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Competitiveness in Mountain Tourism: Integrating mental models and collaborative governance for climate adaptation.

Abstract

Purpose. The study investigates how mountain tourism destinations can maintain long-term competitiveness while adapting to the critical challenges posed by climate change. It aims to reconcile conflicting stakeholder priorities, such as those between environmental conservation and economic growth, through collaborative governance and the analysis of stakeholders' mental models in the context of a ski resort redevelopment in the Italian Apennines.

Design/methodology/approach. Using a participatory action research framework and the mental models' approach, the study maps and compares the perspectives of "experts" (planners, engineers, and local authorities) and "non-experts" (local businesses, environmental organizations, and civil society). Qualitative data collected across three phases were analyzed using the Gioia method to identify cognitive convergences, conflicts, and trade-offs.

Findings. The results show broad agreement on promoting the territory and diversifying tourism year-round to reduce climate vulnerability. However, tensions emerged over specific interventions, such as artificial snowmaking and night lighting, highlighting the challenge of balancing development and conservation. Furthermore, the study highlights the emergence of "stakeholder ambassadors", actors who assume phase-dependent roles to bridge communication gaps, mediate conflicts, and facilitate dialogue.

Research limitations/implications. The findings are context-specific to the case study and focus primarily on local stakeholders. Researchers are encouraged to complement this qualitative analysis with longitudinal quantitative methods to better understand evolving stakeholder dynamics in other vulnerable regions.

Practical implications. Destination managers should institutionalize continuous communication cycles and formal feedback mechanisms to reduce cognitive biases. The study recommends building stable institutional frameworks that support "ambassador" roles to ensure political continuity and long-term social acceptability of adaptive measures.

Originality/value. The paper contributes to Tourism Destination Competitiveness literature by showing that a destination's competitive advantage depends not only on physical infrastructure but also on governance capacity to align divergent mental models, a process facilitated by the ambassador role, which is enacted by different stakeholders across phases to support the negotiated and dynamic nature of competitiveness.

Keywords: climate change; mountain tourism; collaborative governance; mental models; adaptation; tourism destination competitiveness

Article Type: Research paper

1. Introduction

The competitiveness of tourism destinations depends on effective adaptation to climate change through the integration of economic, social, and environmental sustainability, thereby ensuring long-term appeal (Qazi, 2024). Achieving this objective involves protecting natural and cultural assets, addressing the socioeconomic impacts of tourism, and maintaining demand, which collectively enable destinations to attract visitors, provide memorable experiences, and generate substantial economic returns (Mior Shariffuddin et al., 2023). Investing in climate change adaptation requires the promotion of collaborative governance to manage the diverse interests and concerns of multiple stakeholders effectively. This is particularly crucial in mountain tourism destinations, which are among the most vulnerable to the impacts of climate change (Mínguez & Ricart, 2024). A pertinent example is Corno alle Scale, a mountain tourism destination located in the Tuscan-Emilian Apennines of Italy. Positioned at the southernmost edge of the Bologna province (Emilia-Romagna Region) and bordering the province of Pistoia (Tuscany Region), Corno alle Scale reaches an elevation of 1,945 meters, making it the highest peak in the area (see Figure 1). It is home to a popular ski resort and the Regional Natural Park of Corno alle Scale, established in 1988. The area's beautiful cliffs and Lake Scaffaiolo represent significant natural landmarks of geological and mineralogical interest. Its rich biodiversity and landscape attract skiers, hikers, and cyclists alike. Historically, the area has relied heavily on winter tourism; however, in recent years, as well as other several tourism destinations (Fernández-Villarán et al., 2025), it has faced growing threats from climate change, including reduced snowfall, rising temperatures, and increasing operational costs for snowmaking and related infrastructure.

Figure 1. Map of Italy: Corno alle Scale



Source: Authors' own work

In response to these challenges, the Italian Ministry for Sport signed an agreement in 2017 allocating €27 million for a territorial regeneration project aimed at revitalizing the local economy (Agreement no. 24.1485272953). The agreement supports the joint promotion of mountain sports between the Emilia-Romagna and Tuscany regions. These initiatives include ensuring the ski resort's functionality in winter while encouraging tourism diversification during

the summer months. The overarching goals of these investments include strengthening climate resilience, conserving biodiversity, managing natural resources and landscapes, and supporting the development of sustainable livelihoods.

However, adapting mountain destinations like Corno alle Scale to climate change is a complex process that requires more than financial investment. The competitiveness of mountain tourism destinations, especially those susceptible to climate change, relies not only on physical and environmental factors but also on the ability to navigate socio-political complexities through stakeholder collaboration. Such collaboration involves stakeholders with diverse motivations (Bengtsson & Kock, 2014), expectations, priorities, and worldviews (Mínguez & Ricart, 2024). While environmental associations emphasized the protection of landscapes, sports organizations focused on job security for instructors. Businesses and local associations sought insights into market trends to remain competitive, and local government representatives needed information to inform public engagement and policymaking. Meanwhile, members of civil society expressed concern for the region's long-term sustainability and development. In addition, conflicts arise from each stakeholder group's varying capacity to assert its interests (Saito & Ruhanen, 2017) and from disparities in knowledge regarding potential adaptation strategies and their expected outcomes between expert and non-expert stakeholders (Carlton & Jacobson, 2016).

Despite these differences, the collaboration is vital for tourism industry resilience and destination competitiveness (Hojati & Nadalipour, 2025), and understanding the relationship between stakeholder motivations and governance structures is therefore essential for promoting the long-term competitiveness and sustainability of these destinations (Bianchi & Grippi, 2025). Based on this, our study distinguishes between experts and non-expert stakeholders to capture diverse perspectives on climate change adaptation in mountain tourism. Experts include institutional actors and technical professionals, such as local mayors, municipal architects, ski facility engineers, urban planners, park managers, and specialists in sustainability, sport, and tourism, who possess specialized knowledge of regulatory frameworks, territorial characteristics, and technical reports. All these actors contributed to the development of the scenarios. Non-expert stakeholders comprise local associations, environmental and sports organizations, businesses, and representatives of civil society. They bring practical, place-based knowledge, local interests, and lived experiences that may differ from those of experts in terms of focus and priorities. Comparing expert and non-expert mental models allows the study to identify knowledge gaps, communication challenges, and areas for collaborative problem-solving. The ability to navigate these mental models through collaborative governance is a prerequisite for a destination's sustained competitive advantage (Aliperti and Cruz, 2025).

Collaborative governance provides a common platform where institutions, the private sector, and citizens engage in collective action to maintain the quality of a destination (Zekan et al., 2022). Within this framework, our investigation introduces the role of stakeholder ambassadors. These actors serve as essential bridges, facilitating communication and translating complex technical or scientific data into accessible narratives that foster dialogue, increase awareness, and guide adaptive measures. Previous studies indicate that ambassadors can serve as key advocates, promoting and communicating the value of adaptation solutions to diverse audiences, including the public, policymakers, and other community stakeholders (Kabisch et al., 2016). They translate technical or scientific knowledge into accessible messages that emphasize both the benefits and potential risks of proposed adaptation strategies. Beyond disseminating information, ambassadors facilitate dialogue and debate, thereby fostering

community engagement and support for sustainable environmental practices (Kabisch et al., 2016).

Existing literature on destination competitiveness highlights the significant challenge of managing conflicting stakeholder interests to ensure destination viability (Hojati & Nadalipour, 2025). Destination management continues to encounter difficulties in coordinating diverse actors and balancing tourism demand and supply, particularly under climate-related pressures. Although this coordination is essential, research on adaptation to climate change within the context of tourism destination competitiveness remains limited. This gap underscores the need for further investigation into the development of tailored frameworks and instruments that facilitate collaborative decision-making and strategic planning (Mior Shariffuddin et al., 2023). While most studies emphasize destination attributes, they often neglect the pivotal role of stakeholder collaboration in enhancing strategic development (Mior Shariffuddin et al., 2023; Chim-Miki et al., 2019). The present study addresses this gap by examining how divergent mental models among stakeholders can shape adaptation strategies and affect the competitiveness of mountain tourism destinations. To navigate this complexity, our research employs a participatory process that fosters collaborative decision-making, identifies barriers and opportunities, and advances climate change adaptation in a contested governance environment. The stakeholders involved represent a wide range of mental models, values, and interests, factors that can complicate the search for common ground. Therefore, building shared understanding is critical to ensure that adaptation investments are appropriately targeted and contribute to long-term sustainability (Gössling & Scott, 2018). This study emphasizes participation, empowerment, and active partnerships with the stakeholder groups involved in the regeneration project. Unlike traditional models that focus solely on destination attributes, this research highlights how inclusive dialogue and shared learning can transform potential conflict into cooperation (Abreu Novais et al., 2018). By integrating these behavioral perspectives into tourism destination competitiveness theory, we clarify that a mountain destination's competitiveness in a climate-change world depends not on its physical infrastructure alone, but on its governance capacity to align divergent mental models toward a shared, resilient vision of the future. In doing so, we address the following research questions:

1. What are the expectations of stakeholders in mountain destinations regarding investments intended to enhance tourism offerings and adapt to climate change?
2. How can conflicting expectations be reconciled to support decision-making for climate adaptation and sustainable development?
3. To what extent can collaborative governance transform certain stakeholder groups into ambassadors for the development and implementation of climate change adaptation strategies?

