THE TRANSTAT COOKBOOK

Recipes for Sustainable Mountain Resorts

Interreg
Alpine Space
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TranStat

Imprint

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Leading Partner of the TranStat Cookbook

Austrian Academy of Sciences

Project Partners

alpS GmbH

ecoplus Alpin

FHGR University of Applied Sciences of the Grisons

INRAE National Research Institute for Agriculture, Food and Environment

RAGOR Development Agency for Upper Gorenjska

REGION AURA Regional Council Auvergne-Rhone-Alpes

RL Lombardy Region

UGA Grenoble Alps University

UMIL University of Milan

ZRC SAZU Research Centre of the Slovenian Academy of Sciences and Arts

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Abstract

Mountain resorts in the European Alps are of a great topographic, ecological, and socio-cultural diversity. While destinations face the same trends in the spheres of climate and ecology, society and economy as well as governance and participation, the main challenges vary. The TranStat Cookbook presents the Alpine Space TranStat project's co-creative approach to actively address the future of destinations. It provides an overview of megatrends and driving forces, and guidelines for stakeholder identification and group formation. The analysis of the current situation, the definition of a desirable, sustainable future, and possible pathways are described. TranStat aimed not only at strengthening networks within, but also between mountain resorts. The TranStat Cookbook should serve as an orientation for other mountain resorts wishing to facilitate sustainable development.

Highlights

- Resorts in the European Alps face common challenges in the spheres of climate and ecology, society and economy as well as governance and participation.
- However, the main weaknesses, strengths, threats, and opportunities vary.
- Networks in and between mountain resorts provide platforms for exchange and learning.
- The TranStat consortium combined stakeholder insights, quantitative and qualitative data to characterize the current situation as a starting point for future development.
- To set up participatory transition processes, working groups consisting of stakeholders were created in the mountain resorts involved in the project. Methods such as Social Network Analysis were therefore deployed.
- Stakeholders explored future scenarios and defined sustainable, desirable visions to prepare for the future and guide development.
- There are different transition pathways. To prevent economic decline and foster resilience, mountain resorts should plan their transitions in a coordinated manner and consider diversifying their tourism offerings and economy.
- For a successful, comprehensive transition, it is essential to involve policy-makers and consider policies at different scales.

The TranStat Cookbook

TranStat stands for "**Transitions to Sustainable Ski Tourism in the Alps of Tomorrow**". As the name suggests, the project aims at facilitating development that respects ecological and socio-economic resources. The TranStat Cookbook describes the methods used in TranStat – the Stakeholder-driven Transition Method – recounts experiences, and provides lessons learned. It thereby aims at helping other mountain resorts (MRs) prepare themselves for the future. The TranStat Cookbook addresses people who live and/or work in the area and want to engage in the transition process.

Why TranStat?

Destinations in the **European Alps depend on tourism,** especially ski tourism, as a source of income. However, the future of the branch is **affected by different megatrends and driving forces** in the spheres of climate and ecology, society and economy as well as governance and participation. Examples of challenges include insufficient snow, mass tourism, technological advances, changing political leadership, and real estate development. The TranStat project helps participating destinations actively address their future by creating desirable visions (*see chapter 5.2*) based on their specific circumstances. These visions can then guide sustainable development.

What are the aims of TranStat?

Firstly, TranStat aims to build and strengthen networks within and between MRs in order to share knowledge and experience. Secondly, local situations are analyzed to thirdly prepare for future challenges by defining desirable visions for the future and transition pathways to achieve them. Finally, as political support is crucial for sustainable development, TranStat calls for cooperation.

How is TranStat organized?

The TranStat project is organized by **researchers, regional developers, and entrepreneurs** from Austria, France, Italy, Slovenia, and Switzerland. They have formed working groups with stakeholders in **nine diverse alpine mountain destinations,** where so-called living labs (LLs) were established. The LLs in TranStat form a network to exchange experiences.

What is a Living Lab?

A LL is a real-world testing ground where different **stakeholders** such as inhabitants, entrepreneurs, and policymakers **collaborate to develop and try out new ideas.**[1] Rather than testing innovations in a closed laboratory, LLs implement solutions directly into everyday life, rendering them more practical and widely accepted. The TranStat approach is inspired by Gamache et al. (2022)[2], who argue that the transition process can be based on residents' creative potential. The **project builds on the knowledge of local communities,** and integrates local needs and opportunities. The localized setting enables people to explore new paths outside of the dominant system and face the tangible limits of reality. It is characterized by a vision of transition involving a transformation of the relationship between people and their environment.

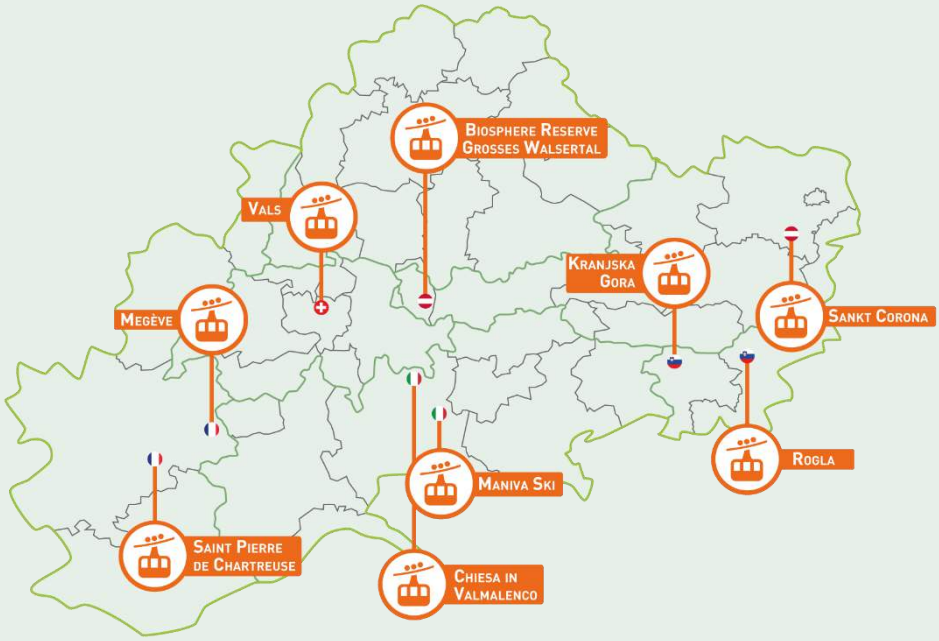

Figure 1: The TranStat LLs (UNIMONT 2023)

What is a Transition and What Does it Entail?

'Transition', the process of change from one state, condition or stage to another, has been widely discussed in political and academic discourse.[3] In response to climate change, resource depletion, and growing social inequalities, researchers, policy-makers, NGOs, stakeholders, and residents are exploring options for sustainable future development. **MRs are often economically dependent on ski tourism.** As such, they are at risk from climate change and are susceptible to various negative social, economic, and environmental impacts of tourism. The goal of the sustainable transition of MRs is therefore to create environmentally friendly, inclusive, and economically viable environments and communities that are less dependent on ski tourism.

How to Use the TranStat Cookbook?

The TranStat Cookbook describes the **main steps of the TranStat project.** Either the whole TranStat methodology or parts of it can be applied to other regions. Depending on the location, the challenges differ. Instead of reading the TranStat Cookbook from the beginning to the end, chapters of interest can be selected. The chapters cover for example how to identify challenges, form a working group, co-create a desirable future vision, and connect with policy makers. The table of contents gives an overview of the TranStat Cookbook, and its structure is briefly described at the end of this introductory chapter. In the boxes, TranStat experiences in and examples of e.g. co-creation or group formation can be found. At the end, key terms such as "co-creation", "living lab", and "sustainability" are briefly described in the glossary.

Structure of the TranStat Cookbook

The first chapter provides an overview of **megatrends and driving forces.** This should help MRs to identify the most relevant ones.

When planning a desirable future, stakeholders and inhabitants should contribute with their experiences, needs, and interests. To these ends, the second chapter explains what **co-creation** means, how it works, what advantages it has, and what experiences were made in the LLs.

The third chapter describes how to implement systematic **monitoring** right from the beginning to ensure a good project overview, facilitate the achievement of objectives, and document experiences that could benefit other MRs.

Chapter four informs how **groups can be formed** with influential and interested persons from various fields. It also includes experiences with the identification of key stakeholders and group formation.

The fifth chapter is divided into four subchapters on the key activities in the participating MRs. Proper planning requires a good overview of the local situation. The first subchapter explains how to collect different types of data. For the **analysis,** data is clustered into strengths, weaknesses, opportunities, and threats (SWOT). With an understanding of the **present situation,** megatrends, and driving forces, the future can be planned. The second subchapter describes the design of future **scenarios and a desirable vision.** To actually pursue the defined vision, the third subchapter explains how to develop **transition pathways and action plans** that encompass steps, responsibilities, timelines, and required resources. To facilitate sustainable development, cooperation with politicians is necessary. The last subchapter addresses the **political sphere,** which extends from the local to the international level.

Finally, in chapter six the main steps of the co-creative TranStat approach and key takeaways from the TranStat Cookbook are summarized. A call for collaboration to facilitate sustainable development concludes the TranStat Cookbook (chapter seven).

1. Mountain Resorts of Tomorrow

The European Alps display a great diversity in terms of relief, climate and weather, ecology, land use, economy, population size and dynamics, history, lifestyles, governance, etc. Specific combinations of the factors make each municipality a unique one. However, megatrends and driving forces affect all mountain resorts (MRs). While some might struggle most with sustaining slopes due to global warming, it might be more urgent for others to limit second-home residences or to offer perspectives to the young generations. Both **specific contexts and similar trends need to be considered** to exchange, to learn from one another, to develop sustainably, and to reach a desirable future.

