among various stakeholders is important through coordinating and connecting the activities offered, as part of which it is necessary to improve opportunities for cycling, hiking, and farm tourism, using local resources. The way to increase visits by tourists is better advertising through modern media and effective

Figure 4.1.1: A tag cloud based on adaptation strategies for pilot sites with mostly summer tourism.

Figure 4.1.2: A tag cloud based on adaptation strategies for pilot sites with all-season tourism.

Figure 4.1.3: A tag cloud based on adaptation strategies for pilot sites with mostly winter tourism.

marketing, in which the target group will especially include families and schools. There is a strong emphasis on a sustainable perspective, especially on mobility with effective regulation of traffic and parking.

A tag cloud created from adaptation strategies for pilot sites with mostly winter tourism shows a strong emphasis on strengthening summer tourism. Of course, the winter season is not overlooked because these sites have good natural conditions for this. There is also a strong emphasis on cooperation, making connections, and networking various stakeholders and providers of goods and services. During the summer season the selection of activities should rely on hiking, excursions, gastronomy, and nature. Vacation packages and stopover destinations should be new tourism products. It is necessary to adopt a sustainable perspective and to build an environmentally conscious image. Families are also a target group here.

4.2 Policy recommendations: common statements from the pilot sites

Tourism planning

- Climate changes should be carefully considered in tourism planning.
- Regional and spatial development plans for tourist destinations should be checked for their climate fitness; their aims and principles should be adapted accordingly.
- Tourism planning should be an integral and ongoing part of tourist office activities for the destination.
- Planning should include all tourism stakeholders at the destination.
- Alpine tourism destinations should create a regional Alpine climate alliance with standards for sustainable tourism planning.

Tourism operations and management

- Developing a seal of quality for local products and establishing collaboration between producers and consumers (restaurants, hotels, grocery stores, etc.).
- Regional and national governments should focus on the transport-related challenges of mountain tourism.
- Infrastructure based on renewable resources can strengthen the sustainable image of a destination.
- Making artificial snow should follow an environmentally friendly path.
- Stakeholders from various fields of tourism (demand and supply) should be actively involved in developing sustainable tourism.
- Sustainability should be integrated into the tourism industry's policies and management practices.

Tourism investment

- Laws and incentives should be adapted to favor climate-friendly investments.

- Building renovations should respect traditional local architecture styles to preserve authenticity.
- Investments must focus on reducing seasonality by investing in year-round tourism development to create greater economic value.
- There should be special support programs offering low-interest-rate loans for sustainability-oriented investments in tourism.
- Investments are needed to optimize sustainable ways to make artificial snow.
- "Green development" initiatives should gain greater visibility to invite traditional investors to pursue these directions.

Tourism promotion and marketing

- Marketing initiatives should focus on the natural environment in combination with traditional/cultural characteristics.
- Greater focus should be placed on promoting local/regional products and services.
- As the market segment of "green" consumers expands, this represents a significant opportunity for destinations to align their strategy with this emerging demand and market themselves accordingly.
- Tourist destinations should strive to promote regional marketing and stimulate endogenous business cycles.
- Local marketplaces should be introduced (e.g., institutionalized as an association), offering the possibility to more easily access any kind of local product (culture, handicrafts, gastronomy, and agriculture).

Capacity building

- Local political and administrative institutions should organize training sessions on socio-environmental topics, sustainable regional development, and effective social and nature-friendly quality management, which will create skilled multilevel tourism stakeholders.
- Scholars should be included in the participatory processes.
- In destinations with intense tourism, the human factor (hospitality) affects the overall image of the resort. However, the periodic influx of tourists may be considered a nuisance by residents not directly involved in tourism. Local authorities should take the necessary steps to inform them of the benefits of tourism for the resort. One approach could be to organize an annual convention on the resort's economy to which all residents are invited. The convention could explain the importance of tourism for the local economy, provide a forum for residents to air their views and concerns, present the image of the resort that residents should be encouraged to share and communicate to visitors, and recognize and promote the knowledge and experience of local residents on historical events and local characteristics.

