

**Department of Business and Management
Master's degree in Management
Chair of Corporate Strategy**

**“Carving out a future:
Sustainable growth strategies
for ski resorts”**

Prof. Francesca
Romana Arduino

SUPERVISOR



Prof. Stefano
Franco

CO-SUPERVISOR

Andrea
Cambiati
ID: 781141

AUTHOR

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1. INTRODUCTION

Since the dawn of time, mountains have always cast a charming spell on men's troubled souls, a mix of astonishment, awe, reverent respect, fear. The majesty of peaks and mountainous chains, rock walls rimmed by snowy summits and perennial ice, has always, though often unconsciously, attracted humankind in its shadow, whose first traces in the Alps date back to approximately 45,000 years ago (Posth et al. 2023). Nowadays, as snowflakes weave their glittering tapestry over mountaintops and slopes, ski resorts come alive, not just as playgrounds for thrill-seekers and bon viveurs but as hubs of wellness and community revitalization. Meanwhile tourists are carving down snowy slopes, the underlying community reaps benefits far beyond the chairlift's reach, as tourism's scope spans into most, if not all, activities of the local community.

Today Alpine valleys and touristic destinations are attractive and vibrant places to live in, with positive migration and lots of amusement and job opportunities (Bender & Kanitscheider, 2012), but it has not always been like this. Mountain communities in the Alps, placed in rural areas, had been shrinking steadily, facing severe depopulation and land abandonment issues given by a continuous exodus towards the urban areas, as proven by the Italian National Commission for UNESCO's work *"Rural exodus and the depopulation of mountains in contemporary society"* dating all the way back to 1966. The mass departure from mountains can be ascribed to the arising of new needs and the desire to find better life conditions, better education, better services and, most importantly, a wider range of job opportunities as occupation in mountain valleys was mainly reliant on agriculture (Dematteis & Di Gioia, 2014).

Farming has shaped the Alps over centuries, being it the main source of occupation and creating specific landscapes characterized by small scale patches of different land use, which led to high biodiversity, aesthetic value and quality food production (Bachmann et al. 2019). However, during the late nineteenth and early twentieth centuries Alpine areas were experiencing economic marginalization, high rates of poverty and depopulation. These processes were triggered by dramatic socio-economic transformations that led to a reorganization of the economic strategies across Europe and to the rise of industrialization, which, coupled with a subsistence economy, drove people in search of a better life from the mountains to the urban agglomerates (Carrer et al. 2020). This

economically induced migration had profound effects not only on mountain economy, but on its landscape and society as well. The abandonment of cultivated land led to changes in land use and vegetation cover, affecting ecosystems processes and services, ranging from protection from natural hazards to water provisioning, to stimulating encroachment, scrub and forest regrowth (Bachmann et al. 2019). On the social side, depopulation was highly disruptive both for the local economy and for the community itself, leading to the depletion of linguistic and cultural minorities such as the Walser community in Piedmont and Aosta Valley and the Ladin community in the Dolomites area (Löffler et al. 2011).

Society serves as the foundational framework upon which communities are built, in fact communities are embedded within the broader social structures and systems of society (Bates & Bacon, 1972) and for these reasons the social aspect of sustainability, which is often disregarded and unfancied, may be ripe of greater consequences than its economic and environmental counterparts, making it more foundational to achieving holistic and lasting sustainable development (Flammer & Luo, 2016; Annarelli et al. 2024). Hence, social sustainability is not merely a complementary aspect but a critical foundation for achieving enduring sustainability outcomes (Leal Filho et al. 2022), especially regarding the 17 Sustainable Development Goals developed by the UN (United Nations, 2025), and for this reason the current research will focus predominantly on the social aspects of ski resorts' impact on its underlying community.

The scope of the current research is to study the overarching theme of sustainability through the lenses of mountain and ski resorts in order to gain valuable insights on how sustainable development can be achieved for Alpine valleys and their communities. The first step of analysis will be to go over the state of art on the topics of sustainability and its three dimensions: economic, environmental and social (van Niekerk, 2020), though providing additional insights on the under-studied social dimension. The research will move forward by analyzing the current literature on sustainability in mountain areas and sustainability in the skiing industry while linking the findings to the stakeholder theory, the foundational theoretical framework underpinning the entire project. The stakeholder theory, which states that a stakeholder is identified as any group or individual who has interest, can affect or is affected by an organization's action (Freeman et al. 2018), is the foundational model which allows the inclusion and dissection of mountain environment (Cholakova and Dogramadjieva, 2023; Žemla, 2021), with its peculiar biodiversity,

landscape and climate, and local community (Knowles & Scott, 2024) in the present analysis of ski resort's sustainable development strategies.

The current research has been brought forward through an inductive approach, thus constituting qualitative research (Tenny et al. 2017), which discovers and develops theories starting from participant perspective, which in this case were provided through interviews of prominent individuals working for Alpine ski resorts, mainly located on the Italian side of the Alps. The subsequent phase of the work was the coding of the interviews, which supplied valuable insights for the results and discussion section. In this section, the positive and negative effects that ski tourism poses on sustainability are thoroughly dissected, especially concerning the social impact of this winter service provider on the community and its language, culture and economy in order to answer the paper's main research question:

“How can ski resorts grow sustainably while creating value for their stakeholders and the underlying community?”.

2. LITERATURE REVIEW

2.1 SUSTAINABILITY AND THE STAKEHOLDER THEORY

Few concepts in the contemporary world carry the same normative weight and global resonance as the term sustainability. Once a peripheral consideration within environmental science papers, nowadays it is on everyone's lips, from coffee talk between friends to newspapers, social media, television, governmental policies and, most importantly, business strategies. Sustainability has evolved into a guiding paradigm that now permeates almost every domain of human activity, from economic development to corporate governance, urban planning, education, tourism and far beyond (Hariram et al., 2023). Despite the widespread use across multiple disciplines, policy agendas and industry frameworks, the concept of sustainability is often misinterpreted, oversimplified or strategically diluted (Pizzo, 2023). Its development is thought to have originated from the ancient idea of eco-development. The prototype of the latter notion should be sought in the foundation of eco-philosophy dating back to around the end of the 5th century BC and stemming from Greek philosophy, more specifically from the minds of pre-Socratic philosophers and then Socrates, Plato and Aristotle. (Ogryzek, 2023). The concept has evolved over time and has been the object of study in all epochs to this day, as contemporary representatives of eco-philosophy such as Henryk Skolimowski in his 1981 book *Eco-Philosophy: Designing New Tactics for Living* have chimed into the topic.

The topic of sustainability was brought in the light of the public domain in 1972, when the term was first coined at the United Nations Conference on the Human Environment in Stockholm while addressing environmental issues as a major global concern (United Nations, co). The Stockholm UN conference gave birth to the Stockholm Declaration, containing 26 principles, placing environmental issues in the forefront of international concerns and marking the start of a dialogue between industrialized countries and developing countries on the relation between economic growth, air and oceans pollution and the well-being of people around the globe. The concept's idea arose in response to the public's growing awareness of emerging threats under conditions of systematic economic growth and limited natural resources, in a context where western countries' energetic demand relied heavily on oil supply from OPEC (Organization of the Petroleum Exporting Countries) countries (Cohen, 2021). The first internationally recognized

definition of sustainability was brought to light by the 1987 Brundtland Report of the United Nations World Commission on Environment and Development, defining sustainability as:

“the practice of meeting future needs without compromising the ability of future generations to meet their own needs” (Brundtland, 1987)

The Brundtland Report, whose formal title was *Our Common Future*, further propelled the concept of sustainability into academic debate and mainstream policy, serving as a foundational reference point for sustainability discourse over the last three decades (van Niekerk, 2020). The strength of the definition lies in its moral clarity and intergenerational scope, prioritizing equity across both time and space and due to these characteristics has become a normative ideal, meant as an ideal that serves as a guide to the way individuals and institutions should think, act and behave (Kates et al., 2005).