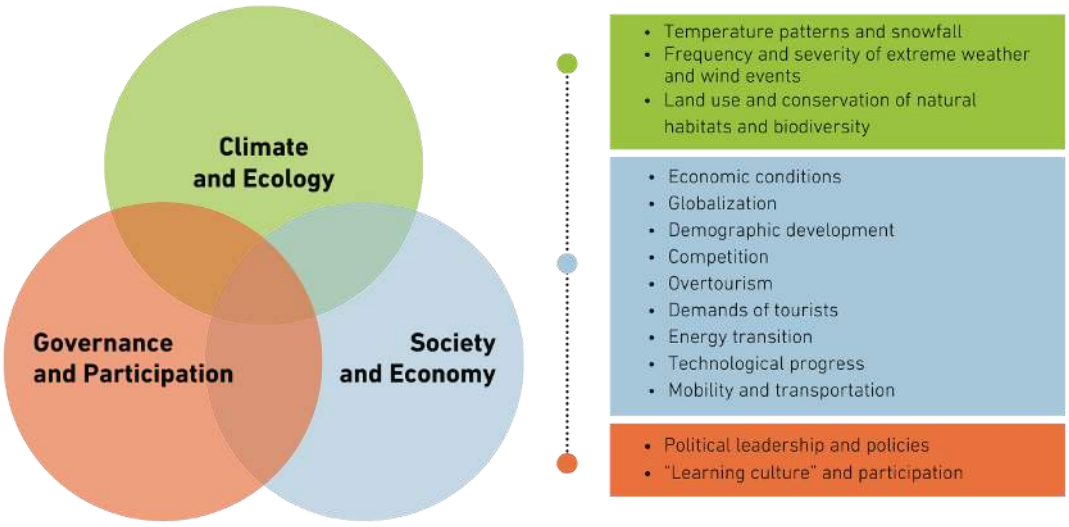

Figure 2: Three thematic categories of megatrends and driving forces (L. Hasenauer 2025)

1.1. Megatrends and Driving Forces in Mountain Resorts

Both megatrends and driving forces push changes and affect people. Examples for driving forces are environmental policies, developments in science and technologies, and demand for products and services.[4] **While driving forces might be of limited temporal and spatial scope, megatrends are more permanent and have far-reaching, lasting impacts on many aspects of life.** The force of several drivers over time can lead to, accelerate or disrupt a megatrend. Megatrends are for example demographic change, globalization, urbanization, climate change, and advancing digital technologies.[5]

For a better overview, driving forces and megatrends can be grouped into categories. The TranStat project distinguishes between the spheres of climate and ecology, society and economy as well as governance and participation. The classification of megatrends and driving forces is not always clear, and there are overlaps between the categories.

Many forces drive change, and it might be difficult to keep an overview of them. In the list below, driving forces and megatrends and their relevance for MRs are shortly described. However, it is not always possible to predict how they will develop. While global warming is

indisputable, exact temperatures cannot be predicted. Even less predictable are technological innovations, political leadership and decisions. It is the aim of this chapter to give some **orientation for the analysis of the present situation and the identification of potential future challenges and opportunities.**

1.1.1 Climate and Ecology

- *Temperature patterns and snowfall*

  Temperature and precipitation are changing.[6] Between 2011 and 2020, the mean surface temperature over land was 1.59°C higher compared to 1850-1900.[7] Until the mid-21st century, surface air temperatures are predicted to continue increasing at an average rate of 0.3°C per decade.[8] Depending on greenhouse gas emissions, warming will then either stabilize or be even stronger. Furthermore, the frequency of cold spells and frost days is decreasing. Snow depth and extent as well as the duration of snow cover are decreasing, especially at lower elevations. As a consequence, it is becoming more difficult to maintain ski slopes, and the length and quality of ski seasons are affected.

- ***Frequency and severity of extreme weather and wind events***

  The frequency and severity of extreme weather events such as heavy rainfall, storms, and heatwaves are increasing.[9] Consequently, forests may be damaged,[10] and hazards posed by floods or landslides are becoming more frequent.[11] Besides the immediate danger to people, the infrastructure of communities and ski resorts can be affected.

- ***Land use and conservation of natural habitats and biodiversity***

  Political regulations on the availability and the use of land determine the possibilities of ski areas. They permit or forbid extending slopes, building new lifts, restaurants, etc. Changes in land use affect biodiversity and the risk of soil erosion. The awareness of the need to preserve natural habitats and biodiversity varies and can change (e.g. due to educational campaigns or consumer demands). Stakeholders' awareness can prevent ski area extensions and lead to protective measures.

1.1.2 Society and Economy

- ***Economic conditions***

  On the one hand, inflation and interest rates affect ski resorts and the local economy in general. They determine whether regular ski operation is possible, loans can be paid, and new investments are feasible. On the other hand, they determine the demand and consumer behavior, i.e. the number of visitors, the length of stay, and the amount of expenditures.

- ***Globalization***

  Global networks bare both potentials and risks for economy, society, and ecology. Ski resorts can attract visitors from all around the world but at the same time face global competition.[12] This not only applies to tourists but also to attracting employees.

Moreover, when establishing and maintaining ski tourism infrastructure, resorts can choose from a global market and are challenged to balance costs, the quality of goods, and sustainability.

- ***Demographic development***

The demographic composition is changing due to longer life expectancy and lower birth rates. Furthermore, young people find more educational and professional opportunities in cities. The age and life stage of residents and visitors affect their needs and demands, to which facilities and services have to be adapted.[13]

- ***Competition***

How easy it is to attract consumers depends on the number and quality of competing ski resorts. To stand out, investment in infrastructure, services, and marketing are required. Additionally, there might not be enough residents who are also interested in jobs in tourism, which are sometimes seasonal, so that ski resorts compete for personnel.

- ***Overtourism***

To reduce the cost per visitor and thereby raise profits, MRs might decide to aim for large numbers of tourists. If the number of tourists per inhabitant is too high, both the quality of life and the quality of holiday suffer. While local economies may benefit from more visitors, this means more traffic and waste. Tourism can also increase land prices and the cost of living for locals.[14]

- ***Demands of tourists***

The tourism industry faces diverse and changing lifestyles, interests, and subjective needs.[15] While skiing remains the dominant motive for visiting MRs for many, others are looking for alternative activities. More sustainable, "slow" forms of tourism with an emphasis on high quality have become attractive options. Thereby, tourists can experience the natural and cultural amenities of the place they are visiting.

- ***Energy transition***

The choice of a sustainable energy source depends on technological progress, costs, availability, suitability, regulations or incentives, and the potential of image improvement.[16] Examples range from solar energy, to hydropower, wind power, geothermal energy, ambient heat, and bioenergy (solid biomass such as wood, biogas, liquid biomass such as biodiesel as well as the biogenic portion of waste).

- ***Technological progress***

Technological progress and innovations should be considered because they can attract visitors, improve working conditions, and help reduce energy consumption

and costs. Examples include AI support for customer service, improvements in snowmaking, and grooming slopes as well as new forms of (e-)mobility.

- ***Mobility and transportation***

  Tourism can lead to traffic jams, increase air and noise pollution and soil sealing. However, it can also incentivise sustainable solutions from which inhabitants can benefit. In terms of carbon footprint, traveling to and from a vacation destination is a major concern.[17] Besides providing and advertising climate-friendly connections, destinations might improve the regional situation in terms of public transportation.[18] Municipalities can be designed pedestrian and bicycle friendly, offer infrastructure for e-mobility (car, bicycle, e-bike, e-scooter) and sharing options.

1.1.3 Governance and Participation

- ***Political leadership and policies***

  Political measures such as regulations or tax incentives impact ski resorts. Policies can apply to working conditions, the renovation and expansion of the resort, and the protection of ecosystems. The availability of land for purposes such as agriculture, housing, and tourism is regulated and affects the price for land, housing, and accommodations. Much depends on decision makers, but political parties and leaders are changing. Ski areas would benefit from cooperation with politicians, transparent regulations and expectations.

- ***"Learning culture" and participation***

  Resorts can proactively address future development by establishing a culture of learning. A prerequisite for this is monitoring and reflecting on one's own processes. Another is being open to new knowledge, ideas, and experiences. Involving stakeholders helps adapt policies to their specific needs and take decisions accordingly. Responsible persons can invite individuals, groups or communities to participate in decision-making processes.

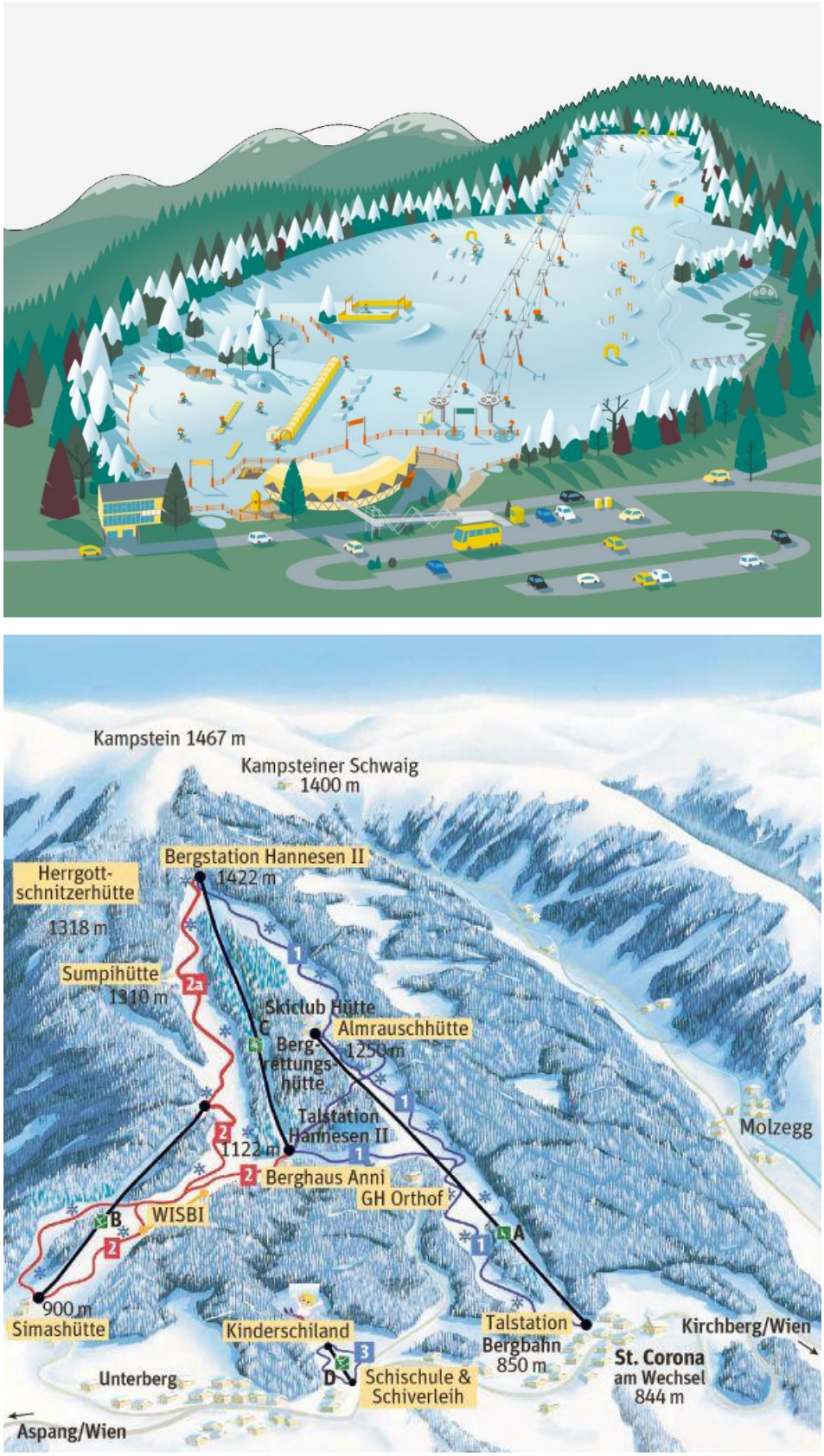

Figure 3: Due to climate change, the ski resort has decided to reduce the size of the ski area, opting for solutions that can be used all year round. In the pictures old and new Sankt Korona Ski Resort. © Wexl Arena St. Corona am Wechsel

1.2. How to Identify Key Drivers of Change in a Mountain Resort?

For the identification of drivers of change, it is important to have an **overview of driving forces and megatrends.** Based on the listed megatrends and driving forces from the previous chapter, the aim is to identify those that specifically concern the MR under consideration. To initiate a transition process that responds to the most pressing challenges, the **specific context** must be considered. While an external expert might help to not oversee a relevant driver, to identify the main drivers on the local level, the experiences and knowledge of regional and local stakeholders are a prerequisite.