Consumption of tourism products and services

- In order to face growing competitiveness, there is an increasing awareness of the need to identify a label for destinations. These labels can have greater impact when they are created based on existing local production systems.
- Creating local and guest awareness concerning the value of local/regional products. In this respect, regional products should be labeled to give them recognition for tourists.
- Local authorities should take the lead in creating a network of local producers and local tourism operators by establishing a directory of local suppliers, facilitating the development of direct commercial relationships between local suppliers and local tourism operators, and negotiating on behalf of local suppliers with external tourism groups operating at the resort.
- Developing a brand representing all locally-produced goods in collaboration with tourism operators would benefit the tourism market at the resort and encourage new suppliers for local products.

Monitoring and evaluating tourism development

- A sustainability initiatives group should be established to set sustainability goals and monitor improvements in this area. This group can report on its initiatives to create awareness in the region.
- Periodic reviews of how the planning agenda is developing.

- Periodic feedback from the system's users (the tourists).
- The results of such monitoring should be included in the overall concepts, and these concepts should be adapted accordingly.
- Improved information on tourism activities would help identify certain trends in tourist behavior and ensure that tourist tax receipts are maximized. These data could also be compared with water and energy use to identify and assist high-consumption establishments in achieving potential savings in both resources and financial terms.
- Regional and national authorities should impose reporting and monitoring requirements to support local tourism planning.

4.3 Strategic development for alpine space tourism in times of climate change – an integrated view

Because climate change is a long-term phenomenon and tourism is a multiple-player business affected by political regulations at several levels, strategic recommendations are given for various groups of stakeholders. These groups and their various main objectives in the tourism industry network are shown in Figure 4.3.1:

- The Alpine destination and its destination management (green)
- The political sphere (orange)
- The tourism industry (white sectors in the middle)
- Capital markets (blue)

A common goal can be seen in attracting current and future guests (yellow) to the Alpine region. By using a pull-marketing approach, destinations try to convince guests of their attractiveness and advantages by promoting their tourism products and related services. In contrast, push-marketing turns the pressure in the opposite direction because guest perceptions, lifestyles, needs, and demanded products change over the course of time and destinations need to adapt to the new circumstances. Thus, both approaches are extremely relevant for destination marketing in times of climate change.