The article is structured as follows: Section 2 outlines the climate-related challenges faced by mountain tourism destinations and introduces the concept of collaborative governance. Section 3 presents the case study and methodological approach. Section 4 discusses the main findings. Section 5 presents conclusions, and Section 6 discusses limitations and provides directions for future research.

2. Managing Tourism Destination Competitiveness: Collaborative governance and climate change challenges

2.1 Destination competitiveness: The interplay of governance, productivity, and stakeholder negotiation

The conceptualization of Tourism Destination Competitiveness has evolved from a focus on simple performance metrics toward complex, multidimensional frameworks that prioritize long-term societal prosperity and resident well-being (Crouch & Ritchie, 1999; Ritchie & Crouch, 2003). Central to this evolution is the distinction between a destination's comparative advantage, which is its inherited resource endowments such as the physiography and climate of mountain regions, and its competitive advantage, which is determined by the effectiveness and efficiency with which a destination deploys and manages these resources (Crouch, 2011). Destination management is a primary driver of competitiveness across both developed and developing economies (Knežević Cvelbar et al., 2016). This management capacity is not merely administrative; it involves the strategic stewardship of resources and the ability to convert strategic inputs into meaningful economic, social, and environmental outputs. Tourism Destination Competitiveness is increasingly dependent on sectoral productivity, where the most competitive destinations are those that optimize the use of their core tourism sectors to improve the quality of life for the local community (Song et al., 2023).

In the specific context of mountain tourism, where climate change is actively eroding traditional comparative advantages like guaranteed snowfall, the burden of maintaining competitiveness shifts toward destination management and the robustness of collaborative governance (Knežević Cvelbar et al., 2016). For mountain destinations facing climate-induced transitions, competitiveness cannot be sustained through top-down technical interventions alone. Instead, it requires a systemic understanding of how management inputs influence long-term outputs (Song et al., 2023). This includes identifying opportunities for benchmarking best practices against competitors to identify inefficiencies in resource utilization (Zekan et al., 2019). When traditional resources are threatened, the capacity of a destination to innovate and adapt its business environment becomes its most critical competitive asset (Knežević Cvelbar et al., 2016).

A significant advancement in literature is the shift from viewing Tourism Destination Competitiveness as a static ranking to seeing it as a "long-term process", which must continuously find a balance between the often-conflicting interests of diverse stakeholder groups (Abreu Novais et al., 2018). A destination's competitive position is inextricably linked to its sustainability. In mountain destinations, where climate change is actively eroding traditional comparative advantages, maintaining competitiveness requires a systemic approach to tourism carrying capacity. Zekan et al. (2022) argue that carrying capacity should not be viewed as a fixed "magic number" of visitors but as a relative performance border that must be managed through continuous dialogue between stakeholders to ensure long-term regional livability. This is particularly relevant for climate adaptation strategies, which frequently involve difficult trade-offs between economic development (e.g., artificial snowmaking) and environmental conservation (e.g., impact generated by the building of new infrastructure). By mapping the mental models of stakeholders, the cognitive frameworks through which they perceive risk and value, destination managers can identify the knowledge gaps and communication challenges that lead to social compromise (Abreu Novais et al., 2018; Mazanec et al., 2007).

2.2 Climate change challenges in mountain tourism areas

The perception of tourism as a naturally resilient industry was challenged by recent global health crises, which caused unprecedented falls in demand (Gunter et al., 2024). Climate change poses additional and significant hazards to mountain regions, with profound socio-economic impacts that threaten the quality of life in tourism-dependent mountain communities (Scott et al., 2012). These challenges are particularly acute for destinations reliant on winter ski tourism

(Keller, 2018). In remote mountain settlements, natural resources such as snow are vital for the survival and well-being of local populations (Keller, 2018). However, rising temperatures have led to a steady decline in snow availability at higher elevations (Scherrer et al., 2012). Other climate-related hazards, including increased rainfall, landslide risks, glacier retreat, and a growing risk of avalanches, further threaten the tourism sector and the competitiveness of mountain tourism destination (Steiger et al., 2016; Purdie et al., 2020).

Despite these challenges, some climate impacts may offer partially positive opportunities for mountain tourism. For example, warmer conditions have extended the season for hiking, climbing, and wildlife-related activities (Pröbstl-Haider et al., 2021; Vuille et al., 2018). These "new seasonal" opportunities, combined with mountain biodiversity and landscape amenities, open possibilities for adaptive planning that could support local economies and foster sustainable development. Nonetheless, climate change adaptation in tourism remains underexplored, particularly from social science perspectives (IPCC, 2022). Socio-economic evolution of mountain tourism destinations hinges on unique local characteristics, stakeholders' adaptive capacities, and institutional frameworks (Steiger et al., 2016). While adaptation investments may target clean energy, water management, infrastructure, cultural heritage, education, and governance, stakeholder interaction often presents challenges due to diverging perspectives and expectations (Grygoruk & Rannow, 2017; Gössling & Scott, 2018). Additional barriers include local governments' limited knowledge of hazards, cultural resistance to change, and a lack of proactive attitudes towards innovative adaptive planning (Losada et al., 2019; Jarratt & Davies 2020). Chim-Miki et al. (2019) identified gaps in tourism literature on coopetition and governance, especially within destinations. They highlight coopetition as a network mechanism that balances competition and cooperation, thereby enhancing benefits for destinations and stakeholders. Coopetition capacity is thus key to integrated tourism destination management, despite the several existing challenges. Collaborative governance offers a pathway to overcoming these obstacles by harmonizing diverse viewpoints and developing tailored frameworks that support strategic planning for Tourism Destination Competitiveness (Mior Shariffuddin et al., 2023).

2.3 Opportunities from collaborative governance

Recognizing climate risks and impacts is a critical first step in raising awareness and fostering collaborative governance among stakeholders. Effective adaptation involves not only disseminating research and education to stakeholders but also communicating risk information, with a focus on the socio-economic consequences of climate change (Brink & Wamsler, 2018). Studies show that when local governments facilitate the dissemination of research and engage with communities, stakeholders better understand risk management plans and become more receptive to adaptation initiatives (Jarratt & Davies, 2020). Despite these opportunities, collaborative governance processes are complex and require multidisciplinary, multi-perspective approaches to successfully identify and implement climate adaptation and mitigation strategies (IPCC, 2022). In the context of tourism destinations, collaborative governance, which is often manifested as collective self-governance, has proven essential for maintaining the quality of tourist attractions and promoting sustainable tourism development (Bets et al., 2017). For such governance to succeed, key factors include broad, equitable collaboration, credible facilitators, and adequate resources (Keyim, 2017). Governance dimensions, including accountability, transparency, participation, organizational structure, efficiency, and power distribution, are central to this process (Barandiaran et al., 2019).

Collaborative governance acts as a tool to foster dialogue, reduce misunderstandings (Gössling & Scott, 2018), and clarify stakeholders' expectations regarding the socio-economic and climate adaptation outcomes of future investments. It creates a common platform where institutions, private sector actors, and citizens can convene for direct engagement and networking (Barandiarán et al., 2019). Effective collaborative governance thus depends on the inclusive involvement of all relevant stakeholders and a consensus-oriented decision-making process that embraces diverse perspectives (Bianchi et al., 2021). Such processes nurture initial stakeholder engagement, mutual motivation, and ultimately collective action, laying the groundwork for participatory planning.