When planning the identification of drivers of change, the **purpose and objectives** should first be clarified: Is the identification of the drivers of change part of a bigger process and what will the results be used for? Is the aim to get a rough overview or to get a comprehensive picture of the MR, including all the three dimensions and the perspectives of stakeholders, inhabitants and visitors? After answering these questions, it can be decided **how comprehensive** the process should be in terms of time and participants.

If you are interested in identifying and analyzing the factors driving change in your region, here is a suggestion for facilitating group work and seminars

2. Co-creating Sustainable Futures

Mountain resorts (MRs) are dealing with a variety of challenges that demand local, sustainable solutions. To create effective solutions, it is essential to involve people from different backgrounds and roles within these communities. This means listening to and discussing ideas with a wide range of voices. Co-creation is a process where different people such as community members, hotel owners, ski lift operators, and researchers **work together as equal partners.** This partnership aims to **create new ideas, products or solutions.** The TranStat project uses co-creation to support sustainable futures for MRs by developing shared scenarios and visions and exploring transition actions (*see chapters 5.2, 5.3*).

Co-creative processes have many advantages:[19]

- inclusivity and transparency;
- increased legitimacy and power-sharing;
- broader societal impact and awareness;
- empowerment of marginalized groups;
- participants develop a sense of ownership; and
- more relevant, practical solutions tailored to local needs.

2.1. Co-creation Phases and Steps

A co-creative process typically includes several steps, which may overlap: co-design, co-production and co-monitoring as well as co-delivery. Each phase contributes to building a sustainable and impactful project, grounded in collaboration and local relevance.[20]

Co-design

This phase is about setting the stage for collaboration. First, the team **identifies key people and groups to involve,** and learns about different backgrounds, experiences, and needs. The group should clarify everyone's roles, objectives, and how they will communicate and work together. It is important to make sure that everyone understands how much time and resources are needed for a successful collaboration, and that everyone is **transparent about their expectations.** Once these foundations have been laid, **the team agrees on activities and end products.** Establishing a **respectful and trusting atmosphere** from the outset is essential for good collaboration, and activities should be planned accordingly: Everyone should be encouraged to participate and express their opinions. At the end of the co-design phase, the team should have a common plan.

Co-production[21] and co-monitoring

During this phase, everyone works together to complete the activities they planned. The team reviews the initial results and the collaboration, and sets up processes to gather feedback on both the collaboration itself and the outcomes. Activities should meet stakeholders' needs and encourage their participation. Therefore, a friendly and open atmosphere is important. **Monitoring and feedback help to improve**

cooperation and future activities to achieve the objectives. More information on monitoring can be found in *chapter 4.*

Co-delivery

In the final phase, the team focuses on knowledge, tools, and scenarios to support decision making. To this end, useful **information for decision-makers is defined.** Participants refine the key messages they want to share with a wider audience. Possible means of **disseminating the results** are (social) media, websites, networks, newsletters, and events with presentations. While this phase takes place at the end of the project, shared learning and the development and dissemination of knowledge are encouraged at all stages of the project.

2.2. Methods and Tools

Co-creation can be carried out using a variety of methods and tools. Appropriate **methods engage participants, ensure that different perspectives are considered, and that solutions are valid and impactful.**[22] When choosing activities, it is necessary to consider the participants' backgrounds, the project plan (what has been done before, what is planned for the future), objectives, and resources (time, place, workshop facilitators, materials, catering).

Figure 4: Dotmocracy in the LL Großes Walsertal (AlpS 2025)

At the heart of co-creation are **workshops and discussion groups**, where people can share ideas and work together on solutions in face-to-face or virtual sessions. There is a wide range of tools and methods to get to know the group, to introduce and work on transitions to sustainable development, and to conclude the team's work.

Examples include Rich Picture to visualize complex situations, Problem Tree Analysis to understand the causes and effects of a problem, Dotmocracy to rank different aspects through voting, Plus-Delta Feedback to highlight what went well and suggest improvements as well as the core TranStat activities SWOT analysis, scenarios, and visions.[23]

2.3. Dealing with Challenges

For the design of a sustainable development path that fits to the local context, as in TranStat, the involvement of stakeholders is crucial. Addressing stakeholder fatigue and managing

conflicts in co-creation processes requires **thoughtful planning, open communication, and proactive management** (*see co-creation steps chapter 2*). By addressing stakeholder fatigue and conflicts, the co-creation process can keep positive, collaborative, and productive for everyone involved.

Problems can be addressed proactively: The **monitoring and evaluation** of stakeholder engagement and satisfaction provide information on the situation. Based on the analysis of the monitoring, objectives are revised and activities adapted. To ensure transparency, targeted communication to different stakeholder groups is necessary. In case, conflicts should be addressed actively and measures against stakeholder fatigue taken.

Measures against stakeholder fatigue

- The required time and effort are transparent from the beginning.
- Planned activities fit into the project plan and contribute to achieving the objectives.
- Meetings are scheduled according to the needs of stakeholders, and online meetings are also offered.
- Efforts are recognized and achievements are celebrated.
- Providing regular updates keeps stakeholders connected without requiring constant involvement.

Conflict handling[24]

- In a friendly environment, people feel comfortable sharing their concerns and opinions. Setting ground rules facilitates respectful communication.
- Listen to and develop an understanding for different perspectives, priorities, and values.
- If discussions become tense, a neutral person can help guide the conversation. This ensures that everyone has a chance to speak and that the discussion remains productive.
- Participants should be reminded of the common goals that brought them together.
- Conflicts can be best resolved through clear processes, such as defining the source of the conflict, looking beyond the incident, and requesting and agreeing on solutions.

Co-creation in TranStat

Partners generally followed the project schedule that defined the co-creative stages, but adapted it to the contexts. Different partners were responsible for specific project steps. They provided the co-creative framework (SNA, SWOT, creation of scenarios, etc.) for other partners and supported the implementation. The responsible partners could therefore **specialize and maintain the quality** of their task. Having a **basic framework and specific responsibilities gave the partners an orientation** when planning and organizing workshops. The approach can be improved after it is tested in different contexts.

To exploit the benefit of a co-creative approach, **flexibility to adapt to the context must be retained.** Partners therefore had to decide how detailed they specified the implementation

guidelines and in how far they pursued the suggested steps of other partners. This balancing act was not always easy. However, the partners were thankful for the orientation the framework provided and managed successfully to put their MRs with the specific needs into the foreground. Their expertise and experience ran into the planning and implementation of the approach. **Not only were the specific capacities of MR participants crucial for the project, but also that of the partners.**

Especially at the beginning, in the co-design phase, partners were eager to motivate participants and wanted to clarify expectations. However, they did not know how the project would unfold in detail, for example how much time participants should invest, and could consequently not be entirely transparent. Plans and predictions can only made to some degree, but in the beginning it is particularly important to **give enough space to clarify key questions.**

Figure 5: TranStat stakeholder workshop in the LL Vals (FHGR 2025)

The project emphasized the importance of taking local and regional specifics as a starting point. Although all of the participating MRs have skiing possibilities, their economic and cultural significance varies. These differences determined the MRs' concerns and affected their motivation for TranStat. While the TranStat Cookbook presents the common approach,

the following briefly describes some solutions and lessons learned in the LLs, ranging from the motivation to participate to group size to co-creative activities.

St. Corona am Wechsel.

St. Corona am Wechsel had undergone a transition process prior to the project start. The participants therefore preferred to reflect the process in a small working group and share their experiences rather than designing a desirable sustainable future anew.

Großes Walsertal.

The Großes Walsertal encompasses multiple municipalities that are part of the regional biosphere reserve. There are small-scale skiing facilities which are relevant for tourism and residents, but the region has established slow-tourism over the years. The biosphere reserve is a key player in the region, and also shaped the project. While the region already pursued sustainable strategies, the participants thought it important to connect all the relevant stakeholders, collect the individual strategies, and develop a common vision. They therefore focused on the improvement of the SNA and the creation of desirable future visions.

Valmalenco and Maniva.

Both for Valmalenco and Maniva, partners decided to explicitly address the youth, and include their perspectives into the project. It was challenging to assemble them because they were often away for their studies and if they wanted to participate, public transport was not reliable. Nevertheless, the partners successfully organized workshops and could integrate the youth's experiences and needs into the project.

Saint-Pierre-de-Chartreuse.

The French partners already knew the main stakeholders in Saint-Pierre-de-Chartreuse before the start of the TranStat project. They met to explain the project's objectives, the participatory approach and all that it entailed. Throughout the project, numerous meetings with political players were held to discuss the main stages. Additionally, public events were organized to raise awareness of the resort's situation, provide information on climate change and its impacts, and better understand the public's motivations with regard to the resort and its future.

Megève.

Prior to the project start, the approach was explained to key stakeholders in Megève. However, a number of changes in key positions affected the commitment to the TranStat project. Consequently, the project leaders had to explain the project again, emphasize potential benefits, reengage with the stakeholders, and build trust. This also made it difficult to stay on schedule.

Vals.

Climatic conditions still allow Vals in Switzerland to continue ski tourism the same way. Nevertheless, stakeholders were motivated to consciously develop a sustainable

strategy with an eye on locals' needs, and pursued the TranStat approach with great participation.

Rogla and Kranjska Gora.