However, despite its historical significance, the Brundtland Report has also been subject to critics, especially in the last decade, for its conceptual vagueness and openness to divergent interpretations. The semantic flexibility, which greatly contributed to the diffusion of the concept’s popularity, has also become one of its greater vulnerabilities given that it often gets invoked without actual alignment with its original principles leading to the concept being often used a “catch-all” for any policy that sounds environmentally or socially progressive, independently from the fundamental long-term viability criteria (Redclift, 2005). Brundtland’s Report broad formulation has created room for ambiguous interpretation, leading to potential for instrumentalization, technocratic pursuit of efficiency and, ultimately, greenwashing. There is not a single accepted definition of greenwashing as academic scholars offer up to 79 different definitions, but it is possible to find common requirements for a positive diagnosis of greenwashing, these being: 1) a claim on environmental performance; 2) by a private sector or organization; 3) marketing a product or a service; 4) which cannot be substantiated; 5) with deceptive intent; 6) done to establish a competitive advantage (Spaniol et al., 2024). Greenwashing, which is not just a superficial but a rather malicious interpretation of the concept of sustainability, as observed by Spaniol’s et al. study, is particularly evident in tourism and corporate sectors, where sustainability is often invoked in bad faith during promotional advertising (Delmas & Burbano, 2011).

Over the years, the Brundtland definition has been extensively revised by sustainability researchers who, especially in the last 20 years, have produced an exponentially increasing number of publications on the open concept of sustainability, adapting it to context-specific understanding and providing myriads of interpretations (Wan et al., 2023; Kansal et al., 2024). As of today, one of the most widely recognized models is the three pillars model of sustainability, which divides the concept into three dimensions: environmental, economic and social (Purvis et al., 2018). Although in order to gain an all-around understanding of the concept of sustainability the three pillars should be considered jointly, by taking a deeper look into each one individually it is possible to assess the different facets of the same medal.

Environmental sustainability deals with ensuring that natural resources are used responsibly in order to prevent any irreversible damage to various ecosystems for future generations. It emphasizes ecological integrity, sustainable resource management and the preservation of the world's biodiversity including activities such as minimizing waste, pollution, the use of renewable energy sources and strategies for the mitigation of climate change (Goodland, 1995). For what concerns social sustainability, it focuses on promoting fairness and equality for all members of society so that communities can thrive over time without compromising their balance and characteristic structure. The protection of the balance and structure of a community encompasses its own language and culture, which in turn incorporates its customs and traditions, folklore and ways of living. Moreover, social sustainability encompasses several social issues, the main ones being equity, justice, safety, sustainable urban forms and eco-consumption (Eizenberg & Jabareen, 2017). The third pillar, economic sustainability, is based on the previous two, meaning that corporations and, from a wider point of view, countries, should obtain economic growth and further developments in a way that is sustainable in the long term, thus without causing harm to humankind's main stakeholders, the environment and society (Doane, 2014). The three pillars can hold different weights based on the circumstances, but should be considered organically in order to foster long term growth. The tripartite description is often presented in the form of three intersecting circles of society, environment and economy, with sustainability being placed in the intersection, highlighting that true sustainability can only be achieved when all of the three pillars are being respected simultaneously (Purvis et al., 2018).

The three pillars sustainability definition has furthered and deepened the understanding of the concept, but its critics argued about its lack of practical extension to the business world. These shortcomings were overcome by observing the topic from a more operational, corporate perspective through the introduction of the ESG framework, which is broadly seen as a more practical, goal-driven extension of the sustainability concept (Eskantar et al., 2024). The ESG (Environmental, Social and Governance) notion of sustainability can be outlined as a multidimensional framework that integrates environmental stewardship, social responsibility and corporate governance into the core strategies of organizations, aiming to assess and improve their long-term sustainability performance beyond mere traditional financial metrics (de Souza Barbosa et al., 2023; Mohd, 2023). The ESG framework theorization aims to emphasize the integration of ESG factors into an organization's strategic planning and operations, reflecting a commitment to sustainable development that balances economic growth with environmental preservation and social equity and plans to do so by making sustainable principles measurable and actionable. The ESG approach allows corporations to assess their sustainability levels, find areas of improvement and compare their performance with competitors (de Souza Barbosa et al., 2023). Furthermore, the compliance to ESG criteria has been demonstrated to have a considerable impact on the reputation and financial performance of companies as firms with strong ESG performance demonstrate a greater profit margin (Koundouri et al., 2021).

ESG criteria consideration has gained significant momentum in recent years, primarily driven by the evolving societal expectations regarding innovative models of production and consumption (Nishitani et al., 2021). The focus of companies has shifted over the last few decades, until the mid-1990s it was centered on satisfying the needs of a single stakeholder, namely the shareholder, whose primary goal, generally, was to obtain an economic benefit from investing in the given activity (Clarkson, 1995). However, this perspective has evolved over time and, partly due to the sensibilization campaigns run by public institutions over the concept of sustainable development (United Nations, 1992; United Nations, 2015b), organizations increasingly recognize that their responsibilities extend far beyond the maximization of shareholder profits, leading to the integration of corporate sustainability principles into their strategic management through the implementation of ESG criteria (Wang et al., 2022). Corporate sustainability performance

refers to a company's ability to operate in a manner that upholds ecological integrity, social well-being and sound governance principles, while generating value for its stakeholders at the same time (Luque-Vílchez et al., 2023). The shift in perspective towards their interests has given rise to the stakeholder theory, a pivotal framework suggesting that businesses should aim at creating value for all of their stakeholders, including, besides shareholders, customers, suppliers, employees, the underlying community and even the environment (Freeman et al. 2018).

Central to the broader approach of stakeholder theory is the concept of sustainable development performance, which encapsulates an organization's effectiveness in balancing economic growth, social equity and environmental stewardship (Panchal et al., 2021). This concept involves the systematical assessment of how well an organization integrates sustainability into its core strategies and operations with effective implementation being characterized by long-term economic viability, equitable treatment of stakeholders and proactive environmental sustainability. Stakeholder theory is central in providing a foundation for understanding and achieving these complementary dimensions by emphasizing that long term organizational success is deeply interconnected with the overall welfare and consideration of the multiple interests of diverse stakeholder groups (Donaldson & Preston, 1995). Thus, organizations that embrace the stakeholder theory should implement practices that support sustainable development by transparently engaging with stakeholders, addressing their concerns and aligning business objectives with broader societal goals such as cultural protection, pursuit of gender and race equality and undertaking an active role in the fight against climate change (Harrison, 2019). This approach not only mitigates risks and builds resilience, but also fosters innovation, collaborative relationships between economic agents and enhances a company's reputation (Neville et al., 2005). Moreover, the stakeholder theory approach emerges to be an essential strategy for organizational longevity and societal well-being as global challenges such as global warming and resource scarcity have the effect of majorly threatening the economic system and intensifying social inequality (Aldunce et al., 2021).