2.4 The importance of mental models' evaluation

Facilitating collaborative governance requires reaching consensus on shared objectives and jointly designing participatory processes among governments and stakeholders (Schneider et al., 2020). A critical aspect of this facilitation is understanding power dynamics and each stakeholder's mental models through which individuals perceive and interpret risks and their management (Boase et al., 2017). Recognizing diverse mental models helps prevent miscommunication during stakeholder interactions (Lazrus et al., 2016). Mental models are shaped by personal experiences, media exposure, and social influences (Lazrus et al., 2016). By mapping these models, gaps in risk communication can be identified, and stakeholder participation enhanced (Boase et al., 2017). A common approach involves comparing expert and non-expert mental models on specific issues, such as risk management, to reveal similarities and differences that can inform dialogue and collaborative adaptation efforts (Lazrus et al., 2016; Boase et al., 2017). This approach is particularly relevant for phenomena such as climate change adaptation, as experts and non-experts typically differ significantly in their mental models (Carlton & Jacobson, 2016). Experts' models tend to be more comprehensive, logical, and accurate, allowing them to anticipate consequences of actions more effectively (Coles & Quintero-Angel, 2018). This expertise gap can complicate communication, as experts emphasize factors that non-experts may find irrelevant, and vice versa (Zaksek & Arvai, 2004). Specifically, in the context of climate change, non-experts often have lower knowledge and confidence, which reduces their likelihood of engaging with new information and limits effective outreach (Carlton & Jacobson, 2016). On the other hand, experts conceptualize climate-related dangers through multiple lenses, including human impacts, threats to communities, and challenges posed by mitigation (Lowe & Lorenzoni, 2007). Recognizing these varied mental models is crucial for effectively communicating climate adaptation strategies, especially to policymakers, whose perceptions influence adaptive capacity (Adger et al., 2005). To bridge this gap, communicators use mental models to identify non-controversial communication that emphasizes climate-related concepts while avoiding contentious debates (Carlton & Jacobson, 2013).

In tourism governance, understanding mental models influences how stakeholders perceive tourism development and engage in decision-making. For example, stakeholders with sustainability-oriented mental models prioritize long-term environmental and social outcomes when making tourism-related decisions (Adams et al., 2018). Gaining insight into these models enables the design of more effective collaborative governance strategies by aligning goals, improving communication, and fostering mutual understanding (Evans & Ross Backer, 2012). Integrating mental models into governance frameworks thus improves decision-making, increases stakeholder engagement, and supports more resilient and sustainable tourism development. In summary, the mental models approach offers a valuable lens for analyzing and strengthening collaborative governance in tourism. By accounting for stakeholders' perceptions,

beliefs, and cognitive frameworks, governance structures can be tailored to encourage sustainable tourism, inclusive participation, and effective decision-making.

3. Methodology

3.1 The case study

In 2017, the Italian Ministry for Sport signed an agreement allocating 27 million euros for the territorial regeneration of an area whose economic survival depends largely on ski tourism. Given the observed decline in winter tourist flows due to reduced snow events, the agreement aimed to revitalize the local economy by jointly promoting mountain sports activities across the Emilia-Romagna and Tuscany regions. The overarching goal was to ensure the optimal functioning of the entire ski complex during the winter and to increase participation in mountain sports during the summer. A key challenge was to design a project that would connect the two neighboring regional ski areas, thereby enhancing their collective tourist appeal. Despite securing funding, project implementation encountered difficulties in reaching a consensus due to competing stakeholder interests. The project required significant interaction and collaboration among diverse groups, including environmental associations, sports organizations, businesses, local associations, institutional representatives, and members of civil society. Environmental groups acted as custodians of the natural landscape, while sports organizations, both for-profit and nonprofit, were concerned about potential job losses for ski instructors. Businesses and local associations sought to understand evolving tourism trends to adapt their services accordingly. Local government representatives were engaged in collecting information to share with their communities and to inform political debates on local challenges. Civil society members voiced concerns about the future of the region and their community.

3.2 The participatory process and the mental models' approach (experts and non-experts)

A successful participatory approach relies on engaging relevant stakeholders, valuing local knowledge, and incorporating diverse perspectives (Chevalier, 2019; Auesriwong et al., 2015). In accordance with this principle, the study was structured as a multi-phase process within the framework of action research, with the researchers actively engaged in designing and facilitating participatory activities (Sagor, 2000):

- Phase 1 (2018): Experts elaborate on the initial five scenarios
- Phase 2 (January 2019): Non-experts' involvement
- Phase 3 (January, February, and March 2019): Comparison between experts' and non-experts' mental models

Drawing on prior research that highlights the importance of proactive stakeholder engagement (Higdem, 2014; Janoff & Weisbord, 2006), the process aimed to address the limitations of passive participation by establishing a collaborative framework for medium- to long-term competitiveness and development planning. The researchers participated not only as external experts but also as integral members of the process in all three phases, applying their academic expertise to meet collective stakeholder needs. The adoption of this approach was justified by its demonstrated capacity to promote peer support, enhance understanding of problems, and facilitate the development of new skills (Sagor, 1992). The process followed the mental models' approach (Cousins & Siegrist, 2010), which examines how individuals or groups interpret complex situations based on their experiences, knowledge, and beliefs. Recognizing

differences between the mental models of expert and non-expert stakeholders is crucial, as such divergences can strongly influence communication, collaboration, and outcomes.

3.3 The three phases

Phase 1. Expert and Technical Scenario Development

In Phase 1, detailed notes were taken during the experts' meeting on participants' contributions regarding scenario development, technical assessments, and strategic priorities. The process allowed the identification of key elements to be included in the scenarios. In this study, experts included institutional actors and technical professionals, such as mayors, municipal architects, ski facility engineers, urban planners, park managers, and specialists in sustainability, sport, and tourism. They were selected through an open procedure conducted by the Regional Government of Emilia-Romagna via a Regional Development Agency. Candidates were evaluated based on prior experience in climate adaptation, technical expertise, and familiarity with regional territorial characteristics. The mayor and the administrative council validated the final expert group to ensure both technical competence and local relevance, consistent with Schauppenlehner-Kloyber & Penker (2015). Experts contributed specialized knowledge on regulatory frameworks, territorial characteristics, and technical aspects of proposed scenarios. Key topics included projections of climate change impacts on regional snowfall, potential effects of night skiing and artificial lighting on local wildlife, and the feasibility of infrastructure and management interventions. The output of this phase was the elaboration of five scenarios, taking into consideration current regulations such as Park Plan and Natura 2000. The Park Plan, together with Natura 2000 regulations, restricts new development and the expansion of existing structures within the General Protection Zones of the Natural Park. Only minimal conservation interventions are permitted, such as the replacement or technological upgrading of existing ski lifts and related infrastructure, provided these actions improve safety without intensifying environmental impact. Five main scenarios emerged from these considerations, each balancing service improvement with environmental sustainability, aiming to support year-round access, enhance connectivity, and improve infrastructure with low-impact solutions:

✓ *Scenario 1: No Change – Basic Maintenance Only*

Focuses solely on maintaining and redeveloping existing systems without major interventions.

✓ *Scenario 2: Expansion of the Existing Chairlift*

Extends and modernizes the current chairlift with an additional intermediate station to improve connectivity and replaces a minor chairlift and walkway.

✓ *Scenario 3: Expansion and Substitution of the Existing Chairlift*

Relocates the main chairlift to a new starting point, adds a new lift at a higher altitude, and introduces a moving walkway for Tuscan side connectivity; includes decommissioning a minor lift and walkway replacement.

✓ *Scenario 4: New Chairlift*

Introduces a repositioned chairlift replacing a minor lift, offering better wind protection and winter access without creating new trails, reducing costs while allowing future upgrades.

✓ *Scenario 5: One New Long Cable Car*

Constructs a long cable car crossing an existing one, dismantles the main chairlift, and pursues a direct connection to the Tuscan side. This option integrates both regions but demands substantial budget allocation. Figures 2–5 illustrate Scenarios 2–5, respectively; Figure 6 provides the legend to interpret them.