In both Slovenian LLs, the TranStat approach was pursued with great motivation. Reasons might be that in both Rogla and Kranjska Gora, winter sport with skiing is highly relevant for inhabitants, not only economically, but also for their collective identity. However, climatic conditions have become unfavorable and inhabitants suffer from negative tourism consequences. All activities were carried out successfully in Slovenia. Experiences showed that it is important to keep the methodology simple, to allow enough space for discussions, and still work towards the planned outcomes. Therefore, a skilled workshop host was identified as key to success.

Figure 6: Ski area in Rogla (Miha Matavz n.d.)

3. What Is Going on and Can We Improve? Monitoring the Transition Process

Transitions can seem complicated and chaotic. Monitoring is first and foremost about getting an **overview of activities**. Information is collected to answer the questions "What activities are taking place?" and "What are the experiences?". Based on the information gathered, reflection can take place.[25] It is possible to **learn from experiences** and to draw conclusions.[26] The knowledge gained **helps to plan** the next steps. In addition, others who are undergoing or planning transitions can benefit from the information. Finally, monitoring sheds light on the **progress and the achievement** of sub-goals.

Key elements of the monitoring process

- **Group formation and composition**: How was the working group formed? What is the composition and is it changing? Is there a balanced representation of different stakeholder groups? Are there any powerful stakeholders represented?
- **Activities**: What activities are taking place? How satisfied are the participants with the activities?
- **Participation**: Who is involved in defining goals and activities? Who participates in which activities? What roles do project partners see for themselves and for stakeholders? How satisfied are stakeholders with the way the project is proceeding and with the opportunities for participation?
- **Pursuit of objectives**: Do project partners and stakeholders have a similar understanding of the project? Are the objectives communicated to all participants? Are they re-evaluated? Are sub-goals being met? Are there feedback loops?
- **Communication**: Do participants receive all the relevant information in a timely manner? How do project partners and stakeholders perceive communication? How can communication be improved?
- **Monitoring itself:** Does the monitoring give a good overview of the transition process? Should the monitoring methods or questions be changed? Is the number of questions appropriate?

Tips for setting up monitoring:[27]

- Organizers need to see monitoring as an integral part of the project.
- Monitoring should be continuous, from the beginning to the end of the project.
- Monitoring objectives and implementation are best planned together.
- Responsibilities for the monitoring need to be clear.
- A combination of meeting documentation, qualitative interviews, and comparative, quantitative surveys of project partners and participants can be used to get a good picture.
- Both organizers and participants are monitored.
- Key information needs to be gathered, but the surveys should be as short as possible.

- If findings are discussed regularly, they can be considered when planning future activities.
- The results of the monitoring may show that the objectives need to be readjusted and help to clarify them.
- Future activities can be tailored to achieve the updated objectives (frequency, face-to-face/virtual/hybrid, group size, content, methods/tools/techniques).
- Through monitoring, progress, positive experiences and achievements are identified and should be shared within the project.
- There should be space to share experiences and benefit from the support of the network.

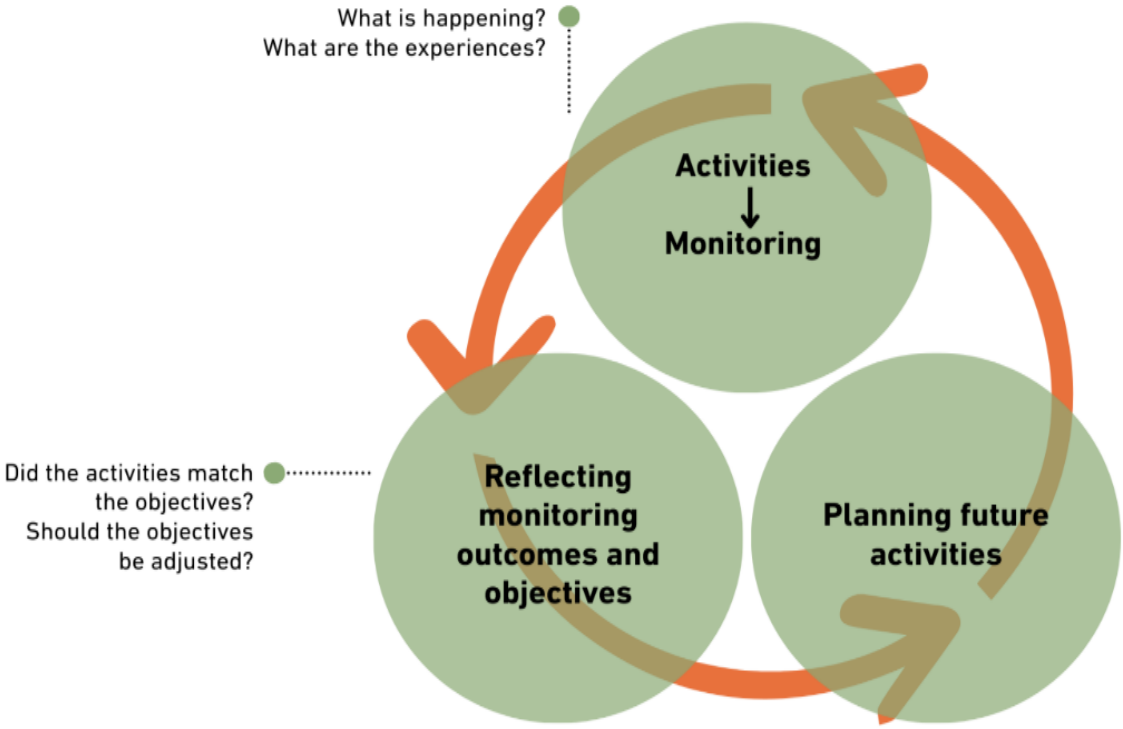

Figure 7: The loop of monitoring, reflecting, and planning activities (L. Hasenauer 2025)

4. From Identifying Stakeholders to Forming Working Groups

To drive change in mountain resorts (MRs), the formation of a strong working group is critical. The process begins with identifying individuals and organizations that are key to transition. This can be achieved by Social Network Analysis (SNA), which maps stakeholders and their relationships. This section outlines how to conduct a SNA, form working groups, and encourage stakeholders to participate actively.

4.1. SNA for Identifying Persons Who Drive Change

What is SNA?

SNA is a tool for **mapping and evaluating relationships between stakeholders.** It visually represents connections ("ties") between actors ("nodes") in a network, helping to reveal **patterns of collaboration, information flows, and influence.**[28] SNA helps to identify most central decision-makers and stakeholders with high influence as well as communication gaps.

Why use SNA? What results does it provide?

SNA provides a clear, evidence-based view of stakeholder relationships **to form collaborative groups.** By understanding the social structures within a network, stakeholders can address potential barriers and leverage stronger relationships to achieve defined goals.[29] The analysis provides:

- A **visualization of the network,** showing how actors interact and where gaps or strong connections exist.
- Differentiation between **peripheral and central actors.**
- Identification of stakeholders who should be engaged in the development of sustainable tourism because they **can make or influence decisions,** are **well-connected** and frequently interact with a high number of other actors, or operate at multiple levels (from local to regional and national).

How does SNA work?

SNA is based on the collection of data on interactions between stakeholders through **surveys or interviews.** Questions address how often stakeholders communicate, the nature of their collaboration, their impacts on decision making and, most importantly, with whom they collaborate in the context of sustainable tourism development. Surveys can be distributed via email or conducted through phone calls, where an interviewer records responses directly into the survey tool. The process typically starts with well-networked individuals who have a strong overview of the stakeholder landscape. Using a snowball sampling approach, **interviewees are asked to nominate additional actors,** ensuring a broad and representative network. Interviews continue until new nominations become rare and all relevant stakeholder categories are represented. This ensures that the dataset is **comprehensive** without being unnecessarily time-consuming. To **analyze the data and visualize the results,** the responses are fed into a software such as Gephi.

For more information, visit the TranStat website.

What is needed for SNA?

To conduct SNA, several resources and actions are required:

- **Representatives** from local government, businesses, community organizations, environmental groups, and others involved in tourism need to engage.
- Stakeholders' **participation** is paramount in the SNA process, as their input is crucial for accurate results.
- **Data collection tools,** for instance survey or interview guidelines to gather information on stakeholder interactions, are useful.
- **Software** such as Gephi is needed to visualize the network.
- **Time** is required. Depending on the complexity of the network, the entire SNA process may take several weeks.

SNA in TranStat

The use of SNA in TranStat's living labs (LLs) was instrumental in identifying key stakeholders in different sectors such as tourism, local government, and environmental organizations. The SNA process revealed a number of well-connected actors central to local decision-making processes.

The SNA provided a clear understanding of the local power dynamics and communication flows, making it easier to identify influential actors. The visualization of networks helped to make informed decisions about who to include in the core group.

The SNA highlighted strong, established relationships between local businesses and government stakeholders. The process provided transparency in stakeholder identification and engagement, ensuring that no important group was overlooked.

Challenges included the time-consuming nature of the data collection through interviews and surveys. Smaller, peripheral actors were sometimes under-represented, requiring additional workshops to ensure wider participation. Expertise in the use of software (Gephi) is required to visualize the network.

The following graph illustrates a network of actors involved in sustainable tourism development. Different colors indicate sector affiliation, while the thickness of the edges represents the frequency of information exchange between actors: the thicker the line, the more frequent the communication. The size of each node reflects its closeness centrality, a measure of how quickly a node can reach others in the network. Actors with large nodes can spread information very efficiently and are therefore central to the communication flow within the network.