The business world's consideration of the stakeholder theory has been significantly influenced by the policies promoted by institutions, like the United Nations Convention on Climate Change, through the adoption of international frameworks such as the Paris

Agreement and the UN's Agenda 2030. The Paris Agreement is a legally binding international treaty on climate change; it was adopted by 196 parties at the 2015 UN Climate Change Conference in Paris. Its overarching goal is to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels” and pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels”, with this latter objective to be achieved by the end of the century in order to limit the risk of unleashing far more severe climate change impacts, which would include more severe and frequent droughts, heatwaves and rainfall. In order to limit the most troublesome consequences, greenhouse gas emissions must peak before 2025 and decline by 43% by 2030, thus the Paris Agreement represents an institutional landmark in the multilateral climate change process because it binds all underwriting nations to fight together to achieve effective action through the submission of five-year nationally determined contributions (NDCs) (United Nations Framework Convention on Climate Change, 2015). This agreement has prompted businesses to re-evaluate their environmental impact and integrate climate-related risks into strategic planning, aligning with the principles of stakeholder theory (Guo et al., 2022). In addition to this, the Paris agreement invites countries to formulate and submit long-term greenhouse gas emissions development strategies and since its entry into force it has sparked low-carbon solutions and new markets, allowing zero-carbon solutions to become competitive across multiple economic sectors (Michaelowa et al., 2019).

Similarly, the United Nations' Agenda 2030, through its 17 Sustainable Development Goals (SDGs) which seek to build on the Millennium Development Goals (United Nations, 2015b), provides a comprehensive blueprint for achieving sustainable development globally. Agenda 2030 is a plan of action to free the human race from poverty and heal and secure the planet based on 5 Ps: people, planet, prosperity, peace and partnership (United Nations, 2015a). Businesses are aligning their operations with the SDGs, recognizing that addressing societal issues such as poverty, inequality and environmental degradation is not only a moral imperative, but also critical for long-term business success. Once again, this alignment reflects the core indications of stakeholder theory, advocating for the care of the interests and well-being of crucial stakeholders like society and environment (García-Sánchez et al., 2022). Moreover, the incorporation of stakeholder theory into corporate governance has been linked to increased innovation and

resilience, as businesses become increasingly tailored to the needs and expectations of diverse stakeholder groups (Mahajan et al., 2023).

The interdependence between sustainability and stakeholder theory is not limited to the above, in fact, as Valentinov (2023) argues, addressing sustainability challenges requires organizations to move forward from traditional autonomous decision-making to engage in cooperative adaptation with its stakeholders. Valentinov demonstrated how companies can better navigate the complexities of sustainability, enhancing both corporate trust and legitimacy by nurturing their relationship with stakeholders. Moreover, it is possible to identify multifaceted motivations behind corporate sustainability initiatives through the lenses of stakeholder theory. Firstly, sustainability efforts are not solely propelled by profit driven motives, but by moral and ethical considerations as well in order to fulfill the company's responsibilities towards various stakeholders (Schaltegger et al., 2019). Schaltegger et al. also argue that engaging stakeholders is a crucial mechanism for the identification and addressment of sustainability challenges. In fact, stakeholders can gain insights into societal expectations and environmental concerns, this way leading to more effective and inclusive sustainability strategies. Lastly, by adopting stakeholder-oriented approaches, businesses can align ethical and economic objectives, fostering long term value creation.

2.2 MOUNTAIN SUSTAINABILITY AND STAKEHOLDERS

Mountain regions are critical and fragile ecosystems characterized by unique environmental, social and economic dynamics, thus making sustainability a pressing concern. Sustainability in mountainous areas addresses the intricate interplay between social and economic development, environmental and biodiversity conservation and its limited resources management. All these themes are interconnected and so academic literature stresses the importance of fostering integrated approaches that combine ecological conservation with the peculiar livelihoods of local communities (Skjeggedal & Clemetsen, 2017). Mountains play a vital role in providing essential ecosystem services, such as fresh water supply and climate regulation, that in recent years have become dangerously exposed to climate change impacts (Beniston, 2003). Thus,

achieving sustainability in these endangered areas involves balancing the three pillars of sustainability (Purvis, 2019).

The concept of sustainability places a higher degree of importance on the ecological balance and preservation of natural resources but in the case of mountains the focus should be put on its sustainable development (Brundtland, 1987), which integrates structured planning and management to foster socio-economic growth alongside environmental protection. More specifically, mountain sustainable development aims to harmonize conservation efforts with sustainable economic opportunities and resilient social structures, ensuring the continuous support of local ecosystem services, which happen to be critical to both local and global communities (Debarbieux & Price, 2008).

The current research focuses on sustainable growth strategies for ski resorts located in the Alpine region, hence the following literature review will put the spotlight on sustainability traits of the Alpine arc.

Throughout its history, the Alpine region's economy, mainly due to its high-altitude environments, was rooted in agriculture, particularly subsistence farming and pastoralism. Traditional practices such as transhumance, seasonal livestock migration between highland pastures and the valley, supported local food systems and shaped the distinctive Alpine landscape, in such a way maintaining the brittle ecological balance and determining cultural identity (Bassi et al., 2020). The distinctive Alpine landscape, shaped by centuries of agricultural transformation, has been demonstrated to be a widely aesthetically pleasing scenario, which should be maintained by avoiding excessive land abandonment and reforestation and through landscaping works.

However, over time economic diversification emerged in response to structural changes and the advent of globalization. Tourism, in particular, has become a dominant sector, capitalizing on the region's scenic landscapes, natural marvels and seasonal activities such as skiing over the winter and climbing and mountain hiking (Thiene & Scarpa, 2008). While agriculture and forestry remain an integral part of heritage and biodiversity, especially protecting Alpine medium mountain landscape (Lindemann-Matthies et al., 2010), the economic center of gravity has increasingly shifted towards service-oriented industries, especially tourism. Indeed, in the last fifty years, given limited alternative

economic opportunities, tourism has become the cornerstone of Alpine livelihood (Lane et al., 2022).

The centrality of tourism in Alpine communities, which is frequently the destination's primary economic driver, and the threats posed by climate change have revealed the necessity to implement sustainable tourism development strategies (Butler, 1999). These strategies, which encompass practices that minimize environmental impacts, enhance local economic benefits and promote cultural preservation (Butler, 1999), are of dire importance in sustaining the economic vitality and social fabric of mountain societies as sustainable tourism appears to be crucial for the destination's socio-economic viability (Nepal, 2002). Transition towards a sustainable tourism system is especially crucial in a sensitive environment like Alpine destinations where the negative impacts of climate change, as well as societal changes that often come from the inherent seclusion, are increasingly noticeable. The complexity of sustainability, especially in the context of extremely fragmented tourism destinations like the one characterizing the Alps, calls for collective and coordinated action to implement measures towards a more sustainable tourism development where the local destination management organization (DMO) plays a central role as the policy steering organization (Wagenseil et al., 2022).

The Covid-19 crisis has exacerbated the necessity for resilient sustainable tourism forms, so in response to the crisis the United Nations World Tourism Organization (WTO), in collaboration with One Planet Sustainable Tourism Programme, has provided a strategic framework to guide the tourism industry's recovery from the Covid-19 crisis. Its vision emphasizes rebuilding the sector putting sustainability at its core, aiming to enhance resilience and align recovery with broader societal goals such as SDGs set by Agenda 2030 and the Paris Agreement (United Nations World Tourism Organization, 2020). The WTO, though not universally accepted, has defined sustainable tourism development as:

“Sustainable tourism development meets the needs of the present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecology processes, biological diversity, and life support systems” (United Nations World Tourism Organization, 2020).