Figure 2. Scenario 2: Expansion of the existing chairlift

SCENARIO 2 - Expansion of the existing chairlift



Source: Authors' own work

Figure 3. Scenario 3: Expansion and substitution of the existing chairlift

SCENARIO 3 - Expansion and substitution of the existing chairlift



Source: Authors' own work

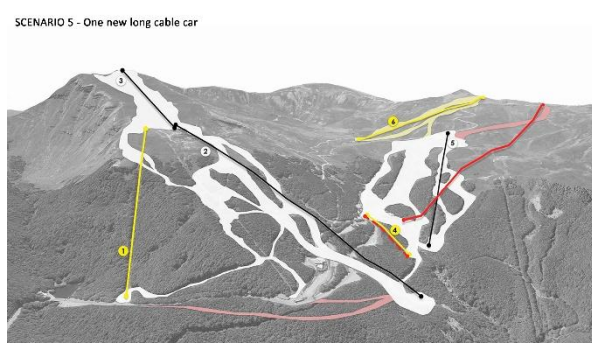
Figure 4. Scenario 4: New Chairlift

SCENARIO 4 - New Chairlift



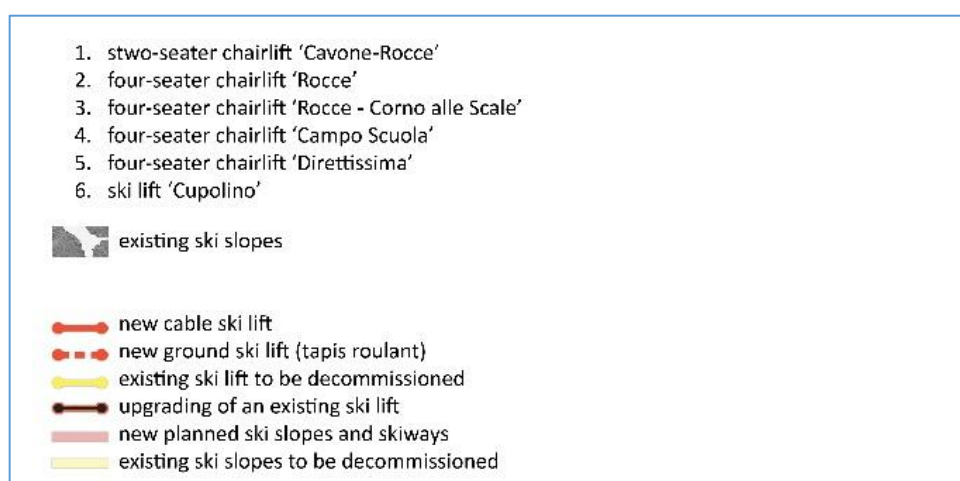
Source: Authors' own work

Figure 5. Scenario 5: One new long cable car



Source: Authors' own work

Figure 6. Legend for figures 2-5



Source: Authors' own work

Phase 2: Local Community and Non-Expert Mental Models

In Phase 2, these scenarios were discussed and evaluated collaboratively with additional stakeholders, referred to as non-experts. Non-expert participants included local associations, environmental and sports organizations, businesses, institutional representatives, and members of civil society. They provided practical, place-based knowledge, local interests, and lived experiences, complementing the experts' technical input. Comparing expert and non-expert mental models allowed the identification of knowledge gaps, communication challenges, and opportunities for collaborative problem-solving. The phase began with the recognition of local stakeholders' crucial role as facilitators of collaborative governance (Higdem, 2014; Baskerville, 1997). To capture local stakeholders' mental models, a public meeting was organized alongside the collection of written feedback via a project-specific email address (Table 1). This dual engagement approach broadened participation and facilitated dialogue, uncovering socially relevant issues and accessing otherwise hidden knowledge. In January 2019, a public meeting was held in the largest public venue of one involved municipality. Communications were disseminated 30 days in advance via public notices, social media, and press releases, attracting

over 70 participants representing seven stakeholder groups. The meeting consisted of three phases:

- ✓ Presentation of the five scenarios (40 minutes).
- ✓ Open debate among participants (60 minutes).
- ✓ Summary of hopes, requests, and needs (20 minutes).

Post-meeting, an additional hour was reserved for individual discussions. The dedicated email channel remained open for three months, collecting further contributions which were categorized by stakeholder type to integrate insights into the final planning scenario and highlight emerging mental models.

Table 1. Non-Experts' Meetings Calendar and Participation

When	What	Engagement level	Represented interests	
January 2019	Public discussion to gather opinions from local actors regarding the proposed five Scenarios.	around 70 participants (29 post-meeting individual additional contribution via email).	Environment	3 associations
			Sport	20 organizations (profit-no-profit)
			Local firms	16 businesses
			Public Administration	4 majors 1 local consortium
			Local Association	9 cultural associations
			Trade union	2 organizations
			Civil society	7 organizations

Source: Authors' own work

The process allowed the identification of key elements to be analyzed and discussed in the following stage.

Phase 3. Comparison between experts and non-experts' mental models

Phase 3 involved experts integrating non-expert contributions, with additional meeting notes documenting evaluations and refinements of the scenarios. In this third phase of the process, experts were required to consider non-experts' mental model to be included in the final evaluation of the initial five proposed scenarios. As suggested by the literature, this phase was grounded in a comprehensive analysis of key local characteristics. The expert group, consisting of 35 participants, convened in four meetings (Table 2).

Table 2. Third phase calendar

When	What	Who	Role of stakeholders
January 2019	Technical issues of the ski facilities.	4	1 Ski facility engineer 1 Administrative public projects supervisor 1 Architect 1 Socio-economic analysis expert
February 2019	Discussion about the feasibility of options.	11	2 Majors 2 Architects 1 Socio-economic analysis expert 1 Administrative public project supervisor 1 Park Director 4 Regional public projects supervisors
February 2019	Discussion with the Services conference bodies.	14	1 Regional Director 1 Parks, Forests and Natura 2000 Manager 1 Environment and Territory Care Manager 1 Territorial and urban planning, transport and landscape service manager 1 Head of the Tourism, Commerce and Sport Service 1 Protected Areas, Forests and Mountain Development manager 1 Major 1 Administrative public project supervisor 1 Operative director 1 Territorial Development and Attractiveness Manager 1 Project coordinator 2 Architects 1 Socio-economic analysis expert
March 2019	Discussion of the progress of the intraregional agreement between the Emilia-Romagna and Tuscany regions.	6	1 Architect 1 Socio-economic analysis expert 1 Regional Director Emilia Romagna 1 Regional parks manager 2 Regional environment managers

Source: Authors' own work

3.3 The coding process

After completing the initial elaboration of the experts' five scenarios (Phase 1), to ensure rigorous and systematic analysis of the participatory process, we applied the Gioia method (Gioia et al., 2013) across the latter two phases of the study. All qualitative data were first coded into first-order concepts, capturing participants' original terms and meanings. These were then grouped into second- and third-order themes to identify patterns across stakeholder groups and stages. Multiple researchers cross-checked coding to ensure consistency, and discrepancies were resolved through discussion until a shared interpretation was reached. This approach allowed us to systematically compare the mental models of experts and non-experts, identify knowledge gaps, highlight conflicts and convergences, and integrate insights into the final

Masterplan scenarios. By applying the Gioia method, we ensured transparency, rigor, and traceability in how stakeholder-inputs informed scenario development and evaluation, thereby enhancing the replicability of the participatory process.

The researchers took extensive notes on all the emerged evidence and instances to later develop a feasibility matrix including all the emerged variables and perspectives (Chand, 2025). Following the approach outlined by Gioia et al. (2013), notes were coded into emerging first-order categories and subsequently organized into second- and third-order categories based on each specific area of intervention (Table 3). These meetings aimed to identify critical variables for an approvable and sustainable planning solution, addressing structural, economic, and long-term territorial impacts.

Table 3. Coding process to identify third level themes

1 st ORDER LEVEL	2 nd ORDER LEVEL	3 rd ORDER LEVEL
Natura 2000 restrictions challenge redevelopment; balance between protection and modernization	Environmental and regulatory constraints	Legal restrictions and climate challenges
Climate variability increases vulnerability; adaptive, law-aligned planning; innovation within ecological limits	Climate adaptation in planning	
Success linked to promotion and diversification; demand for year-round tourism (cycling, ski surface expansion)	Tourism development and diversification	Expectations and priorities of local stakeholders
Disputes over artificial snow and lighting; divergent views on conservation vs. economic growth; transparent trade-off management needed	Environmental conflict and trade-offs	
Transport and accessibility upgrades seen as vital; inclusive and sustainable infrastructure valued	Infrastructure and accessibility	Economic and financial considerations
Need to balance long-term economic viability, sustainability, and landscape aesthetics	Economic-environmental balance	
Agreement on territorial promotion, multi-season tourism, and accessibility	Shared priorities and strategic alignment	Convergences for sustainable development
Shared commitment to sustainability and climate resilience; convergences guide long-term strategy	Building collective vision	
Disputes over snowmaking, lighting, and infrastructure scale; regulatory complexity (Park Plan, Natura 2000) adds tension	Environmental vs. economic tensions	Persisting conflicts
Expert/non-expert misunderstandings; need for transparent communication and capacity building	Knowledge gaps and communication issues	
Collaborative governance reconciles conflicting mental models; inclusive dialogue builds trust and resilience	Governance as mediation tool	Implications for collaborative governance and destination management
Flexible, stepwise redevelopment (e.g., Scenario 3); ongoing stakeholder engagement;	Adaptive and phased management	

navigating regulatory frameworks ensures continuity		
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Source: Authors' own work

4. Results

The participatory methodology employed in this study produced two principal categories of outcomes. The first category encompasses the identification of converging and conflicting mental models among a diverse range of stakeholders, providing insight into areas of consensus as well as divergence within the collective perspectives. The second category comprises the practical technical solutions that emerged from the consultations, reflecting actionable redevelopment proposals aimed at enhancing the destination's sustainability, resilience, and long-term competitiveness. This dual emphasis facilitates a comprehensive understanding that not only captures the shared visions and tensions among stakeholders but also demonstrates concrete strategies for destination development.