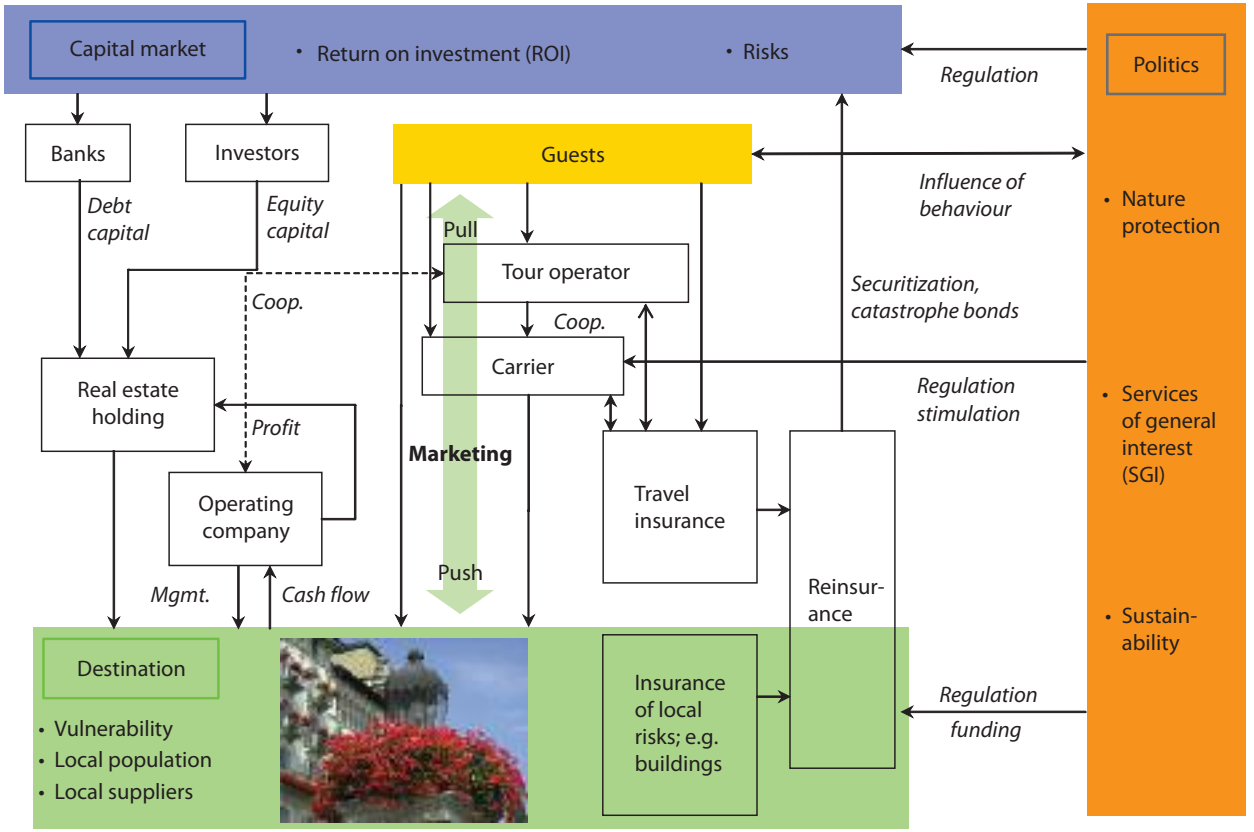

Figure 4.3.1: Strategic recommendations for various groups of stakeholders within tourism industry network.

General recommendations

1. There is **no single overall tourism adaptation strategy** for the Alpine space in times of climate change. Instead, there must be a variety of individually adjustable strategies at the local and regional levels considering the heterogeneity of the Alps.
2. The greater the strategic changes in a destination's tourism system, the **more stakeholders have to be considered** in the change process, either directly or indirectly. This particularly applies to important stakeholders coming from outside the destination.

Destinations and regional development

3. Major Alpine cities (e.g., Innsbruck or Grenoble) have to consider both adaptation and mitigation measures, whereas for most Alpine regions (characterized by low population density and only little endogenously [locally] induced traffic) **adaptation strategies become more relevant** than mitigation strategies. In total, the Alpine space has to **adapt** towards climate change, and the contribution of the Alpine space to the mitigation of GHG emissions will remain comparatively small.
4. Adaptation strategies could finally result in both:
   - Minor or major **changes** of the current tourism product portfolio; for example, at lower elevations a decrease in winter sports-related products in favor of increased summer and year-round tourism opportunities, or
   - Protecting and **strengthening existing** tourism structures; for example, at high-elevation winter sports resorts in order to cover the increasing demand coming from resorts in less snow-reliable ski areas.
5. The on-site discussion on climate change impacts in tourism should be characterized by **transparency, cooperation, fair balance, and a primarily market-oriented approach**. In the past, risk maps and risk assessments were often created by insurance companies and banks, but kept inaccessible by local authorities in order not to disturb stakeholders and guests.
6. Nature protection and economic interests can only be balanced in the Alpine space if opportunities for both mass tourism and sustainable tourism are generated at the same time. For example, if a strategy for new protection zones in former winter sports destinations is being developed, an increase in mass tourism in other, higher-elevation winter sports regions has to be accepted or at least considered. One remaining question is whether a cross-border compensation system for the entire Alpine space could be discussed, forcing investors in new winter sport areas to also invest in compensatory actions in other Alpine regions. National compensation systems have already been in use for many years now. However, a cross-border/transnational compensation system could offer more flexible compensation solutions. Because high-elevation destinations might intensify their winter sports investments, these investments could be connected with compensatory payments to lower-elevation areas at the northern and southern edges of the Alps. A first step in this direction could be done by enhancing the Alpine Convention: The general transborder cooperation mandate of the Alpine Convention (Article 2, No. 1) is specified in the Protocol "Conservation of Nature and the Countryside", Article 3 (International cooperation), No. 1: "The Contracting Parties undertake to cooperate particularly for … preventing and rebalancing damage to nature and the landscape …" However, as far as offset measures are concerned, so far they are limited to national laws, as stated in Article 9 (Actions on nature and the countryside), No. 2.
7. The sustainability paradigm of "environmental-economic-social" equality needs to be transferred to the tourism market, where local adaptation strategies should be driven by:
   - Profitability for tourism suppliers
   - Quality of vacations for guests
   - Quality of life for the local population

   Due to differing political mechanisms in the Alpine countries (participatory or non-participatory), it might even be necessary to consider structural changes

in the local political system in order to push climate change-adaptation processes. Failing to start such processes could result in the loss of the total regional tourism system.