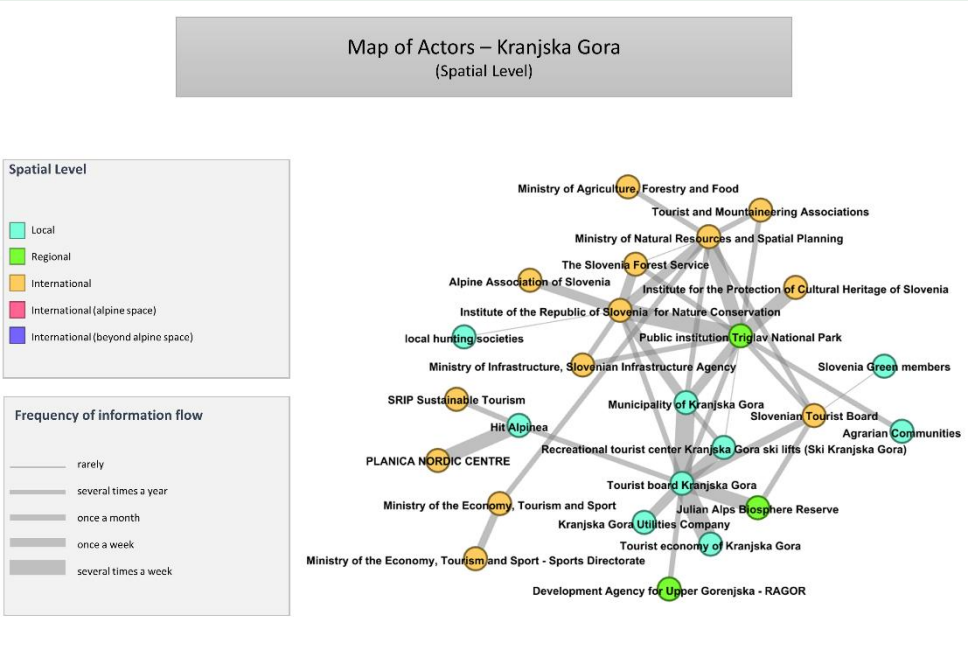

Figure 8: Abstracted stakeholder map of the LL Großes Walsertal (AlpS 2025, software: Gephi)

The stakeholder map of Großes Walsertal illustrates a moderately dense and highly heterogeneous network, involving actors from a wide range of sectors such as public administration, SMEs, education, infrastructure, and elected representatives. The central actor in the middle (purple node) — an expert in a relevant administrative sector—holds a key position with high closeness centrality, enabling efficient information flow across the network. This actor functions as a crucial connector and potential broker between otherwise unconnected stakeholders. The multisectoral composition of the network is a strength, as it allows for diverse perspectives and fosters collaboration across different fields. Overall, the structure supports both coordination and adaptability, though it may rely heavily on the central actor, indicating some vulnerability in case of disengagement.

4.2. From Stakeholder List to Core Group

The success of a LL depends on the formation of a core group, composed of key stakeholders who drive the implementation and maintain the momentum to achieve sustainable solutions. Based on the results of SNA and consultations, this section outlines the process for identifying and assembling such a group.

The outcome of the SNA is a **structured list of stakeholders** who are potential members of the core group. Consider the following steps to transition from this list to a **functional core group**:

Assessing stakeholder relevance

- Evaluate stakeholders based on their **interest** in the LL and their **power** to influence decisions (e.g. using an interest-power matrix).

- Ensure **diversity** by including actors from different sectors, such as businesses, government agencies, NGOs, and research institutions.

Engaging key stakeholders

- Use direct consultations to **understand individual motivations** and clarify the potential benefits of participation.
- Organize workshops or meetings to **introduce the LL's objectives** and invite stakeholders to actively shape its direction.
- **Address concerns and emphasize mutual gains,** such as policy influence, economic opportunities, or innovation partnerships.

Building commitment

- Define clear **roles and responsibilities** for core group members.
- Foster a sense of **ownership** by ensuring that stakeholders' contributions shape the LL decisions and outcomes.
- Maintain **transparency** and regular communication to sustain engagement over time.

Finalizing the core group

- Ensure that the group is well-balanced, with actors who are both **influential and committed.**
- Establish **collaborative agreements** to clarify expectations and responsibilities.
- Create an **action plan** outlining the next steps for co-creation and implementation.

A prerequisite for stakeholders' involvement in the core group is their **motivation**. Without a clear reason to participate, even influential or committed stakeholders may become disengaged. The tips from the chapter on co-creation, and steps described above such as open communication of benefits and of expectations, support participants' motivation. Further tips are to foster stakeholder ownership by involving them from the beginning and to **align the objectives of the LL with participants' interests and values.** Last but not least, **progress and achievements** should be celebrated and the contributions of participants should be recognized.

Group formation in TranStat

Großes Walsertal.

In the Großes Walsertal, the formation of the LL core group required careful planning, especially with regard to workshop attendance. Timing was a major challenge: workshop dates during the high tourist season had to be cancelled due to low attendance, as many stakeholders (especially those in tourism) were unavailable. To overcome this, **scheduling workshops** outside the high season became critical. Another key success factor was the use of **personal invitations.** Sending individual, personal invitations to key stakeholders, preferably by phone, significantly improved

engagement levels and helped stakeholders feel valued and integral to the process. **Consistency of communication** was important to avoid misunderstandings and maintain stakeholder involvement throughout the process. Ensuring that the **same contact persons** were involved throughout the project helped to build trust and keep communication clear.

Kranjska Gora and Rogla.

In the LLs Kranjska Gora and Rogla, core stakeholder groups were defined by SNA. For each LL, 2–3 primary stakeholders were identified, typically including the municipality, the ski resort operator, and the local tourism board. Starting with these stakeholders, the team mapped out additional key actors. The result was a rich and dynamic network of stakeholders for both areas. The SNA helped form a diverse core group, including representatives from both the public and private sectors: local authorities, municipalities, tourism organizations, regional development agencies, ski resort operators, environmental NGOs, businesses, and landowners. **This variety of perspectives was essential in fostering a comprehensive understanding of the challenges and opportunities tied to the sustainable transition of MRs.**

Interestingly, **the SNA revealed different thematic focuses** in the two locations: In Kranjska Gora, stakeholder connections were closely tied to nature conservation, while in Zreče (Rogla), tourism and sport emerged as dominant themes.
During the first workshop, the core group identified and ranked a wide range of challenges. **Participants' perspectives and experiences determined the weighing of challenges.** In the second workshop, **new challenges were added** after stakeholders raised additional concerns. Moreover, stakeholders from the ski school and the mountain association joined the core group.
All workshops, meetings, and major decisions were made collaboratively with the core group. Over the course of the project, **additional participants** who expressed interest in joining were included, for example the ski school in Kranjska Gora and the Koroška development agency. Most participants agreed that the project successfully brought together key stakeholders and emphasized the importance of **regular meetings** within such a group to discuss shared concerns.

5. Building a Better Future Together

This chapter describes **key steps and activities carried out in the TranStat project.** The first sub-chapter deals with the analysis of mountain resorts (MRs) in order to identify the current situation and future prospects. Based on this, the second sub-chapter outlines how to define scenarios and desirable futures in MRs. The third sub-chapter explains how these can be pursued with transition pathways. Finally, the relevance of policies to facilitate sustainable development is highlighted.

5.1. Situational Analysis of Mountain Resorts

Before future plans can be established, it is necessary to **gain a detailed understanding of the situation of the living labs** (LLs). To this end, a systemic analysis is covering different scales such as the ski resort, the municipality and the inter-municipality or territory. The overview of driving forces (*see chapter 1.1*) gives an orientation and helps to not forget key factors when collecting data for analysing a specific MR. The analysis consists of **five steps** that can be carried out in **parallel and iteratively,** as new findings or discussions may require additional data and analysis of specific areas. Three steps concern the collection of different types of data, one step focuses on structuring and analysing the data, and the last step is the presentation and discussion of the analysis. The steps and how they contribute to a comprehensive picture are described below.

Study of grey literature

To gain an understanding of the area, a gray literature benchmark can be conducted before or during data collection. Sources can include historical archives, studies carried out by consultancies, and documentation of public policies at different levels.

Qualitative data collection

Potential interview partners include local stakeholders (politicians and technicians, directors of ski areas, ski schools, and tourist boards, presidents of associations) and residents as well as tourists. Questions can cover challenges and drivers of change, relationships with the land, future visions, and transition (e.g. in the form of semi-structured interviews).

Quantitative data collection

Exploring available data on the environmental and socio-economic situation of a territory in order to get an exhaustive overview. Specifically, this step involves the analysis of data drawn from national, regional, and local statistics to study trends and concerns specific to the area. Data of interest varies depending on the scale of observation. Ski area data can include climatic conditions, snow cover, the annual turnover, annual financial reports, skiing days, overnight stays, tourist taxes, tourist beds. Municipality and intermunicipality data can comprise demography, households, human practices, housing, and land prices, employment, economies, agriculture, commuting, habitats, water, and forest resources.

The SWOT analysis

The SWOT analysis is a systematic approach that can support decision making. It is a widely used tool in business management for analysing strengths, weaknesses, opportunities, and threats.[30] **While strengths and weaknesses concern the system itself, opportunities and**

threats relate to its environment. The SWOT analysis considers both internal and external factors. It **overarches scales** from a business, over a MR to an entire region.[31] This tool can be used for local organizations, such as MRs, which are a complex system of diverse stakeholders, combining individual and collective rationales, economic rationales, and rationales of general interest.

The graphic below visualizes how the SWOT analysis can be carried out.

Discussion of the analysis with stakeholders

Figure 9: Three steps of the SWOT analysis (IGF/ÖAW 2025)

The analysis should be presented to the stakeholders and inhabitants, **discussed** and reflected upon together, and in case **adapted**. The results and requests are fed into meetings with stakeholders with a twofold objective: First, the local community should **understand** and be aware of the strengths and weaknesses of the territory. Second, the local community identifies and **clarifies** the socio-economic and environmental issues to be addressed, and the solutions to be outlined.

This step helps to get to know the perceptions of the population, to raise new questions, and to discover existing initiatives. As the results may demand further analyses, this step can be iterative. **Discussions of the analyses, iterative learning, and comparisons with similar analyses in other areas form the basis for the development of scenarios for the desired future** (*see chapter 5.2*). By carrying out territorial analyses in different MRs, it is possible to identify both common challenges and opportunities, and discuss possible strategies.

The mentioned steps systematically help getting an **objective understanding** of the resort, the territories, and the interrelationships. Furthermore, a cross-analysis, the comparison of quantitative and qualitative data, helps to **identify patterns, connections, and contradictions**. For example, limited employment opportunities push younger residents toward urban areas, while a high ratio of residents over 65 implies a limited labor force and increased healthcare needs. By discussing the analysis with stakeholders and inhabitants, their perspectives help refine it. The results can be distributed according to the SWOT categories and illustrated as shown in the following figure.

Figure 10: SWOT analysis Kranjska Gora

Situational analysis in TranStat

As part of the work carried out in the TranStat project, nine territorial analyses were carried out in each of the project's LLs.

A comparison of their SWOTs reveals a number of potential hooks for scenarios, as summarized in the table below.

Table 1: Threats and weaknesses; potentials, chances, and strategies in the TranStat LLs (INRAE 2024)

Threats and Weaknesses	Potentials, Chances, and Strategies
Labour market issues, drain of skilled workers, and recruitment difficulties *(Rogla, Valmalenco, Großes Walsertal)*	Supporting economic initiatives and engaging stakeholders in decision-making processes *(Großes Walsertal);* promoting tradition and local products *(Maniva)*
Climate change and its impact on snow cover *(Maniva)* and the need for solutions to reduce dependence *(St Pierre de Chartreuse).*	Year-round tourism and reduction of seasonality in the destinations *(Valmalenco, Kranjska Gora and Rogla)*
Issue of high land prices leading to spatial exclusion *(Vals)*	Utilization of vacant buildings for affordable housing *(Großes Walsertal),* more effective use of second homes *(Megève)*
Overtourism, aspiration for more sustainable mobility *(Rogla, Kranjska Gora)*	Holistic tourism concept for four seasons and environmentally conscious travelers *(Großes Walsertal)*
Limited financial resources hinders municipalities' capacity to invest in infrastructure *(Großes Walsertal)*	Territorial approach (long-term, holistic perspective on the interactions of people and their environment together with stakeholders) (*Valmalenco, Saint-Pierre-de-Chartreuse)*

Saint-Pierre-de-Chartreuse.