The goal of sustainable tourism development is thus to meet the basic needs of society while also extending the opportunity for a higher quality of life and to achieve it, there must be a social structure that facilitates the resolution of conflicts, an economic system able to produce a continuous source of surplus and of technical knowledge and a protected environment where all of this takes place (Vogel et al., 2021). Particular attention needs to be placed on the last component of the previous definition, the environment, as without the aesthetic mountainous landscape that attracts tourists to the destination, sustainable tourism development would not be possible (Dax & Tamme, 2023). The imperative of sustainable tourism development naturally leads to the application of stakeholder theory which, in the context of Alpine tourism, implies recognizing the environment and society not merely as passive actors but rather as central stakeholders whose interests must be actively safeguarded, especially considering that without the attracting presence of the Alps the social phenomena called tourism would not have been found there (Hajian & Jangchi Kashani, 2021). The gargantuan importance of the environment for mountain destinations has contributed to raising concerns over its conservation state in times of climate change. As Rogora et al. (2018) report in their long-term study in the Swiss, Austrian and Italian Alpine regions the rapid response of these ecosystems to climate change, especially concerning limited snow coverage and its consequent impact on freshwater and soil temperature, is posing a major threat to biodiversity, especially above the tree line. The priority of policymakers should be to adapt their perspective and strategy to support a sustainable tourism business model through the application of participatory decision support processes, in alignment with the stakeholder theory (Bonzanigo et al., 2016). Bonzanigo et al. take as an example the mountain community of Auronzo di Cadore, a village located in the Dolomites, where an efficient combination of modelling capabilities, decision supporting tools and participatory process have shown to improve decision making for sustainability. This combination of methods allows the multiple stakeholders to assert their own perspective on the topic and stimulate a proactive debate on climate change adaptation and relative consequences on winter tourism that smooths conflicts and favors the emergence of creative solutions, all the while treating the environment as both a source of competitive advantage (Schirpke et al., 2013) and one of the main stakeholders involved in the process (Hajian & Jangchi Kashani, 2021). The involvement of various stakeholders allows for the integration of qualitative knowledge

and preferences of the involved actors with quantitative information (Mahajan et al., 2023).

As evidenced by Byrd (2007), sustainable tourism development and stakeholder theory should not be considered in a disjointed manner. According to Gunn (2020), there is no other form of development “that has so many far-reaching tentacles as tourism does”, given such, it appears clear that the interests of multiple subjects need to be gauged at the same time, therefore making the application of stakeholder theory a key element for the success of sustainable tourism in a community. In the case in which these, often conflicting, interests are not considered into tourism planning and strategy implementation, then tourism development can destroy multiple resources that are foundational for the underlying community (Choi & Sirakaya, 2006). Top-down decision-making processes often are perceived by the community as not reflective of their interests and can create rising tensions, which would damage the touristic inflow, thus tourism development should involve and empower stakeholders throughout the entire decision-making process (Niñerola et al., 2019). The first step of the process is determining who should be considered a stakeholder, who is identified as “any group or individual who can affect or is affected by”, in the research’s case, tourism (Freeman, 1984), while the second step is choosing how to involve them in the development of a successful touristic strategy. There are different ways to apply the idea of stakeholder inclusion, but planners should always consider the peculiarities of the destination and of its stakeholders, including the community (Roxas et al., 2020). Coming back to the first step, Byrd (2007) identified 4 stakeholder groups: present and future visitors and present and future host community. Present visitors infuse the local economy with economic resources by consuming the services that the tourism industry (hotel, restaurants, rental, activities etc.) and community (water, transportation, cultural and natural resources) offer, though the impact of tourism goes also beyond services offered by tourism. The present host community can be divided into residents, business owners and government officials. The environment itself is a stakeholder, as it is the enabler of tourism development, and the stakeholder theory, if applied correctly, reflects what is best for nature and, without forsaking the economic factor, for the community (Schaltegger et al., 2019).

The present stakeholders’ interest involves the quality of the experience and the changes in the community, which have influence on the visitors as well: better infrastructure, staff,

quality service are positive changes, while crowding, host community resentment and loss of historic buildings are negative changes (Byrd, 2007; Aas et al., 2005). These changes influence the propensity to consume of visitors, hence determining the amount of money spent during their stay in the touristic destination. The money spent is then absorbed by the local community, which can re-invest it to better the quality of the services offered to further increase tourists' willingness to pay (Durán-Román et al., 2021). Visitors' willingness to pay for services has the greatest association with visitors' income and budget, given that tourism demand appears to be inelastic in the face of a moderate increase in prices and tourism motivation has been referred to push factors which sustain the tourists' desires, as well as factors of attraction related to destination characteristics (Reitsamer et al., 2016). Given the above and that tourist profiles have changed over recent years, becoming more complex, demanding for personalized offers and environmentally cautious, the scenario demands for a more dynamic role by territorial authorities, in an attempt to promote new and more sustainable growth strategies based on stakeholder involvement and gradual differential competitive positioning (Brandão et al., 2019). These strategies should protect the community's present resources in order to make them available for the future one, with current tourism professionals inventorying not only the local physical resources but also all stakeholders and their interests (Byrd, 2007).

2.3 SKI INDUSTRY SUSTAINABILITY

The Alps represent one of the world's most iconic and economically significant regions for winter tourism and the ski industry is its core. According to Laurent Vanat, an international consultant specialized in the ski business, the Alps command around 155 million visitors each year, approximately 43% of the world's share, making it the most visited range in the world for winter sports. In countries like Austria, Switzerland, France and Italy winter tourism contributes substantially to local GDP and rural livelihoods. Austria, the skiing capital of the world, had 71,1 million of overnight stays over the 2023/2024 winter season which contributed to the employment of approximately 250,000 people, the 7.6% of the working population (Ski Welt, 2024). The ski industry appears to have hit a peak in the last two decades, visitation of the western ski markets has been

flattening and all traditional ski markets are mature, experiencing a set of issues such as the loss of consumer base due to demographic change and ageing customers (Steiger, 2012).

Even more concerningly, socio-economic vitality is threatened by environmental vulnerability as the Alps have warmed at twice the global average, with snow-reliable elevations projected to rise by 300 meters by 2050, hence putting at risk ski stations located below 1,600 meters on sea level (Gobiet et al., 2014). The reduction of snow days, which have declined 20-60% since the 1980s, beyond posing a serious threat to the prevailing business model of winter sport destinations, affects the seasonal water cycle of Alpine regions (Marty, 2008). The supply of snow is fundamental for mountain communities as it acts as a natural water reservoir, gradually melting to sustain rivers and human activities such as agriculture and hydropower generation (Viviroli et al., 2020). Reduced snowfall also has the effect of diminishing the mass balance of glaciers. Alpine glaciers have lost over 60% of their volume since 1850 and the melting pace has accelerated in recent decades, its consequences being the reduction of drought years buffer, increased natural disaster risk through the melting of permafrost, like in the recent case of the detachment of the Birch Glacier which buried the Swiss village of Blatten (Foulkes, 2025), and change of the visual and ecological identity of mountain landscapes (Zemp et al., 2015). The impact of glacier retreat also influences cultural identity and well-being of mountain communities, as evidenced by the research conducted by Kosanic et al. (2023) in Swiss Lower Engadine. According to this study, cultural ecosystem services (CES), play a crucial role in shaping individual and collective identities as, for locals, the region's landscape is deeply intertwined with family history and activities such as hiking were noted to benefit not only physical health but mental wellbeing as well. The study reinforces the concept that local authorities and destinations should consider CES in touristic planning and conservation efforts.