Politics

8. Strategies should **primarily be market oriented** (stimulation), and additional regulation-oriented politics (prohibitions and subsidies) should flank the system. However, the climate change issue should not be handled alone, but together with other major trends such as health, demographic changes, and technological development wherever reasonable.
9. There is **no need to further subsidize artificial snow production** with public money, especially in small ski areas. If it is a worthwhile business, the relevant companies should invest and cover the costs through higher prices on their own. If not, other objectives of (regional) planning should be prioritized.

Tourism industry

10. Climate neutrality does not sell on its own. If summer and year-round tourism should (to some degree) replace winter sports with its high margins, there must be added values in **the balance sheets of the tourism suppliers**, not only in guests' conscience. This only works if other attractions or offers lead to an extra willingness to pay. Examples can be seen in regional food, sports, wellness, and health. These tourism topics can both generate above-average contribution margins and strengthen a sound and holistic climate-friendly image (without focusing on climate change as a sales argument).
11. The **marketing strategies** for the Alpine space should be further differentiated. The Alpine space has attractive tourism opportunities from one-day events to long-term stays (e.g., the whole summer). The image to be transferred to potential guests can range from a "sports arena" to an "authentic, sustainable, green recreation area." Moreover, in times of rising transport costs the Alps have the advantage of being a nearby vacation destination for Europeans.

Capital markets

12. **Allocation of capital for tourism projects** should consider sustainability aspects more than in the past. This counts not only for ecological impacts, but also for pure financial considerations because investors are becoming increasingly aware of the fact that ecological and financial sustainability go hand in hand.
13. **Risk management tools** (not only holistic strategies, but also partial elements) should be promoted and made available to local stakeholders, especially SMEs in the tourism industry and DMOs. This could also cover support in market analysis, product development, and so on, and be implemented via consulting and/or free training sessions (depending on the economic status of the institution in need of support). In both cases there can be an economic benefit for the capital provider, at least through better investment and project decisions by the relevant stakeholders.

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5

CONCLUSIONS

5.1 Towards sustainable tourism development

The conclusions below emerge from the direct experiences of the various partners and case studies. Overall, the project's results demonstrated the need to take action towards a more sustainable form of tourism as the most effective adaptation strategy for dealing with the impacts (both negative and positive) of climate change. What is particularly remarkable is how they match the recent activities and Multi-annual Working Programme of the Alpine convention.

The alpine region is extremely vulnerable but very diverse

Europe's Alpine region is one of the areas most rapidly being affected by climate change. However, local conditions are very different across the region in terms of expected changes in climate, tourism typology and intensity, and capacity to adapt, making it impossible to envisage a single approach to tackle this issue. The project analyzed 22 pilot areas with diverse environmental, social and economic conditions in order to provide a global perspective on Alpine tourism. The results of the project confirm the lack of a single simple strategy to cope with the issue at stake throughout the Alps.

Climate change is a source of opportunities and threats

Summer tourism could benefit from climate change. Warmer summers (like in 2003) would bring more people to the mountains and freshwater activities may become more viable. The tourism season could be extended. At the same time, droughts and increasing pressure on water resources in general are likely to occur more frequently in summer even in the Alps, the "water tower of Europe." Conversely, winter tourism will be challenged by the expected decrease in snow and ice cover. The negative implications for winter tourism and sports mainly concern snow reliability. Today 57 of the 666 main ski resorts of the Alps are already considered not to be snow-reliable.[42] However, climate change is also an opportunity for resorts that are snow-reliable because they will face less competition in the future.