For the LL Saint-Pierre-de-Chartreuse, the situational analysis confirmed the intensity of the effects of climate change, with a deterioration in snow conditions, and a reduction in the economic profitability of the ski area and the resort. The collective sharing of this analysis has facilitated a territorial reflection on the future of the resort and tourism in relation to other resources (agriculture, crafts, and environment) in an area that is generally attractive from a residential point of view.

Figure 11: Workshop participants in the LL Vals exploring future scenarios (J. Mosedale 2025)

5.2. Scenarios and Desirable Future(s)

In an era marked by global challenges such as climate change, technological disruptions, and shifting social behaviors, it is important to consider how the future might unfold to proactively find responses to possible futures.

Scenarios provide a structured approach to identifying potential future developments. They enable the **creation of long-term perspectives** and the **exploration of solutions** to complex problems. Scenarios do not predict the future; instead, they help anticipate various possible outcomes, thereby expanding the range of options available in the present. This approach enhances the ability to manage uncertainties and to respond proactively to emerging challenges.

There are different types of scenarios:[32] Exploratory scenarios help **envision diverse possible futures** by highlighting different development paths that can result from current trends, drivers of change, and uncertainty factors. Normative scenarios, on the other hand, **focus on desirable future states and how to achieve them.**

Exploring possible futures

Exploratory scenarios are based on key drivers of change and uncertainties that may influence a particular issue or system. By thinking through how different drivers of change could develop, diverse possible developments of the future can be explored.[33]

Exploratory scenarios may increase the **awareness** of potential risks and opportunities at an early stage. By understanding drivers of change and their interactions, and playing through possible 'what-if' situations, destinations and companies can either **test strategies for resilience and strengthen their adaptability or develop strategies that are robust across a range of possible futures.**

Exploratory scenarios challenge entrenched thought patterns. They inspire considerations of unlikely or uncomfortable developments—such as the impacts of climate change on tourism destinations reliant on snow activities—offering a broader and more inclusive perspective on the future. The incorporation of **different perspectives enables a deeper understanding of complex interrelationships.** This is particularly valuable when various stakeholders are involved, such as in tourism destinations. Embedded in a collaborative process, scenarios can become a common basis for discussion.

Developing desired scenarios

Unlike exploratory scenarios, which analyze possible developments, normative scenarios[34] emphasize envisioning a desired future and charting concrete pathways to reach it. In community and destination planning, normative scenarios play a key role in **fostering shared visions** for growth, sustainability, and social inclusion. Backcasting[35] then works backward from the vision, outlining the **steps necessary to achieve the desired future** by considering the required actions, strategies, and decisions. This approach enables tourism destinations to develop concrete actions and pathways, ensuring they are aligned with the long-term goals and can effectively navigate challenges along the way.

By **combining exploratory and normative scenarios,** the strengths of both approaches can be exploited to gain a comprehensive and strategically sound examination of the future. This helps to develop strategies that can **react flexibly to different developments without losing sight of the long-term goal.**

Participatory foresight workshops in tourism destinations

Tourism destinations comprise a **broad spectrum of stakeholders,** including destination management organizations, local businesses, the population, guests and political decision-makers. Each of these groups brings their own needs, experiences, and goals. Participatory workshops create a space in which these differing perspectives can be brought in on an equal footing. Collective intelligence may also help to avoid blind spots so as to obtain a more **comprehensive picture of the challenges and opportunities** for the destination.

Tourism destinations are unique—not only in their nature and culture, but also in their social and economic structures. Participatory workshops offer the flexibility to **adapt** foresight methods to the **specific conditions** of a destination. This ensures that the strategies developed are practical and realistic.

In a rapidly changing world, foresight through participatory workshops offers a valuable opportunity to prepare tourism destinations for future challenges. They **promote cooperation, strengthen resilience, and create the basis for sustainable and future-oriented strategies.**

From selecting driving forces to exploring transition actions

By actively involving various stakeholders, different perspectives can be utilized to systematically move from analysis to strategy development. The process, in which scenarios are embedded, is typically divided into five steps:

1. **Selecting driving forces:** Based on the situational analysis of the MR and the overview of drivers of change, the participants choose relevant driving forces for the particular MR. The aim is to identify factors that both have a major influence on sustainable development of MRs and are characterized by a high degree of uncertainty.

2. **Creating scenarios:**[36] Two selected key factors serve as the axes of a 2x2 matrix, which results in four possible future fields. Each of these quadrants represents a consistent future scenario. In small groups, participants develop narrative scenarios that describe how the future could develop in each quadrant. The scenarios often include a combination of quantitative data and qualitative descriptions to create a vivid picture of possible developments.

3. **Developing and testing strategies:** In the third step, strategies are tested for their robustness and flexibility. Participants evaluate existing or new strategies in terms of their effectiveness in the various scenarios. This helps to identify strategies that work under uncertain conditions and to develop adaptation options. The aim is to make decisions that are both risk-mitigating and opportunity-orientated.

4. **Developing a desirable future vision:** Finally, the focus turns to the question of what kind of future we should strive for. The participants develop a shared vision of a desirable future and identify steps to make it a reality. The findings from the scenarios and strategy tests are used to shape the transition from vision to concrete realization.

5. **Exploring transition actions:** Participants explore concrete transition actions that can initiate or accelerate the path toward desired futures. These actions are positioned as practical steps that bridge the gap between present-day strategies and long-term visions. Transition actions may include pilot projects, new partnerships, policy innovations, or capacity-building measures that help to activate change in the short to medium term.

The participatory workshops combine analysis, creativity, and strategic thinking to prepare destinations for the challenges of the future. The systematic development of change factors, scenarios, strategies, and visions not only reduces uncertainty, but also creates a framework in which change can be actively shaped.

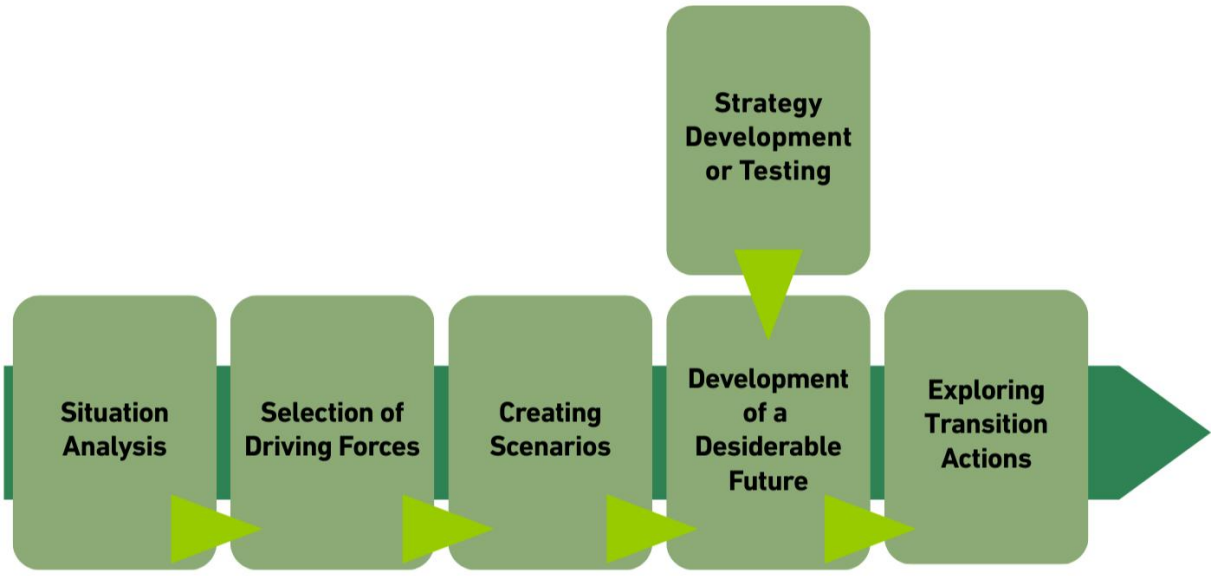

Figure 12: From situation analysis to exploring transition actions (J. Mosedale 2025)

Scenarios and Desirable Future(s) in TranStat

A design fiction workshop was held in the LL Saint-Pierre-de-Chartreuse to explore potential lives in a +4°C future. Design fiction is a creative foresight approach that uses storytelling and speculative design to imagine plausible futures, making abstract challenges more tangible and relatable. In groups, participants worked with thematic cards to identify key environmental and social challenges, also discussing their implications, and they collaboratively created nine narrative scenarios, envisioning Chartreuse in 2050.

By blending imagination with critical reflection, the method helped foster long-term thinking and supported the collective exploration of the impacts of accelerated climate change.

Based on the situational analysis and relevant drivers of change, four exploratory scenarios were created for tourism in the LL Vals. The scenarios were then used to test the existing tourism strategy. This revealed possible development paths (*see figure 13*) from a risky "quantity over quality" approach, to an ambitious premium strategy, and a balanced model where innovation and groundedness go hand in hand).

The scenarios helped uncover blind spots and question the strategic assumptions behind the status quo. In this way, a solid foundation for future-oriented decisions was created.

Figure 13: Participatory Workshop in Saint-Pierre-de-Chartreuse

5.3. Transition Pathways

MRs in the Alps and beyond share many similarities and face common challenges, such as climate change. However, they also differ in many ways. For example, they have different institutional frameworks, local cultures, social networks, infrastructures, and resource endowments. It is important to consider local scenarios and visions for the future, as this helps to **mobilize different actors and facilitate transition pathways that are appropriate for specific geographical contexts.**

Importance of a multi-stakeholder and multi-level perspective

Sustainable transitions are complex and require climate adaptation or mitigation, institutional and behavioral changes.[37] Differing resources, interests, and beliefs often lead to conflicting views on how to manage transitions, share benefits, and address political impacts.[38] Participatory approaches are therefore very important.

While bottom-up innovations are vital, public policy also plays a central role: Regulations, incentives, and strategic orientation are shaping transitions. Multiple political levels contribute to comprehensive transitions.[39] **With an eye on all sectors, multi-level governance can promote impactful and coherent transitions towards sustainable development.**[40]

In the context of MRs, **transition pathways** refer to trajectories that **guide** resorts from their current, often winter tourism reliant development model **towards more sustainable futures.** These pathways encompass a **combination of institutional, economic,**

technological, social, and cultural changes. They are shaped by the local context and influenced by governance, stakeholder collaboration, and broader climate and socio-economic pressures.