In response to the worrying global warming, ski resorts have invested and become reliant on artificial snow production, as a ski resort is considered to be snow-reliable if, in 7 out of 10 winters, a sufficient snow coverage of at least 30-50 cm is available for ski sport for at least 100 days between 01/12 and 15/04 (Bürki et al., 2022). The massive use of artificial snow has raised serious concerns among the public about energy use, water consumption and landscape modification (Joksimović et al., 2020). Against this

backdrop, sustainable tourism development has become a strategic imperative, its planning and development strategies should involve the engagement of diverse stakeholders, including ski resorts operators, municipal authorities, local residents, tourists, environmental NGOs and eventually natural parks (Bonzanigo et al., 2016). Moreover, Wagenseil et al. stress that destination management organizations (DMOs) should be the pivotal actors in developing sustainable strategies through the application of Global Sustainable Tourism Council (GSTC) criteria (GSTC, 2025) and the coordination of conflicting stakeholders. The latter, who often hold divergent priorities, should strive to collaborate and design a strategy that fosters economic resilience, social employment and protection and environmental and cultural preservation (Wagenseil et al., 2022). Cultural preservation and identity often do not get much academic consideration in the topic of sustainability but according to Knez and Eliasson (2017) they play an important role in enhancing individual well-being, reinforcing the idea that cultural continuity is psychologically vital to mountain communities. This concept resonates with the research conducted in South Tyrol by Ghirardello et al. (2022), which highlighted how traditional practices function as vehicles of cultural sustainability, hence enabling not only the preservation of Ladin and other Alpine identities but also the development of locally grounded tourism economies. These perspectives are complementary to the sustainable management of heritage resources, which is ensured through the employment of multi-stakeholder collaboration (Aas et al., 2005).

In conclusion, sustainable tourism management for ski resorts must move beyond environmental concerns alone, leveraging on cultural heritage and participatory governance as the foundational pillars of long-term community resilience and identity-based well-being.

2.4 GAP IDENTIFICATION AND GUIDING CONCEPTS

Sustainability is a broad concept which, in its widely recognized definition, relies on three pillars: economic, environmental and social (Purvis et al., 2018). Boyer et al. (2016) in their systematic review argue that the environmental, including carbon dioxide emissions, biodiversity loss etc., and economic pillar, which encircles green economy, circular economy etc., are extensively researched and routinely measured through specific

indicators. On the other hand, the social pillar remains markedly unrepresented in both theoretical and practical frameworks, as social sustainability lacks a definitional consensus and coherent empirical metrics. Boyer et al. (2016) in their review of over 100 academic articles reveal how only a minority of them address the social aspects and even fewer have them as the study's central theme. Similarly, the previously mentioned article of Aas et al. (2005) stresses that local community interests and social equity are frequently overshadowed by tourism development objectives such as economic profitability and environmental preservation. According to Michał Żemła (2021), social sustainability is conceptually fragmented and empirically marginalized in the ski industry as well as evidenced in his systematic study of 86 peer-reviewed articles published on the topic of winter sports resorts and the natural environment since 2001. Żemła argues that most of the literature focuses on the impact of climate change on ski resorts, highlighting a growing concern over their long-term economic sustainability. Given the limited academic attention devoted to the topic of social sustainability within the ski industry, the present research identifies a gap in existing literature and, consequently, seeks to investigate the theme in order to contribute to the literature through new knowledge and insights, by conducting interviews of notable representatives of ski resorts located in the Alpine region. More specifically the research is structured around the following guiding concepts:

- *Ski resorts do create value for their stakeholders, including the underlying community*
- *Ski tourism is essential to prevent mountain depopulation, despite its environmental trade-offs*
- *Social sustainability is not systematically integrated into ski resorts strategies compared to environmental sustainability*
- *Ski resorts increasingly leverage cultural identity and heritage as assets to enhance destination attractiveness*
- *The transition to renewable energy and technological innovation is perceived as a primary pathway towards climate adaptation*

3. METHODOLOGIES

3.1 EISENHARDT METHODOLOGY

The research has been conducted through a qualitative methodology (Lim, 2024), which consists in a situated activity locating the observer in the selected world, in this case in the mountain and, more specifically, in the ski resorts' world in order to study its sustainability in its triple dimension, economic, environmental and social (van Niekerk, 2020). The world mentioned is turned into a series of representations such as interviews, recordings and field notes with the aim of delving into the rich texture of human and societal experience and perspective, capturing specific contexts and nuances that often get lost in mere numerical translation. Engaging in qualitative research means a commitment to exploring the depths of social phenomena, enabling researchers to connect with personal experiences of their subjects with the aim of discovering and developing grounded theories starting directly from the participants perspective, mainly investigating the Why? And How? questions of the researched topic (Lim, 2024).

Qualitative research studies phenomena that often times are non-quantifiable in nature or the efforts to provide a numerical analysis may fall short to offer an appropriate depiction of it or even impede scholars to consider the phenomena as a potential matter of investigation (Taherdoost, 2022). The present research's aim is to study sustainability through the lenses of mountain and ski resorts and while environmental and economic sustainability numerical indicators may be extensively available and reliable, social sustainability aspects can't be fully analyzed nor comprehended through a quantitative approach, hence making the qualitative methodology the better approach to investigate the topic. In fact, this type of research is based on the Verstehen principle, a key concept in sociology and social sciences, which emphasizes the importance of empathetic understanding in research rather than solely relying on encrypted information (Khalifa, 2019).

Qualitative research is performed through an inductive approach, which allows for emergent themes and theories to arise organically from the data, rather than being driven by a priori hypothesis, thanks to the interpretation work done by the researchers (Patnaik, 2013). The current research encompasses multiple cases and not a single case study and

so the most fitting methodology is the Eisenhardt methodology. This methodology considers multiple cases at once, which leads to a comparative advantage over single case Gioia methodology, in fact Eisenhardt provides a resulting theory that is less biased by the investigators or interviewees' preconceptions, thus allowing for better generalizability of the findings. Moreover, it grants the possibility to make comparisons, find similarities and highlight differences between the different ski resorts' sustainability practices (Eisenhardt, 2021). The Eisenhardt method, which stems from Yin's *Case Study Research: Design and Methods* published in 1984 and Glaser and Strauss' grounded theory, an iterative process of constant comparison of data and theory (White & Cooper, 2022), has been employed by utilizing data coming from first-hand interviews.

In the current study, all the necessary information was gathered as primary data, meaning that all data have been collected directly by the researcher through interviews, though performed in different ways as will be explained in the following section. The decision to focus solely on primary data has been taken for different reasons, the first one being the direct and immediate relevance to the research questions; this is of particular importance in theory-building research as it provides punctual information and avoids the risk of going off-topic. The second reason is to gather context-specific insights, allowing to understand the complexity and nuances of each local phenomena. This is particularly crucial when studying mountain sustainability as each valley is peculiar, unique, can have its own culture, its own traditions, its own ways of living and even its own language, like in the case of the Walser and Ladin enclaves in the Italian Alps (Ramponi, 2024). Moreover, each ski resort has its own values, its place-based practices and its issues, therefore each one is substantially run in its own idiosyncratic way. Reason 3 for using primary data is to obtain a novel and unbiased study, capable of providing new first-hand insights into the topic directly from the previously selected subjects. Finally, the last reason is flexibility, primary data collection allows for adaptive strategies during the data collection process, enabling adjustments along the way that align with Eisenhardt's principles of inductive and iterative methodologies.