The process centered on a detailed evaluation of five alternative scenarios, which elicited rich discussions and highlighted additional socially relevant issues. Among the non-expert participants, Scenarios 1 and 5 were predominantly favored. Scenario 1 advocated for a conservative approach with no new interventions, prioritizing the maintenance and redevelopment of existing infrastructure. Meanwhile, Scenario 5 proposed the construction of a new, extensive cable car system, which would entail dismantling the current primary chairlift and establishing a connection with the Tuscan ski areas. This option is valued for its potential to achieve enhanced connectivity, adhere to budgetary constraints, maintain partial operational capacity during adverse weather conditions at higher altitudes, and provide access to all existing ski slopes. Its appeal lies in the modernization of infrastructure coupled with improved network integration. However, it does not allow for any additional interventions beyond the installation of the lift itself.

In contrast, expert stakeholders showed a preference for Scenarios 3 and 4. Scenario 3 envisioned replacing a minor ski lift with a new chairlift that would be integrated with an upgraded main chairlift, with the strategic objective of reaching the highest possible altitude; while scenario 4 introduces a repositioned chairlift replacing a minor lift, offering better wind protection and winter access without creating new trails, reducing costs while allowing future upgrades. This scenario reflects a balance between modernization and operational feasibility, emphasizing increased altitude access as a competitive advantage. Together, these outcomes reveal the complexity of stakeholder priorities and the need to balance technical feasibility, environmental considerations, and user preferences in designing sustainable redevelopment plans.

4.1 Convergences in Mental Models: Establishing foundations for sustainable competitiveness

Analyzing stakeholder-inputs showed key areas of agreement that provide a solid foundation for improving the destination's competitive advantage in a sustainable way. A notable and consistent consensus emerged across diverse stakeholder groups, including residents, institutional representatives, and commercial enterprises, regarding the imperative of implementing robust and strategically targeted territorial promotion. This shared perspective reflects a collective recognition that effective marketing and destination branding are essential mechanisms for increasing the area's visibility, thereby attracting a broader and more diverse visitor base. Such agreement underscores the vital role that communication strategies play as

powerful instruments for fostering destination resilience and securing favorable market positioning, particularly amid the evolving challenges posed by the post-pandemic tourism context. In addition to territorial promotion, stakeholders demonstrated a strong commitment to diversifying tourism offerings beyond the conventional winter season. This consensus is grounded in an acute awareness of the vulnerabilities inherent in snow-dependent recreational activities, which are increasingly compromised by climate change impacts. Expanding tourism activities across multiple seasons was widely perceived as a crucial strategy to mitigate the effects of seasonal fluctuations, enhance economic stability, and foster the development of a resilient tourism sector capable of adapting effectively to environmental uncertainties. There was also clear alignment on the importance of improving services tailored for cycle tourism and expanding skiable surfaces as components of a broader strategic growth framework. This underscores a shared commitment to diversifying recreational options as a pathway toward sustainable tourism development. Beyond promotional and seasonal diversification, there was significant agreement on the necessity to improve accessibility and mobility infrastructure. Stakeholders emphasized the enhancement of public transportation networks and the upgrading of facilities to better accommodate individuals with reduced mobility. These infrastructural improvements align closely with broader sustainability and social equity objectives while simultaneously broadening the destination's appeal by promoting inclusivity and enabling access for a wider range of visitors. Together, these convergences articulate a coherent and integrative strategic framework that not only advances the destination's attractiveness but also safeguards the environmental and social dimensions fundamental to long-term competitiveness and sustainable development.

4.2 Conflicts in Mental Models: Navigating the tensions between development and sustainability

Despite broad areas of agreement, the participatory process revealed significant conflicts that underscore the complex interaction between economic development priorities and environmental conservation concerns. The process highlighted different mental models within non-expert stakeholders, and between experts and non-experts. One key point of contention involved the proposal to construct artificial snowmaking basins. While some stakeholders regarded these infrastructures as essential climate adaptation tools necessary to sustain ski tourism in the face of reduced snowfall, others expressed serious reservations about their ecological consequences, particularly regarding the sustainability of local water resources. This debate exemplifies the broader challenge of balancing economic competitiveness with environmental stewardship. Similarly, the suggestion to extend skiing hours through the implementation of night lighting systems elicited polarized responses. Proponents argued that night skiing would increase visitor numbers and enhance the destination's appeal, whereas opponents raised concerns about the negative impacts of artificial lighting on wildlife behavior and the preservation of landscape integrity. This divergence highlights a fundamental tension between the desire to improve accessibility and the imperative to safeguard environmental quality.

Differences of opinion also emerged around the scale and scope of infrastructure development. Tourism stakeholders generally supported more extensive infrastructure expansion to improve connectivity and accommodate growing visitor demand. In contrast, environmental organizations and some institutional representatives cautioned against excessive development that could compromise the integrity of protected natural areas. This split reflects inherent tensions between promoting economic growth and maintaining environmental

sustainability. Further complexities arose regarding regulatory frameworks, particularly those stemming from the Park Plan and Natura 2000 designations. Expert participants demonstrated a nuanced understanding of these regulations and strategies to navigate them effectively. However, non-expert stakeholders often struggled to reconcile development ambitions with conservation requirements. This regulatory complexity contributed to misunderstandings and intensified conflicting mental models, which risk impeding consensus building and increasing the likelihood of regulatory deadlocks.

These conflicts collectively identify critical areas where destination management must foster transparent, inclusive, and ongoing dialogue. Such processes are essential for negotiating trade-offs effectively and collaboratively developing resilient solutions that balance often-competing objectives. In terms of specific areas of convergence and conflict, stakeholders generally agreed on the need to expand skiable surfaces as reflected in Scenarios 2, 3, and 5. However, tensions arose concerning the construction of artificial basins for snow collection, which were proposed across all scenarios due to climate change challenges. While some stakeholders viewed these basins as necessary adaptations to maintain skiable conditions, others raised concerns about their environmental impact and the sustainability of local water resources, highlighting a clear conflict between development objectives and ecological preservation. The proposal to expand skiable areas and extend skiing hours through night lighting similarly generated debate. While some supported this approach to increase accessibility and extend the skiing season, others opposed it due to concerns about light pollution and its effects on wildlife, illustrating differing values regarding accessibility versus environmental protection.

Disagreements also surfaced regarding infrastructural redevelopment. Although there was broad consensus on the need to improve access on both the Tuscany and Emilia Romagna sides, opinions varied on the extent and nature of such developments. Local sports associations and some businesses prioritized extensive infrastructure expansion to enhance connectivity and tourism growth, whereas environmental groups, local and regional institutions, and other business sectors emphasized the importance of preserving landscape integrity and avoiding overdevelopment. This division reveals the tension between economic and environmental priorities. Finally, conflicts arose concerning community regulations and current planning provisions. The Park Plan and Natura 2000 regulations prohibit new construction and expansion in General Protection Zones of the Natural Park. Minimum conservation measures allow only for the replacement and technological upgrading of existing ski lifts and infrastructure, aimed at enhancing safety without increasing environmental impacts. While experts recognized and attempted to navigate these constraints, non-experts often struggled to understand their implications, leading to further conflicts in mental models.

Table 4 provides a detailed comparison of convergences and conflicts in stakeholder mental models. Areas of convergence include unanimous agreement on the importance of territorial promotion, strong support for year-round tourism activities, and alignment on improving services for cycle tourism and expanding skiable surfaces, and common requests for enhanced public access infrastructure, especially for individuals with reduced mobility. Conversely, conflicts center on resource use and environmental impacts such as artificial snow basins and night lighting systems, differing views on the scale of infrastructural redevelopment, and misunderstandings related to regulations and planning restrictions. Overall, this analysis highlights the need for destination management to engage in continuous, inclusive dialogue that acknowledges these convergences and conflicts. Such an approach is critical for co-creating

resilient strategies that balance economic growth with environmental conservation and social inclusivity.