Overview of different transition pathways

MRs can follow different transition paths shaped governance support, ranging from weak recognition of the need for change to actively driving it, and by the scope, ranging from continued reliance on (winter) tourism to more diversified local economies. The scheme below outlines four types. **Latent transition** reflects weaker governance support for transition with strong reliance on (winter) tourism. **Bottom-up transition** also exhibits weaker governance support, but features fragmented diversification initiatives to build resilience. **Adaptive transition of tourism sector** benefits from stronger governance support, focusing on adapting and diversifying tourism to reduce economic and climate vulnerabilities. **Strategic sustainable transition** involves strong governance support for transition, pursuing economic diversification beyond tourism, long-term livability and sustainability of MRs.

For a better understanding, please refer to the D3.1.1 - Transition Pathways Typology.

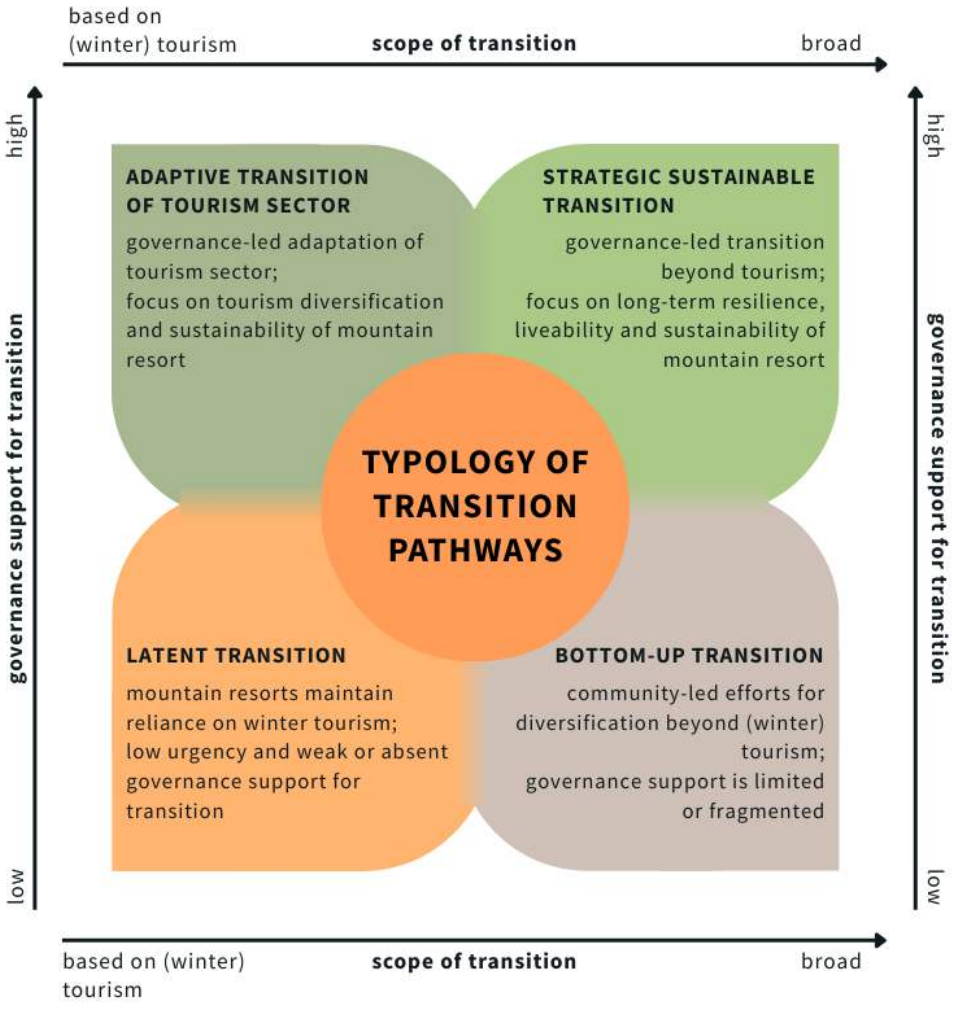

Figure 14: Typology of transition pathways across the Alpine Space (M. Goluža 2025)

How to define, select, and implement a transition pathway

Considering driving forces, conducting situational analyses, and designing future scenarios build the foundations for transition pathways. After the definition of **objectives,** pathways to achieve them can be found. MRs' pursued sustainable futures may vary depending on local capacities, resources, stakeholder interests and other **context-specific** factors. In collaborative processes, key stakeholders, academic partners, and the local community identify current challenges, gaps, and the scope of necessary changes, for example institutional reform, tourism diversification, or social transformation. They should also recognize local strengths and potential barriers.

Developing alternative scenarios is essential for outlining possible paths towards the desired goals. The scenarios may demand incremental or radical changes. After a desirable pathway was selected collaboratively, an **action plan** should be developed **to guide the implementation**. Such a plan encompasses steps, responsibilities, timelines, and required resources. The success of the execution depends on financial, human, and technological **resources,** as well as **political support.** To ensure resource provision and a targeted strategy to facilitate the transition, policy-makers across sectors and governance levels need to be involved.

How to jointly develop solutions and supporting strategies

Identifying short- and long-term actions should be based on a clear understanding of the involved stakeholders—those affected by or capable of influencing proposed solutions. Engaging relevant policy-makers early on helps build a **shared understanding of local needs** and ensures political support. Actions should be co-created collaboratively, for example through workshops, with attention to feasibility, available resources, and potential impact. **Short-term actions should provide quick, visible results that support broader long-term strategies.** Clear agreements on responsibilities are essential for implementation. While each MR faces unique challenges, **certain solutions can be adapted and transferred across contexts.** Therefore, sharing good practices and organizing events for knowledge exchange are vital to support sustainable transitions in MRs.

Transition pathways in TranStat

In the TranStat project, LLs were primarily positioned within three transition types: adaptive tourism diversification, transformative economic diversification, and incremental economic diversification. However, the **typology is not always easy to apply.** Some LLs are not solely dependent on tourism, and local stakeholders may hold differing visions for the future. Moreover, the typology does not fully account for the temporal dimension of transitions—that is, the **different stages** MRs may occupy along their transition journeys.

No MRs aspires to follow a path of incremental economic decline, which when it occurs is symptomatic of lack of adaptation to local or global drivers of change due to limited resources, absence of political will, or the lack of a viable alternative development vision. In this case, stakeholders may not yet recognize the urgency of change or have only begun exploring possible direction for the future development.

It is essential to **identify the current stage in the transition process**: Whether the MR is for example at the early stage with limited awareness and strategies, or already advancing towards coordinated change. The need for **early, inclusive dialogue** is underlined by diverging stakeholder visions. Failure to act promptly can lead to incremental economic decline. Consequently, workshops and co-creative processes are vital for **shaping realistic, forward-looking scenarios that fit to the MR.** Typologies can help to understand and guide transition paths. However, it should not be forgotten that the position of a MR can change due to internal dynamics and external pressures.

5.4. Reaching out to Policymakers

The role of the policy level in sustainability transitions of MRs

Although people may be willing to act sustainably, they often lack the incentives or means to do so. This underlines the crucial role of public policy in initiating and guiding sustainability transitions. Policies can range from education and awareness-raising to regulating waste, transport, and land use. They can also promote sustainability by subsidizing green industries and restricting harmful practices. Strong and well-designed policies are essential to drive change. **Sustainability requires a coordinated, holistic approach, which depends on leadership and the political will to align actions across sectors and ensure long-term societal benefits.**

How project results can be exploited in MRs and on a transnational level

MRs involved in the project can build on the outcomes to support sustainable transitions by **actively engaging with policy makers**. Possible objectives include changing policies, mobilising resources, generating public support, or formalising commitments. Engagement can take the form of meetings, workshops, or collaborative platforms that enable the co-creation of practical solutions. Depending on the specific needs, this can result in adapting regulations, introducing standards or subsidies, or initiating joint projects.

Given the diversity of local contexts and institutional settings, the involvement of policy makers should follow the principle of **subsidiarity**: If possible, issues should be addressed locally. Some challenges, however, require interventions on the regional, national, or even international level.

TranStat's **bottom-up approach responds to locally identified challenges** by working with stakeholders to co-develop short- and long-term solutions. Many LLs already include relevant policy-makers who help align local needs with existing frameworks. In parallel, a **top-down** review explores whether current international and national **policies adequately address these challenges**. Project partners identify policy gaps that need to be discussed at national policy meetings and a final transnational workshop with policy-makers from all partner countries. Targeting Alpine Space decision-makers, the resulting policy recommendations of the TranStat project are shared at the project's final political event.

6. Summary of the Stakeholder-driven Transition Method

While the project applied the transition steps in nine mountain resorts (MRs), it is the aim of TranStat to also **facilitate transitions to sustainable development** in other MRs. The TranStat Cookbook therefore suggests different steps to systematically implement transition processes.

In view of climate change and other megatrends, MRs are challenged to address their future development actively. The chapter on **megatrends and driving forces** provides an **overview,** differentiating between the spheres of climate and ecology, society and economy as well as governance and participation. When identifying relevant drivers, the chapter can help to not forget relevant drivers and it gives an orientation.

Sustainable development can only be achieved together with powerful stakeholders. Participatory approaches are more transparent and lead to legitimate outcomes for which participants have developed a sense of ownership. To reach practical results, the approach should, with the knowledge of stakeholders, be adapted to the area's dynamics. Stakeholder involvement should begin when designing processes, and include the creation of ideas, products or solutions, the monitoring of the process, and the dissemination of outcomes. This can be achieved by applying targeted interactive methods. An appreciative atmosphere, transparent expectations and requirements, targeted activities and acknowledging achievements are key.

There might be many open questions in the beginning and transition processes can be understood as rich learning processes. **Monitoring helps to keep an overview, revise objectives, and improve processes to achieve them.** Furthermore, lessons learned, which can be helpful for other MRs, can be identified. It is therefore advisable to define monitoring responsibilities and specify steps early on. Regular reflections on the findings (e.g. on group formation or activities) and on the monitoring itself should be scheduled.

With Social Network Analysis (SNA), influential stakeholders can be identified and an overview of connections between stakeholders can be gained. Therefore, surveys are conducted to find out about stakeholders' communication, collaboration, and impact. Identified and motivated persons such as mayors, ski lift operators, environment agencies, and citizens can form the working group.