3.2 SAMPLE SELECTION

When performing a qualitative analysis, the sampling decisions are of paramount importance as they are crucial to the credibility, depth and analytical power of the topic's exploration. In inductive studies, where theory is derived from the collected data and insights, the selection of participants directly shapes the scope and relevance of the findings, hence it is essential to be able to select and interview information-rich cases (Staller, 2021). Sampling is a foundational decision for the study, which underpins its validity and explanatory strength.

The first step was to select the broader study area, in this case the mountain area in which to collect the primary data via interviews. The final choice fell on the Alps, for a wide range of reasons that will be explained in the current paragraph. The first reason for the choice was the geographical and emotional closeness and familiarity of the researcher with the Alpine area. These researcher's characteristics can be of greatly valuable when drawing insights from the interviewees' words, as especially in qualitative research the interpretative power, acumen and critical mind of the researcher are of dire importance (Broom et al., 2009). The interviewer, who coincides with the topic's researcher, grew up not far away from the Italian Alps and has, over the course of his life, travelled to many alpine mountain destinations, in all seasons but mainly during the winter, hence allowing him to have a knowledgeable understanding of the natural, social and cultural environment that are being depicted in the interviews. The second reason was that the Alpine region being a worldwide focal point of mountain tourism, in fact, the Alps are one of the oldest, most developed and densely concentrated ski tourism regions on planet Earth, nowadays counting around 2,000 active ski resorts (Moreno-Gené et al., 2018). Therefore, the Alps provide a vast sampling pool and critical empirical settings for the study of the intersection of tourism, environment and local communities.

The third aspect for which the Alpine arc was chosen is that the Alps an area of rich diversity, offering a broad spectrum of geographic, socio-cultural and linguistic variations (Maurer-Lausegger, 2003), other than great flora, fauna and habitats' diversity. The Alps are home to around 15 million people and span over 8 different countries where the main spoken languages are French, Italian and German, though these are not the only ones (Alpine Convention, 2017). The Alps are the cradle of different and peculiar socio-

cultural and linguistic enclaves such the Ladin enclave in the Italian Dolomites, the Walser enclave in Southern Switzerland and North-Western Italy, the Cimbrian enclave in the Italian Sette Comuni plateau and the Occitane enclave in the French Alps (Maurer-Lausegger, 2003). These widely distinct cultural communities could be defined as the real autochthonous people of the Alps as they can only be found there, both their culture and language are deep-rooted in the Alpine fabric and have lived in close contact with their birthplace mountains for centuries, developing their own ways of living off the land, given so they could be the providers of valuable insights into place-based sustainability models. Moreover, these models add depth to the research's analysis on social sustainability, which often gets overlooked in tourism-dominated narratives. (Connor, 2023). One more reason for which the Alps represent an ideal sample for sustainable mountain tourism study is its endemic environmental fragility and climatic relevance, in fact the Alps are acutely vulnerable to climate change with temperatures rising on average two degrees faster than the world's average, consequently generating reduced snowfall, constantly retreating glaciers and increased pressure on natural resources (Alpine Convention, 2019a). Given these premises, the Alpine region is a florid testing ground for sustainability mountain development policies and green innovation, such as green infrastructure, eco-tourism initiatives and cross border environmental governance, as testified by the job conducted by the Alpine Convention itself, a legally binding international treaty signed by all Alpine countries whose objective is to foster sustainable growth for the whole Alpine area. (Alpine Convention, 2019b). Findings from the Alps, though context-specific, could carry strong transferability potential to other mountain areas under similar economic, environmental and social distress, thus serving as a critical case for theorizing broader sustainability challenges for mountainous areas.

Given the reasons stated above, the Alpine area was selected as the sampling pool for the research. The following step was narrowing the sampling pool down by taking a selection of ski resorts based on certain previously set criteria. The selection criteria were identified as: degree of tourism development, geographic distribution within the Alps, cultural and linguistic context, environmental sensitivity and ongoing ecological practices, social sustainability initiatives, stakeholder availability and mountain identity strength and resilience. Given that the research's aim is to give an insightful view of social sustainability, the most important criteria for the selection were the first, the latter and the

cultural and linguistic context. More specifically, the degree of tourism development was of dire importance in order to isolate the most tourism-reliant mountain destinations as the bigger economic impact a ski resort generates on a mountain community, the stronger will be the community's economic reliance on such business and hence the wider its impact will be on the society (Ooi et al., 2014). The importance of cultural and linguistic context can not be understated. The intertwining of culture and nature is referred to as biocultural diversity, which is crucial for the resilience of socio-cultural systems in mountainous areas and the survival of regional traditions and folklore (Maffi, 2018). Moreover, linguistic diversity is equally fundamental as its loss would negatively impact, other than the world's stock of linguistic culture, traditional knowledge, thus affecting biodiversity conservation efforts and lowering the well-being of mountain communities. (Kosanic et al., 2023). The other fundamental criteria, mountain identity strength and resilience, has been shown to contribute significantly to its residents' well-being as demonstrated in Swedish mountain counties where emotional attachment to the landscape correlates with higher levels of personal and collective well-being (Knez & Eliasson, 2017). This positive correlation further underscores the importance of preserving natural landscapes to maintain community health and identity.

Once the ski resorts' sampling pool was restricted according to the above-mentioned criteria, the next step was to identify one relevant subjects to interview belonging to each of the selected ski resorts. The search was conducted on the ski resorts' websites looking for people who held prominent roles in the organization such as administrative director, cableway director, marketing director or even ski resort director. The search for suitable candidates revealed itself to be more difficult than expected as not always it was possible to retrieve personal contact information of such people neither on the company's websites nor via work-related social media such as Linkdn or Glassdoor. Moreover, it would be often possible to find the contacts of ski resorts' employees that did not meet the relevance criteria, thus not being suitable for the interview. At the end of the day, 25 prominent subjects, belonging to 25 different ski resorts, were contacted via personal email whereof only 9 replied and made themselves available to be interviewed, resulting in a 36% response rate.

3.3 DATA COLLECTION

The interviewees were a total of 9, each representing a ski resort or an institution working with or for the ski resort, and were interviewed in the following order:

- Dolomiti Superski, a 12 ski area consortium;
- Monte Rosa Ski;
- APT San Martino di Castrozza for Ski Area San Martino di Castrozza-Passo Rolle;
- APT Alpe Cimbra for the Ski area Alpe Cimbra - Folgaria Lavarone;
- Alta Badia Brand for Alta Badia ski area;
- Schladming-Dachstein ski region;
- Kronplatz Seilbahn for the Skirama Kronplatz ski resort;
- Dolomites Val Gardena for the Val Gardena - Alpe di Siusi ski resort;
- Funivie Pinzolo for the Ski Area Madonna di Campiglio.

The interviews were conducted in different ways, according to the availability of each ski resort's representative. The interview with Schladming-Dachstein, the only non-Italian ski resort, was run through a set of predetermined questions sent to the chief director of the Sustainability & Mobility office of the ski resort, who replied via e-mail. The interview method for Kronplatz Seilbahn and Alta Badia Brand was through a face-to-face interview at the ski resort's headquarters, respectively located in Riscone in Pusteria Valley and in La Villa in Badia Valley. For what concerns the six remaining interviews, they were all run through online meetings on Google Meet, sometimes requiring a double interview session, like in the case of the interview with Gianni Baldessari, the general director of Funivie Pinzolo, one of the ski lifts companies belonging to the Ski area Madonna di Campiglio consortium.