Table 4. Mental Models Comparison

MENTAL MODELS	
CONVERGENCES	CONFLICTS
Territorial promotion: • Unanimous agreement on the importance of effective promotional strategies for the project's success. • Recognition that marketing is crucial for attracting visitors, alongside the intrinsic quality of offerings. Year-round activities: • Strong support for extending activities and tourist offerings throughout the year to enhance regional appeal beyond the winter season. • Alignment on improving services for cycle tourism and expanding skiable areas as part of a strategic growth framework. • Emphasis on diverse recreational options to promote sustainable tourism. • Mutual agreement on the need to improve the general organization of the ski area, access points, tourist services, and sports facilities. Infrastructure Improvements: • Common requests for enhanced public access infrastructure, particularly through trains and buses. • Focus on accessibility for individuals with reduced mobility, reflecting a shared belief in inclusive development.	Resource use and environmental impact: • Tension over artificial basins for snow collection. Some see them as necessary, while others worry about environmental effects. Night lighting systems: • Controversy over extending skiing hours. Some support it for accessibility, while others are concerned about light pollution and wildlife. Infrastructural redevelopment: • Agreement on improving access, but differing views on the extent of development. Some prioritize tourism, while others emphasize environmental preservation. Regulations and planning conflicts: • Conflicts over community regulations. While there's consensus on environmental protection, restrictions on new constructions create misunderstandings, especially among non-experts.

Source: Authors' own work

4.3 Results of the participatory process and alternative redevelopment proposals

The participatory process led to practical redevelopment strategies aimed at boosting the destination's competitiveness within a sustainable framework. Stakeholders prioritized improved connectivity and service integration to enhance accessibility, visitor experience, and year-round efficiency. Proposals included upgrading gateway areas and high-altitude landscapes to improve both aesthetics and functionality. Efforts also focused on reorganizing existing infrastructure to support a wider range of recreational activities beyond skiing, reducing climate-related vulnerability and broadening market appeal. A key priority was the protection and promotion of natural and cultural heritage, ensuring that development aligns with conservation goals and strengthens the destination's identity and long-term sustainability.

Among the alternative redevelopment scenarios evaluated, Scenario 4 emerged as the most integrative and garnered broad support from both expert and non-expert stakeholders, even if scenario 5 was strongly supported by some non-expert stakeholders. Scenario 4 exemplifies a balanced approach that combines infrastructure modernization with

environmental sensitivity and operational feasibility. Its adaptability and respect for ecological constraints position as a promising framework for enhancing the destination's resilience and market appeal, particularly considering ongoing climate change and the evolving dynamics of post-COVID-19 tourism. Despite differing perspectives on ski lift development and winter tourism support, discussions related to environmental and landscape concerns revealed strong consensus among stakeholders. There was widespread recognition of the importance of environmental quality, landscape protection, and the preservation of the region's environmental value as fundamental assets for development. This shared commitment to responsible development harmonizes with both the natural and cultural assets of the area. Strategic topics that emerged throughout the dialogue included landscape protection, the aesthetic quality of urban furnishings, and the structural redevelopment of buildings.

Drawing on the findings from the participatory process and the analysis of stakeholder mental models, several key strategies were identified to guide the sustainable enhancement and development of the area. These strategies encompass the upgrading of services and accessibility through the expansion and improvement of infrastructure and communication networks to facilitate better connectivity. Furthermore, enhancing the district's "gateway" was prioritized by improving the organization, functionality, and aesthetic quality of services at the entrance, including interventions in urban furnishings, building efficiency, and green landscaping. Another strategic focus involves the valorization of the "high-altitude window" through landscape restoration, preservation of environmental vistas, and the mitigation of tourist behaviors and infrastructure impacts in these ecologically sensitive zones. Additionally, the rationalization and modernization of existing infrastructure aim to optimize and streamline connections and facilities, thereby supporting a diversified, year-round tourism offer. Finally, the enhancement of environmental and landscape heritage remains paramount, with an emphasis on protecting and restoring hydrological, geomorphological, and ecosystem functions while fostering sustainable tourism practices that underscore the intrinsic values of the park and its territorial heritage. Furthermore, the participatory approach facilitated the identification of alternative redevelopment proposals, primarily linked to Scenario 4. They emphasized the importance of refined structural redevelopment and the integration of ski and tourist facilities, focusing on operational efficiency and feasibility. This scenario also allows for the exploration of additional redevelopment possibilities for existing infrastructure, which may be considered in future discussions, thereby providing a flexible and adaptive framework for the destination's sustainable development.

5. Discussion

The results highlight how participatory approach can support the sustainable redevelopment of tourism in contexts shaped by climate, legal, and socio-economic challenges. By integrating stakeholder engagement, mental models, and local planning, we identified the following key priorities, tensions, and shared strategies (summarized in Table 5).

Integration of participatory methodology, mental models, and local planning approaches. This paper presents a collaborative governance approach that systematically identifies the expectations and concerns of diverse stakeholder categories within the destination. Such a localized, participatory approach is crucial for enhancing the social acceptability of project proposals that are implemented at the territorial scale. The consultation process successfully revealed both converging and conflicting interests embedded in different mental models, thereby providing a rich basis for understanding the underlying values, knowledge gaps, and priorities influencing stakeholder positions. Consistent with the theoretical foundation of

community-based tourism planning (Auesriwong et al., 2015) and participatory governance paradigms (Chevalier, 2019), the research demonstrates that social acceptability emerges not simply from technical feasibility but from the meaningful involvement of local actors in identifying problems and co-designing solutions. The acknowledgment of diverse mental models facilitates a collaborative governance approach, offering an opportunity to openly identify and address tensions among stakeholder groups and, ultimately, to foster consensus and durable cooperation.

Legal restrictions and climate challenges. One of the most salient challenges identified during the participatory process relates to legal restrictions governing construction and infrastructure development in protected natural areas. These constraints are mandated by Italian regulations implementing the EU Natura 2000 Directive, which aim to safeguard biodiversity and ecological integrity. The presence of such restrictions, while essential for environmental protection, complicates redevelopment efforts, particularly in a region where 36 km of ski slopes depend heavily on artificial snowmaking systems to sustain winter tourism. Indeed, artificial snow systems currently support 70% of the skiable area, emphasizing the region's vulnerability to changing climate patterns marked by reduced precipitation and increased winds. Stakeholders engaged extensively in discussions about alternative technical and infrastructural solutions within this regulatory framework. Proposals included the redevelopment or modernization of existing snowmaking systems and chairlifts, seeking a balance between complying with conservation laws and maintaining operational viability. These debates highlight the intricate interplay between environmental regulation, climate adaptation, and tourism infrastructure planning, reflecting a broader challenge faced by mountain destinations worldwide.

Expectations and priorities of local stakeholders. The consultation process revealed that stakeholders widely perceive the success of other ski destinations as closely tied to effective territorial promotion and marketing strategies, rather than solely the intrinsic quality of the tourism offerings. This insight underscores the critical role of communication and branding in attracting visitors and sustaining competitiveness in an increasingly crowded market. Local businesses, associations, and community groups advocated strongly for extending tourism activities throughout the year, thus supporting the earlier-discussed consensus on multi-seasonal diversification. They emphasized improving services for cycle tourism enthusiasts and expanding skiable surfaces as key strategies to broaden the destination's appeal. These priorities align with sustainable tourism literature advocating diversification as a hedge against climate-related seasonality risks (Chiwaridzo & Dzingirai, 2025). However, conflicts arose regarding specific development interventions, particularly the creation of artificial basins for snow collection and the expansion of skiable areas to facilitate night skiing through lighting systems. While some stakeholders viewed these technical adaptations as necessary to sustain tourism under changing environmental conditions, others raised concerns about the ecological impacts, water resource use, and potential disturbance to wildlife and landscape aesthetics. These divergent views encapsulate the core tensions between innovation-driven economic development and environmental conservation imperatives.

Economic and financial considerations. The participatory discussions also foregrounded the economic and financial dimensions underlying redevelopment choices. Extending skiable surfaces, constructing artificial snow basins, and implementing lighting for night skiing were debated not only from environmental and technical standpoints but also in terms of their economic viability and cost-effectiveness. Stakeholders recognized the necessity of improving

public transportation access and upgrading facilities to accommodate individuals with reduced mobility, reflecting a shared understanding that infrastructure investments must enhance accessibility and inclusivity to maximize socio-economic benefits. At the same time, economic concerns about the long-term sustainability of investments were frequently balanced against environmental priorities, highlighting the complexity of negotiating trade-offs inherent in tourism development. Issues such as landscape protection, aesthetic quality of urban furnishings, and operational costs were emphasized, pointing to the multifaceted nature of sustainable destination management where economic growth, environmental stewardship, and community welfare intersect.