Before defining a desirable future, the current situation needs to be understood. A **comprehensive situational analysis** encompasses the study of grey literature, qualitative and quantitative data collection, SWOT analysis, and the reflection of the analysis. Based on the data found, for example on temperature and snow cover, tourist beds, age structure in the municipality, and ecosystems, the SWOT shows the main strengths, with which the MR can prepare for future threats and opportunities. This needs to be continuously reflected together with the local and regional stakeholders.

After considering the current situation and the most pressing future challenges, the working groups meet to design scenarios. **While creating exploratory scenarios enables the confrontation with diverse possible futures, desirable futures can be pursued by means of normative scenarios.** A combination of both means that MRs have a clear vision and are still aware of dynamics and can respond to them.

Transitions can occur uncoordinated or coordinated, with a continuing reliance on ski tourism, diversification or radical breakdown of the branch. **A sustainable future can be actively pursued by considering diversification of tourism and economy, and defining a transition pathway for coordinated development.** The pathway then guides the development of solutions and supporting strategies.

Policies can act as drivers, frameworks or barriers of sustainable development. Depending on the specific challenge, it needs to be questioned whether local policies apply, or if regional, national or even international policies address the issue. Supportive policies and the achievement of desirable futures are fostered through strong cooperation with political actors.

7. Collaboration for Sustainable Futures

MRs are challenged by a wide spectrum of megatrends and driving forces. By addressing potential developments, MRs become more resilient and prepared to face them.

TranStat encourages MRs to take their futures into their own hands. Therefore, collaboration is key to success: strong networks both within and between MRs and with the political sphere help to address the relevant challenges, define a desirable future, and take decisions and actions accordingly.

Glossary

Alpine Space Programme

The "Alpine Space" programme (Interreg VI-B Alpine Space) is a EU cooperation initiative, launched in 2000 and currently operating under the 2021–2027 programming period. It supports joint projects across the Alpine region with the aim of improving climate resilience, innovation, governance, and sustainable development in the seven participating countries: Austria, France, Germany, Italy, Liechtenstein, Slovenia and Switzerland.

Co-creation[41]

Co-creation is a process where different people such as community members, hotel owners, ski lift operators, and researchers work together as equal partners. This partnership aims to create new ideas, products or solutions.

Desirable future vision

Sustainable development might require change, and for its achievement, a desirable vision is motivating and supportive. Similar to normative scenarios, visions depict a desirable future. However, a vision is characterized by vividness: The stories it tells and the pictures it paints of the future should enable people to not only imagine the vision but even "experience" themselves in it.[42]

Dotmocracy

Dotmocracy is a participatory method with the result of a ranking. It is useful for distinguishing priorities or preferences of different options (e.g. drivers of change in a MR) in a quick and democratic way. First, the different options are posted on a board or display so that everyone can see them. Next, each participant is given a certain number of colored dots (or stickers). Each dot represents a vote that people cast for one option or spread across several options. When the voting is complete, the facilitator counts the number of dots and ranks the options. The option with the most dots is the most relevant one for the group.

Driving forces and drivers of change

Driving forces push changes and affect people. Examples for driving forces are environmental policies, developments in science and technologies, and demand for products and services.[43] Driving forces might be of limited temporal and spatial scope. However, the force of several drivers over time can lead to, accelerate or disrupt a megatrend. The term "drivers of change", short "drivers", can be used similarly, but tends to be more specific. While there is a chapter on different drivers in the TranStat Cookbook, it is important for MRs to identify the key drivers in their specific contexts.

Learning culture

Characteristic for a learning culture is an environment that encourages reflections, improvements and development, and where mistakes are regarded as learning opportunities. To gain an overview of experiences in large projects, monitoring is helpful. Key elements of a learning culture are careful listening, exchanging experiences, reflection, and constructive feedback. Prerequisites are curiosity, openness to new knowledge, ideas, and experiences, as well as adaptability and an open and friendly atmosphere.

Living lab (LL)

A LL is a real-world testing ground where different stakeholders such as inhabitants, entrepreneurs, and policymakers collaborate to develop and try out new ideas.[44] Rather than testing innovations in a closed laboratory, LLs implement solutions directly into everyday life, rendering them more practical and widely accepted.

Megatrend

Megatrends push changes and affect people. They tend to be permanent and have far-reaching, lasting impacts on many aspects of life. Examples are demographic change, globalization, urbanization, climate change, and advancing digital technologies.[45]

Multi-level governance

Sustainable development towards a desirable future is facilitated or hindered by legislation, regulations, budgeting and public spending, as well as policies in the social, environmental, economic and other spheres. Conditions in MRs are determined by different governance scales, ranging from the local to the international level. Examples from the EU level are mandatory labor conditions (working hours, rights), regulations on the use of chemicals, mandatory environmental impact assessment for large projects, and subsidies for sustainable endeavors and bottom-up initiatives for innovative projects. While some countries are more centralists, federal states and municipalities have extensive duties and rights in others. Regardless of the different responsibilities, all governance levels should have sustainable development as a common vision and collaborate to eliminate barriers and establish a supportive frame. Furthermore, multi-level governance can involve non-state actors such as NGOs, businesses, experts and citizens.

Mountain Resort (MR)

In TranStat, a MR is situated in a mountain region and the natural mountainous environment is decisive. A MR encompasses touristic infrastructure such as ski lifts and hotels. Its borders do not necessarily coincide with a municipality because it can be situated within or between municipalities. Besides tourists, inhabitants and stakeholders are key when regarding MRs.

Plus-delta feedback

Plus-delta feedback can be applied to learn about participants' workshop experiences. Therefore, the categories Plus and Delta are shown on a board, flipchart or display. Plus is about positive experiences, what worked well and what participants liked or found useful. The Delta category is about aspects that could be improved with suggestions for the future. The moderator asks the participants to reflect on the workshop, to write down their experiences on (digital) sticky notes, and to place them next to the appropriate category. While the participants place their feedback, the moderator takes a look and orders it. After 5-10 minutes, the moderator summarizes the Delta category, asks for clarifications, possible solutions and future plans, and highlights the Plus experiences.

Problem tree analysis

Problem tree analysis is a visual tool that helps break down complex issues into manageable components. Key components are the definition of the core problem (trunk), the identification of the causes (roots) and the effects (branches) of a problem. Causes of the problem can either be immediate or deeper, systemic issues. The visual representation shows the relationship between the problem, causes and effects. This helps identify the most pressing causes and to figure out potential solutions or interventions to address them. MRs can take a look at the list of driving forces and conduct a problem tree analysis with the main problems at a local level.

Rich picture

Rich Picture is suitable for bringing order to a complex situation. The facilitator places a flipchart in the center, with a question such as "What is the current situation in the MR?". The participants are asked to think about the answer and to illustrate it. The drawing can include people, objects, processes, interactions, and other relevant elements represented by symbols, arrows and notes. After completing the picture, the participants explain it.

Scenario

The future holds many uncertainties and challenges. By identifying possible and desirable future developments, scenarios help to actively address the future. Scenarios enable the creation of long-term perspectives and the exploration of solutions to complex problems. Two types of scenarios can be distinguished. Exploratory scenarios envision diverse possible futures by highlighting different development paths that can result from current trends, drivers of change, and uncertainty factors. Normative scenarios focus on desirable future states and how to achieve them.

Social Network Analysis (SNA)

SNA is a tool for mapping and evaluating relationships between stakeholders. It visually represents connections ("ties") between actors ("nodes") in a network, helping to reveal patterns of collaboration, information flows, and influence.[46] To gain the required info, interviews or surveys are conducted. Questions address how often stakeholders communicate, the nature of their collaboration, their impacts on decision making and, with whom they collaborate in the context of sustainable tourism development. Applying the snow-ball sampling technique, surveys start with stakeholders such as mayors and ski lift operators, and end when no new stakeholders are named. The results can be visualized with software such as Gephi. SNA helps to identify most central decision-makers and stakeholders with high influence as well as communication gaps.

Stakeholder

In TranStat, stakeholders are personally or professionally affected by or have an interest in the MR. Examples are ski lift operators and employees, hotel owners, mayors, tourism managers, environmental organizations and inhabitants. Stakeholders have specific knowledge, experiences, skills, perspectives, needs and wishes. If different stakeholders are involved, solutions can become more practical and tailored to the local situation. Depending on the issue, stakeholders' motivation and power to take decisions and actions vary.

Stakeholder-driven Transition Method

The TranStat project aimed at developing, testing and propagating a method that facilitates transitions to sustainable development in MRs. The approach is characterized by participation of stakeholders. Step by step, the TranStat Cookbook describes the elements of the method such as forming groups, setting up monitoring of processes, and creating desirable future visions.

Sustainability

Sustainability was defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" by the United Nations Brundtland Commission.[47] Accordingly, sustainability is characterized by economic development that ensures a high quality of life, preventing ecological damage and conserving ecosystems.

SWOT analysis

The SWOT (strengths, weaknesses, opportunities and threats) analysis is a systematic approach that can help find a future strategy and support decision making. While it is common in business management, it is also helpful for MRs. With the knowledge of weaknesses and strengths, strategic objectives are defined in order to respond to future threats and opportunities. After defining the SWOTs specific to the MR, categories are combined to answer questions such as: "How can strength X support the realization of chance Y? What strengths help face what threats? How can weaknesses be transformed into chances?" Next, strategic objectives are defined in response to the questions, such as: Pursuing new chances that match to the MR's strengths, exploiting strengths to avert risks, eliminating weaknesses or transforming them into chances, and developing a defensive strategy to prevent weaknesses from becoming serious threats.

Transition

Transition, the process of change from one state, condition or stage to another, has been widely discussed in political and academic discourse.[48] In response to climate change, resource depletion, and increasing social inequalities, researchers, policy-makers, NGOs, stakeholders, and residents are exploring options for sustainable future development. The goal of the sustainable transition of MRs is therefore to create environmentally friendly, inclusive, and economically viable environments and communities.

Transition pathway

In the context of MRs, transition pathways refer to trajectories that guide resorts from their current, often winter tourism reliant development model, towards more sustainable futures. These pathways encompass a combination of institutional, economic, technological, social, and cultural changes. They are shaped by the local context and influenced by governance, stakeholder collaboration, and broader climate and socio-economic pressures.

TranStat

TranStat is a project funded by the Interreg Alpine Space Programme and the European Regional Development Fund. TranStat stands for "Transitions to Sustainable Ski Tourism in the Alps of Tomorrow". As the name suggests, the project aims at facilitating development that respects ecological and socio-economic resources. The project is organized by researchers, regional developers, and entrepreneurs from Austria, France, Italy, Slovenia, and Switzerland. They have formed working groups with stakeholders in nine diverse alpine mountain destinations, where LLs were established. The LLs in TranStat form a network to exchange experiences.

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