The interviews with prominent representatives of ski resorts were conducted following a semi-structured format, a base set of 52 questions, each one divided into different sections depending on the selected research area, was prepared ahead of the interviews defining a solid starting point from which open responses and even context led un-expected questions could arise. The questions' guiding framework was organized into six thematical domains: 1) General Nature, 2) Energy and Energetic Efficiency, 3) Artificial Snowmaking and Water Management, 4) Environmental Ethics and Transport, 5) Strategy

and Social Sustainability and 6) Operations. These categories were pre-determined to ensure comprehensive coverage of all sustainability related dimensions, while also allowing the researcher to adapt the interview trajectory according to each resort's specific characteristics and sustainable development focus areas.

The interviews did not follow a rigid checklist model, while at least one question from each of the six sections was always asked, not all predefined questions were posed to the interviewees due to interview time constraints and each resort's peculiarities, that required a certain degree of flexibility. Thus, the interview approach adopted was a responsive and inductive one, allowing interviewees the possibility to freely wander and take into greater consideration sustainability domains in which their resorts demonstrated particularly robust practices or notable innovations, some of which will be covered in depth in the following results & discussion chapter. This methodological choice also aligned with the broader inductive framework that embeds the whole research, the Eisenhardt's theory building case study approach, wherein comparative richness is prioritized over uniformity (Eisenhardt, 2021). The goal was to avoid redundancy associated with theoretical saturation (Faulkner & Trotter, 2017) while also surfacing the unique contribution of each resort by leveraging their localized knowledge and context-specific practices. For instance, some ski lift companies like Kronplatz Seilbahn exhibited trend setting initiatives in self-produced renewable energy deployment and trail-blazing snow groomer technologies while others, like Alta Badia Brand or Dolomites Val Gardena which both reside in the Ladinia region, placed major weight on social sustainability dimensions such as the protection of linguistic minorities and the collaboration with local cultural organizations. By enabling each participant to set the discussion in alignment with their resort's unique sustainability profile, the research captured a wide spectrum of practices that collectively illustrate the sector's multidimensional engagement and approach towards the topic of sustainability.

This approach yielded a heterogenous yet coherent dataset, as emerged by the subsequent coding of the data, reflecting both the diversity and depth of sustainability efforts across the Alpine ski industry. Theoretical saturation was purposely avoided in order to preserve the individuality of each case and put in the foreground the hues in which sustainability is interpreted, implemented and prioritized within different geographical, cultural and operational contexts.

3.4 CODING

Each of the interviews, given formal prior authorization from the individuals concerned, was recorded and transcribed in full using a distinct Microsoft Word file for each. This preliminary organization encompassed the systematical segmentation of each response according to the corresponding sustainability section and interview question, in such a way allowing for efficient navigation, thematic subdivision fostering clarity and facilitating the transition into the coding phase. The transcribed interviews' information was then transferred into a coding matrix developed on Microsoft Excel, which served as the primary analytical device for identifying the presence, or absence, of specific sustainability related criteria. These criteria included but are not limited to: utilization of renewable energy in the resort's operations, existence and use of snow making basins, sustainable transport options, self-production of renewable energy, presence of the ski resort in a natural park and other additional environmental and social indicators which will be developed and interpreted in the results and discussion chapter. The coding followed deductive logic informed by the thorough analysis of pre-established thematic categories of the interviews and putting particular emphasis on the identification, organization and interpretation of key patterns across a qualitative dataset, though still remaining open to the emergence of unanticipated yet relevant variables (Braun & Clarke, 2006). Though mainly deductive, the coding process retained an inductive sensitivity which allowed for the arising of unexpected themes, coherently with the adaptive logics of qualitative inquiry (Fereday & Muir-Cochrane, 2006).

Through the above explained process, both recurring trends and distinct peculiarities across the different ski resorts were identified. The Excel matrix facilitated comparative analysis across cases but also enabled the underscoring of innovative practices and noteworthy gaps, paying particular attention to the intersection of environmental and social sustainability measures, in this way allowing for a holistic understanding of how sustainability is conceptualized and faced in different Alpine contexts. This structured yet flexible analytical approach ensured that the diversity of responses was retained while also enabling cross-case synthesis and pattern recognition, which is critical to the inductive aims of this qualitative research on the heterogeneous landscape of sustainability within Alpine ski resorts.

4. RESULTS AND CONCLUSIONS

4.1 SAMPLE ANALYSIS

The research sample consists of nine interviews, each conducted with a prominent representative of a ski resort or of an institution working in close contact with or for the ski resort. The only exception is Monte Rosa Ski, with which the interview was conducted with a double interlocutor, the resort's administrative director and a marketing sales office representative. The sample, which can be also found in the methodologies section, is hereby reported in table format:

Table 1

Interview Pool

Interviewed entity ▼	Reference Ski Resort ▼	SOIUSA Alpine Section ▼	Interviewee role ▼	Interview date ▼
Dolomiti Superski	Dolomiti Superski	Dolomites	Marketing Director	27/03/2025
Alta Badia Brand	Alta Badia	Dolomites	Director	02/04/2025
APT San Martino di Castrozza	San Martino di Castrozza - Passo Rolle	Dolomites	Director	01/04/2025
Val Gardena	Val Gardena - Alpe di Siusi	Dolomites	Destination Manager	14/04/2025
Kronplatz Seilbahn	Skirama Kronplatz	Dolomites	Technical Aspects Manager	07/04/2025
APT Alpe Cimbra	Alpe Cimbra - Folgaria Lavarone	Vicentinian Prealps	Director	31/03/2025
Funivie Pinzolo	Madonna di Campiglio	Southern Rhaetian Alps	General Director	17/04/2025
Monte Rosa Ski	Monte Rosa Ski	Pennine Alps	Administrative Director	28/03/2025
Schladming - Dachstein	Schladming - Dachstein	Lower Tauern	Marketing Sales Officer	
			Sustainability and Mobility office	03/04/2025

Source: personal elaboration, data collected between March and April 2025

The interviewees subset includes five individuals directly working for the cited ski resorts, two working for lifts companies, namely Funivie Pinzolo and Kronplatz Seilbahn, that are respectively part of the Ski Area Madonna di Campiglio resort and Skirama Kronplatz resort, and three interviewees working in close collaboration with ski resorts as territorial coordinators. These territorial coordinators are the two Aziende per il Turismo (APTs) belonging to the province of Trento and Alta Badia Brand, an overarching identity for the Alta Badia area which functions as a key operational entity setting the framework for tourist operators (Alta Badia Brand, 2025). The Aziende per il Turismo, or Tourism Board, which are a total of eleven and spread across the Italian province of Trento, play a central role in the promotion, coordination and sustainable

development of tourist destinations (Provincia Autonoma di Trento, 2023). Diving deeper into the sample, three interviewees work in the marketing area, two in the sustainability & mobility area and among the remaining five, some hold the position of general director, while others serve in administrative leadership roles.

Of the nine ski resorts under scrutiny in the study, there is a noticeable geographical concentration in the Eastern section of the Alps. Eight out of the nine ski resorts belong to the Eastern Alps, the only exception being Monte Rosa Ski which is located in the shadow of the Monte Rosa massif in the Pennine Alps and across the Italian regions of Piedmont and Aosta Valley. Out of the Eastern Alps ski resorts, the only non-Italian is the Austrian Schladming-Dachstein ski region, located in the Lower Tauern range, home of the world-renowned Alpine Ski World Cup Slalom Night Race. The remaining six ski resorts belong to the Italian region of Trentino-Alto Adige and are equally divided between the province of Trento and the province of Bolzano. The case of Dolomiti Superski is more complex, as it does not correspond to a single ski resort but rather to a consortium of such. The consortium is recognized as the world's largest skiable domain under a single ski pass, in fact Dolomiti Superski offers access to more than 1,200 kilometers of slopes across 12 ski areas within the Dolomites region, which spans across the provinces of Trento and Bolzano in the Trentino Alto Adige region and the province of Belluno, belonging to the Veneto region (Dolomiti Superski, 2019). Dolomiti Superski is an example of interregional cooperation in the management of Alpine tourism and even though it can not be defined strictly as a ski resort, in the present analysis it will be treated as a single ski resort for the sake of analytical clarity and consistency.