Convergences for sustainable development. Beyond specific thematic areas, a remarkable convergence emerged among diverse stakeholder groups on key strategic pillars underpinning sustainable competitiveness. Unanimous agreement on the importance of territorial promotion confirms that destination branding and marketing are perceived as critical tools to increase visibility and attract a broader, more diverse visitor base. This is particularly salient in a post-pandemic context where tourism markets are rapidly evolving. Likewise, strong support for extending tourism offerings across multiple seasons, coupled with alignment on improving services for cycle tourism and expanding skiable surfaces, reflects a shared commitment to broadening the tourism portfolio and reducing vulnerability to climatic and economic fluctuations. Enhancing infrastructure accessibility, especially through improvements in public transport and facilities for individuals with reduced mobility, also garnered widespread endorsement, reinforcing social equity goals within the sustainability framework. Together, these convergences establish a coherent and integrative strategic framework that advances the destination's attractiveness while safeguarding environmental and social dimensions essential for long-term competitiveness.

Persisting conflicts. Despite broad areas of agreement, significant conflicts persisted, illustrating the intricate balance required to navigate economic development and environmental conservation. Contentious debates about artificial snowmaking, night skiing lighting, and the scale of infrastructural expansion underscore the challenges of integrating climate adaptation with ecological preservation. Regulatory frameworks, particularly those related to the Park Plan and Natura 2000 designations, introduced additional complexities. While expert stakeholders demonstrated nuanced understanding and strategies to comply with such restrictions, non-expert participants often struggled to grasp regulatory implications, contributing to misunderstandings and intensified conflicts. This highlights a crucial need for capacity-building and transparent communication to bridge knowledge gaps and foster shared understanding.

Implications for collaborative governance and destination management. The study highlights the potential of collaborative governance as a pathway to mediate conflicting mental models and enhance social acceptability of redevelopment projects. Transparent, inclusive, and ongoing dialogue platforms are essential for negotiating trade-offs, building trust, and co-creating resilient, adaptive strategies that accommodate diverse stakeholder values and regulatory constraints. Prioritizing flexible, phased redevelopment options, such as those exemplified by Scenario 4, which balances modernization with environmental sensitivity, can provide adaptive frameworks capable of evolving in response to shifting climate realities and market dynamics. Enhancing stakeholder capacity to navigate regulatory environments and fostering continuous engagement remains critical for sustaining collaborative momentum.

Addressing the Research Questions. Addressing the first research question, the findings suggest that stakeholders in mountain destinations share the expectation that investments

should simultaneously strengthen tourism competitiveness and address climate vulnerability. Across groups, there is strong support for initiatives that extend tourism beyond the winter season, improve accessibility, and enhance territorial promotion. However, expectations vary according to stakeholder type: local businesses and associations prioritize economic viability and destination marketing; environmental organizations and park authorities emphasize ecological protection and compliance with conservation regulations; and institutional actors seek solutions that maintain political legitimacy and community support. These differing expectations underscore a desire for integrated, place-based investments that align environmental responsibility with socio-economic opportunity, confirming and reinforcing the importance of participatory planning for balancing competing priorities.

Answering research question 2, the results highlight that conflicting expectations can be reconciled through collaborative governance mechanisms that integrate participatory approaches and mental model analysis. This combination allows diverse stakeholder perspectives to be explicitly mapped, compared, and discussed, making underlying tensions visible while identifying potential areas of convergence. Structured dialogue, supported by transparent communication and facilitation by neutral intermediaries such as researchers, helps build trust and legitimacy. Flexible, scenario-based planning enables phased, adaptive solutions that accommodate both environmental constraints and development needs. Over time, this iterative process transforms conflict into cooperation by fostering shared understanding, institutional learning, and collective ownership of adaptation strategies.

Finally, answering the last research question, the findings suggest that "stakeholder ambassadors" are not a distinct third category of actors, but rather a dynamic functional role assumed by existing stakeholders to bridge the gap between technical expertise and community perception and expectations. Collaborative governance transforms specific groups into these roles when engagement is inclusive and supported by stable institutional frameworks. Specifically, the identity of the ambassador is context- and phase-dependent. During the early analytical and planning stages, researchers and technical experts tend to act as knowledge ambassadors, translating complex scientific data into accessible narratives that address local concerns. As the process enters negotiation and implementation, government representatives assume the role of policy ambassadors, ensuring that community inputs are aligned with institutional decisions and legislative requirements. Finally, business associations and local organizations evolve into community ambassadors, maintaining engagement within their networks to foster long-term social acceptability for climate adaptation. This temporal distribution explains how different ambassadors act as "bridges" during communication and as "facilitators" during mediation (Kabisch et al., 2016), ultimately serving as a collaborative governance mechanism to reconcile conflicting mental models.

Implementation challenges and contextual developments. To date, the observed area continues to face issues related to the de-seasonalization of ski facilities, compounded by insufficient resources due to inflation following COVID-19 (Danzi & Figini, 2023). While the project resulting from this collective consultation was presented to the regional administrative body, a newly formed local committee has begun blocking its approval, delaying necessary construction tenders. Consequently, the regional authority revoked funding for the cableway, leaving the project at a standstill. These developments illustrate how post-consultation dynamics and shifting political contexts can undermine the continuity of participatory outcomes, emphasizing the fragility of consensus when not institutionally supported.

Table 5. Overview of participatory research findings: Themes, insights, and strategic governance implications

Discussion Theme	Key Insights	Collaborative Governance Implications
Integration of participatory methods and mental models	- Local planning approach reveals expectations & concerns of diverse stakeholders. - Identification of converging and conflicting mental models. - Social acceptability arises from meaningful local involvement, not just technical feasibility. - Collaborative governance fosters consensus and durable cooperation.	- Participatory processes increase legitimacy and inclusivity. - Mental models facilitate conflict recognition and joint problem solving.
Legal restrictions and climate challenges	- Strict construction limits in protected Natura 2000 areas challenge redevelopment. - Stakeholders propose balancing ecological protection with infrastructure modernization. - Climate-driven weather changes (reduced precipitation, increased winds) exacerbate vulnerability.	- Need adaptive planning that aligns with environmental laws. - Technical innovation must respect ecological constraints.
Expectations and priorities of local stakeholders	- Success is seen as linked to effective promotion, not just product quality. - Strong demand for year-round tourism diversification (cycling, ski surface expansion). - Conflicts over artificial snow basins, night skiing lighting due to environmental concerns. - Diverse views on balancing economic benefits and conservation.	- Marketing and diversification strategies are critical. - Need to manage ecological trade-offs transparently. - Foster dialogue on contested issues.
Economic and financial considerations	- Infrastructure upgrades (public transport, accessibility) are seen as vital. - Economic viability and long-term sustainability concerns. - Landscape protection and aesthetic quality prioritized alongside cost-effectiveness. - Complex trade-offs between growth and environmental stewardship.	- Investments must balance accessibility, inclusiveness, and sustainability. - Economic feasibility and environmental protection must co-inform decisions.
Convergences for sustainable development	- Broad agreement on importance of territorial promotion. - Support for multi-season tourism and infrastructure accessibility. - Shared commitment to diversify offerings and reduce climate vulnerability. - Consensus provides strategic framework for sustainable destination growth.	- Leverage convergences to build cohesive long-term strategies. - Promote inclusive accessibility and multi-activity tourism portfolios.
Persisting conflicts	- Disputes over artificial snowmaking, night lighting, and infrastructure scale. - Regulatory complexity (Park Plan, Natura 2000) adds tension. - Expert vs non-expert knowledge gaps fuel misunderstandings.	- Capacity-building and transparent communication needed. - Foster shared understanding of legal constraints. - Manage conflicts proactively.

	• Environmental protection is often at odds with economic development desires.	
Implications for collaborative governance and destination management	• Collaborative governance mediates conflicting mental models. • Transparent, inclusive dialogue builds trust and resilience. • Flexible, phased redevelopment models (e.g., Scenario 3) balance modernization with sensitivity. • Continuous stakeholder engagement and regulatory navigation are essential for sustained momentum.	- Prioritize participatory platforms and adaptive governance. - Build stakeholder capacity. - Use phased approaches to respond to evolving challenges.
Stakeholder expectations by type	• Local businesses and associations prioritize economic viability and destination marketing. • Environmental organizations and park authorities emphasize ecological protection and compliance with conservation regulations. • Institutional actors seek solutions that maintain political legitimacy and community support.	- Recognize and address group-specific priorities. - Align integrated investments with both socio-economic and environmental objectives.
Collaborative governance mechanisms	• Conflicting expectations can be reconciled through structured participatory approaches and mental model analysis. • Transparent dialogue, scenario-based planning, and neutral facilitation help build trust and legitimacy. • Iterative processes foster shared understanding, institutional learning, and collective ownership of adaptation strategies.	- Implement structured participatory platforms and scenario planning. - Use facilitators to mediate conflicts. - Foster adaptive governance that evolves with stakeholder needs and constraints.
Emergence of climate adaptation ambassadors	• Different actors act as ambassadors at different phases: researchers/technical experts (knowledge), government representatives (policy), business associations/local organizations (community). • Roles are context- and phase-dependent. • Effectiveness relies on stable institutional frameworks, political continuity, and ongoing collaboration.	- Recognize and support evolving leadership roles. - Institutionalize ambassador roles to sustain engagement. - Leverage ambassadors to enhance communication and implementation of adaptation strategies.
Implementation challenges & contextual developments	• Post-consultation political shifts delayed project approvals, e.g., revocation of funding for cableway construction. • Insufficient resources due to inflation/COVID-19 exacerbate challenges. • Fragility of consensus is evident when institutional support is lacking.	- Ensure institutional backing to sustain participatory outcomes. - Monitor and adapt to political and economic contexts. - Maintain continuous stakeholder engagement to preserve trust and momentum.