Future socioeconomic scenarios are as crucial as climate conditions

In the last few decades, the positive trend in tourism demand has decreased at Alpine destinations and the average duration of visits has diminished substantially. Many destinations have reached their maturity stage and the market is now saturated. Globalization has exponentially increased the number of competitors and changed travelers' behavior. Power costs are progressively eroding the margins of return for accommodation and transportation. Water availability and costs are increasingly becoming an issue for producing artificial snow. In and of themselves, these elements justify questioning the traditional development model built on the ski-based "white dream," which has prevailed since the 1970s. Instead, Alpine tourism needs trademarks (e.g., treasures of the Alps), innovativeness and flexibility.

Adaptation should be mainstreamed into long-term tourism planning

Adaptation to climate change should not be considered in isolation. Climate change is just another pressure being placed on already stressed tourism systems, which have specific strengths and weaknesses. Although tourism demand is very adaptive and tourists' behavior is constantly and rapidly evolving, the tourism supply (referring to Alpine destinations as a whole) needs more time to plan activities in order to respect social, economic and environmental constraints. There certainly are autonomous activities (e.g., artificial snow, ski slope design, etc.) that tourism suppliers can engage in, but the most crucial part of the adaptation effort will be played by "planned adaptation." Climate change is merely an opportunity to involve the most appropriate

[42] In general, a ski resort is considered to be snow-reliable if, in seven out of ten winters, a sufficient snow cover of at least 30 to 50 cm is available for skiing on at least 100 days between 1 December and 15 April.

set of local stakeholders in the process of defining activities to improve the sustainability of tourism within each Alpine resort.

The people of the Alps are ready

Raising the awareness of stakeholders – including tourists, the local population, and businesses – about the impact of climate change on tourism in the Alps is one of the principal goals of the project. However, in the participatory workshops that have been taking place over the length of the project, the local stakeholders have proven to be the sentinels of climate changes that are already being felt. They are already deeply interested in and aware of this issue. Moreover, they have expressed a desire for a higher degree of inclusivity and participation. Indeed, what is still missing at many destinations is the capacity to let the stakeholders sit together around one table and agree on how to proceed to improve the situation. In the pilot sites, where Delphi Analysis, Social Network Analysis, DSS tests, and other methods to involve local stakeholders were carried out, the project offered the opportunity and a methodology to overcome this limitation. Moreover, the workshop results have emphasized that, when consulted in an appropriate way, the local community might indeed have a coherent and "climate- change-safe" vision of what the future of Alpine tourism could look like.

There are crucial actions to be taken

Some tourism-related issues are particularly crucial for the Alpine region beyond the impacts resulting from climate change. An Alpine tourism destination needs to be identifiable. Local culture, handicrafts, gastronomy and agriculture are elements of strength among the destination's special features, and these should be incentivized. Other crucial factors that can have a huge impact on Alpine tourism are transportation and energy. Sound reflection on how to improve their sustainability would be appropriate for most Alpine resorts.

5.2 Further steps

Based on the lessons learned, the following further steps should be taken:

Differentiating development strategies to reduce seasonality. This would differentiate opportunities in the tourism supply. Alpine resorts should move away from traditional winter and summer experiences; that is, skiing and hiking. Instead, they should invest in developing wine and food tourism, marketing local products and tasting tours, wellness activities, and hosting sports and cultural events, to mention just a few. All of these products are greatly appreciated at those alpine resorts that promote them, which are increasingly becoming more popular than those where only traditional activities are promoted. Thus, there is the potential to apply this approach to other destinations as well.

Coordinating locally tailored development strategies under Alpine Convention objectives, in line with sustainable development principles. Not every destination can offer the entire range of activities outlined above. The project results demonstrate that it is strongly advised to develop specific trademarks that make the destination unique by exploiting its specific potential. In turn, this will limit the risks resulting from fierce global competition in tourism.

Cases of **best practices** should be communicated to promote exchange of experience within the Alpine area.

Concerted efforts towards **long-term adaptation schemes**, at both the regional and local levels, should become a priority and last beyond the term of a single political administration. Public investments should be utilized for long-term planning. These must pay particular attention to environmental protection and climate projections, and at the same time cut back on the construction of new downhill skiing infrastructure.

It is necessary to build on and exploit local stakeholders' interest in climate-change issues to create dynamism for exploring potential development options.

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