Source: Authors' own work

6. Conclusions

This study offers a comprehensive examination of sustainable destination redevelopment through a participatory, mental models-based approach, highlighting the critical interplay between stakeholder perspectives, regulatory frameworks, and climate change adaptation challenges. By engaging a diverse array of local actors, including residents, institutional representatives, businesses, and environmental groups, the research successfully captured both convergences and conflicts that shape the future trajectory of a ski tourism destination confronted with evolving environmental and socio-economic pressures. The findings underscore the pivotal role of collaborative governance and inclusive stakeholder engagement in enhancing the social acceptability of redevelopment proposals. The identification of shared priorities, such as robust territorial promotion, diversification of tourism activities throughout the year, and improvements in accessibility and infrastructure, provides a strategic foundation for advancing sustainable competitiveness. Equally important, the study reveals persistent tensions between economic development ambitions and environmental conservation imperatives, particularly in relation to artificial snowmaking, night skiing lighting systems, and infrastructure expansion within protected areas governed by stringent legal restrictions. The scenario that balances modernization with ecological sensitivity and operational feasibility emerged as the most integrative redevelopment proposal, garnering broad support from both expert and non-expert stakeholders. This scenario exemplifies an adaptable and resilient framework capable of responding to climate change challenges and shifting tourism market demands. Furthermore, the research highlights the necessity of transparent, ongoing dialogue and capacity-building efforts to bridge knowledge gaps related to regulatory frameworks and environmental constraints, thus fostering mutual understanding and cooperative decision-making.

The approach outlined in this paper demonstrates how stakeholder engagement can lead to integrated planning solutions that address a wide range of interests. Consulting and documenting emerging issues enabled stakeholders to recognize diverse perspectives, fostering a more community-oriented vision. From a sustainability standpoint, the process supported balancing economic, social, and environmental priorities, potentially facilitating dialogue among community members in other contexts. This inclusive approach enhances democratic legitimacy by incorporating cognitive diversity into decision-making and promotes iterative learning necessary for adaptive management in the face of climate change. Clear, ongoing communication between technical experts and the local community, ideally facilitated by a neutral third party, is essential to mediate cognitive biases and integrate diverse perspectives, resulting in solutions better adapted to local challenges such as climate change.

In terms of managerial implications, our findings suggest that clear and continuous communication between technical experts and the local community, mediated by a neutral third party, such as researchers, should be institutionalized. A structured cycle of listening and feedback can reduce cognitive biases, clarify misunderstandings, and build shared narratives. This iterative process can increase the legitimacy of planning decisions and ensure that adopted solutions remain flexible and context-sensitive, especially in the face of evolving challenges like climate change. This study underscores that tourism destinations vulnerable to climate impacts require a combination of collaborative governance, conflict management, continuous communication, and adaptive planning. These elements are indispensable for addressing the complex challenges posed by climate change while promoting sustainability in sensitive inner regions. Destination managers and local authorities should prioritize building institutional frameworks that facilitate multi-actor collaboration from the early stages of project

development through implementation and monitoring. This includes investing in transparent decision-making processes, establishing formal mechanisms for stakeholder feedback, and adopting flexible strategies that can evolve in response to new data or shifting community needs. Furthermore, managers must anticipate and address potential sources of conflict early on, especially those arising from shifting power dynamics or competing land-use priorities. Failure to do so, as the case study's current evolution illustrates, can lead to delays, funding losses, and long-term reputational damage.

Theoretically, the research contributes to mental model theory by illustrating the complex and sometimes conflicting perceptions of stakeholders sharing a common geographical and cultural context. When mismanaged, these differences can obstruct the development of converging solutions that strengthen local communities facing socio-economic disruptions caused by environmental change. The mental model approach facilitates democratic legitimacy by ensuring that decision-making processes incorporate cognitive diversity and foster collective learning, thereby enabling adaptive responses to ongoing climate-related uncertainties. By integrating mental models' analysis with a localized participatory planning approach, this research contributes empirical evidence to the fields of sustainable tourism planning and collaborative governance. It demonstrates how mapping stakeholder expectations and regulatory challenges enhances understanding of social acceptability and informs more nuanced, context-sensitive redevelopment strategies.

Beyond these findings, this research extends Tourism Destination Competitiveness literature by showing that the ambassador function is not confined to a single group but is assumed by different stakeholders depending on the phase, facilitating the negotiable nature of competitiveness. During early design phases of the collaborative process, researchers act as neutral facilitators translating scientific data into accessible narratives; in later phases, technical experts and local government advocate for adaptive implementation and maintain the legitimacy of proposed measures. By mapping the mental models of diverse actors, the study shows that a destination's ability to align divergent worldviews is as critical as its physical infrastructure. These ambassadors function as knowledge brokers who facilitate dialogue, mediate persistent conflicts (such as those surrounding artificial snowmaking) and advocate adaptive measures. However, the study also reveals that the fragility of consensus remains a significant risk; without institutional backing and political continuity, the progress generated by these ambassadors can easily be lost after the initial phases. Therefore, destination managers should prioritize the institutionalization of these ambassadorial roles to transform collaborative governance into a resilient, long-term process capable of navigating environmental and socio-economic transitions. Table 6 synthesizes these contributions, illustrating how different stages of the process are associated with distinct ambassadorial roles and potential risks, thereby offering both theoretical depth and practical guidance for future participatory projects.

Table 6. Ambassadors' roles in adaptive governance

Contribution area	Ambassadors' roles	Specific contribution	Practical/theoretical implication	Risks
Participatory Approach + Mental Models	Researchers facilitate mediation; technical experts clarify feasibility	Integration of stakeholder mental models with participatory governance	Enhances understanding of cognitive diversity and conflict dynamics; informs adaptive strategies	Misalignment between mental models may delay consensus
Climate & Regulatory Context	Technical experts guide adaptation; researchers	Balancing Natura 2000 restrictions	Provides transferable insights for other	Regulatory and climate

	support scenario analysis	with infrastructure modernization	climate-sensitive, legally constrained regions	uncertainties affect feasibility
Conflict Management & Consensus Building	Governments mediate policy; researchers facilitate dialogue	Recognition and mediation of persistent conflicts (e.g., snowmaking, infrastructure scale)	Increases social acceptability and legitimacy of decisions	Local opposition or political shifts may undermine progress
Adaptive Governance & Resilience	Researchers and experts act as knowledge brokers; government should ensure continuity	Scenario-based, flexible redevelopment pathways	Offers frameworks for phased resilient project implementation	Post-consultation dynamics and funding volatility can obstruct progress

Source: Authors' own work

However, certain limitations should be acknowledged. The findings reflect a context-specific approach tailored to the unique territorial dynamics of the study area, which may not be directly transferable to other settings. Nevertheless, the participatory methodology can be adapted as a useful tool for participative planning in similar contexts characterized by environmental, social, and economic challenges. The study's focus on local stakeholders limits insights into broader perspectives, suggesting avenues for future research expansion. Moreover, complementing qualitative mental models' analysis with quantitative longitudinal methods could deepen understanding of evolving stakeholder dynamics. Continued monitoring of implemented strategies will be essential to assess effectiveness and adapt to ongoing environmental and socio-economic changes.

In conclusion, this research highlights the critical importance of integrating participatory approaches in addressing climate-sensitive issues within tourism-dependent regions. Although challenges such as local opposition and funding constraints can delay progress, the promotion of proactive communication, stakeholder collaboration, and adaptive governance offers a promising pathway toward more inclusive and sustainable solutions. By demonstrating how different stakeholders can evolve into ambassadors for adaptation, this study provides a transferable framework for fostering climate resilience through collaborative governance and participatory planning. By embracing these principles, decision-makers can develop resilient frameworks that not only address current concerns but also anticipate and adapt to future uncertainties, advancing the sustainable transition of vulnerable destinations.

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