The Trentino Alto Adige region has demonstrated good sustainability levels through its operations, according to Bonzanigo et al. (2016) it showcased high levels of adaptation to a new and more sustainable business model, integrating sustainability in almost all of its operational facets. This claim is backed up by Christina Demetz, marketing communication managers for Dolomites Val Gardena as she states that concerning the broad topic of sustainability: *“overall, we are in a pretty good position, not just us in Gardena Valley, but in all Alto Adige. Compared to some other places, we have always taken care of our nature and of our local community, in Alto Adige we have plenty of tourism because we are all well-aware that we work exclusively thanks to our unmatched nature. Our unmatched nature is the point of attraction and thus it is clear that we need*

to strive to maintain it beautiful and intact in order to be able to keep operating in the tourism sector". Demetz's words testify that climate change is indeed a global issue and that the whole region has taken strides towards a sustainability-based approach in order to protect the unmatched natural patrimony of the local territory. The protection of the natural patrimony as a focal point of the touristic offer has been provided by the Marketing Director of Dolomiti Superski as well, Marco Pappalardo stated that: *"The wellness that is nowadays present in our valleys, which allows people to keep living in these areas is due to a nature that has no equals in the world and so it is only right that people have great respect for this outstanding heritage and the will to pass it on to future generations. Thus, we have the duty to preserve it, maintain it and protect it so that the future generations can keep doing business on the territory."* Hence, the protection of nature, through sustainable tourism development, is also a social tool given that without the Alps, and in this case more specifically the Dolomites, it would not be possible for locals to keep living in these valleys without worsening their standard of living. Pappalardo doubled down on the matter by asserting that: *"The natural patrimony is the guarantee of success and the reason why it is possible to obtain this kind of wellness in our valleys"*. It appears then clear the great interdependence between economic, social and environmental sustainability and the need for a coordinated multiple-stakeholder development strategy. The outstanding beauty of the Alpine landscape is the selling point attracting tourism and the failure to protect it would result in a severe drop in demand, creating a negative economic spiral that would dump the majority of its toll on the underlying destination community, thus prejudicing its social balance.

4.2 SUSTAINABILITY VISION

Before conducting an in-depth analysis of the sustainability variables gauged through the interview responses, it is interesting to first examine and understand each ski resort's vision of sustainability. As outlined in the methodologies section, the interview questions were adapted to reflect the peculiarities and specific characteristics and initiatives undertaken by each resort, however, all interviews have the first question asked as common denominator, with this foundational question being: *"What is the sustainability vision in the context of the ski resort?"*.

The answers to this question were diverse, but two common interpretations of the conceptual framing of sustainability can be identified. The first interpretation sees sustainability as a philosophy that is at the core of the business and underpins all operations and territorial identity, hence making sustainability more than a mere strategic or regulatory response. For seven out of nine ski resorts, sustainability is an ethical and strategic philosophy that guides their long-term development in all its facets. Roberto Huber, Alta Badia Brand director, even affirmed that tourism, strictly intended in its environmental conception, was and still is not sustainable as it involves the displacement of vast number of individuals towards habitats that were mostly untouched, hence inevitably causing harm to the environment. Regarding this topic he stated that: *“What we can do is try to make it as sustainable as possible. Sustainability is a constant and transversal presence into our strategy. It is something that we have always done because it is a matter that we, both as individuals and as an organization, feel from the inside as we love the place where we live and thus want to protect it.”* Moreover, Huber points out that sustainability is not only about the safeguard of the environment and its biodiversity but *“is a 360° concept that includes the protection of the community and of its culture and, more in general, its aim is to enable individuals to reside and work in the area while ensuring a fair and adequate standard of living.”* Huber’s words highlight the fact that the concept of sustainability is very broad and that the social pillar, which includes the protection and conservation of local cultural identities and languages, does not hold less importance than its economic and environmental counterparts.

Kronplatz Seilbahn does not directly use the term “philosophy” to describe its sustainability vision, nevertheless it can be inferred that being sustainable and taking care of the surrounding natural capital is something that is existential for the operability of the tourism sector itself. The lifts company’s technical aspects manager, Jan Terzariol, declared that: *“We work in the mountains and without the mountains we wouldn’t be here, so their preservation is a first order priority because the day we are not able to work in symbiosis with the mountain and its environment, we would close. It is not possible to relocate in our business, so our duty is to preserve and take care of this mountain environment, which enables us to live and work here”*. Kronplatz Seilbahn understands its existence is inextricably tied to the mountains’ presence and health and so, in order to ensure its operability, it has to fully commit to the protection of the surrounding

environment by internalizing the concept of sustainability as a foundational principle tied to territorial identity and long-term responsibility. A similar claim can be made for APT Alpe Cimbra as it emphasizes a value-based commitment to sustainability that is untied from external trends or altitude consideration. In practice, APT Alpe Cimbra made an *“awareness choice to preserve the Alpine environment and work on changing the tourists’ perception and behavior in the mountains”* which proves the destination’s deliberate act of ecological and community consciousness. In addition to this, the Trentino resort has reinforced its environmental stance by joining Alpine Pearls, a network of destinations committed to eco-friendly tourism focused on providing slow tourism and soft mobility options (Alpine Pearls, 2025), and obtaining the GSTC certification (GSTC, 2025).

On the other hand, it is possible to distinguish a second approach to sustainability, which addresses the matter in more instrumental or operational terms, focusing on environmental compliance and economic viability, hence evidencing a lack of an explicit internalization of the concept. In particular, Michaela Lautischer of the Sustainability & Mobility office defined Schladming Dachstein’s vision of sustainability as: *“enabler of winter tourism that balances nature, economy and society. The focus is on aligning tourism with future needs, with sustainability, climate-friendliness, and resource conservation playing a central role.”* Although Schladming Dachstein acknowledges the dire importance of sustainability and fight against climate change, especially considering the dangerously quick temperature increase the Alps are witnessing (Gobiet et al., 2014), its main focus appears to be able to ensure the viability of tourism using the environment as a mean to achieve it, thus framing sustainability as a strategic adaptation to external climatic and market pressures rather than as an internal need. Schladming Dachstein’s approach reveals sustainability to be conceptualized as a compliance-driven objective, essential to comply to in order to obtain operational efficiency and reputational positioning but lacking a deeply embedded cultural framework and concept interiorization. The absence of a clear cultural framework for sustainability can have underestimated consequences as, while the environmental and economic pillars get attended to due to structured policy attention, the social pillar is more vulnerable given the difficulty to quantify its aspects in numerical terms. Specifically, the deficiency of a cultural anchor can erode linguistic and cultural diversity, which is a primary societal

resource for isolated mountain communities and consequently diminish territorial identity (Centre for Development and Environment, University of Bern, 2019).

In the end, the distinct conceptualizations of sustainability revealed different levels of concept interiorization, which directly influence policymaking and may affect other aspects of destination management such as the long-term resilience of current business models and the degree of stakeholder engagement.

4.3 SUSTAINABILITY AND GREEN ECONOMY COMPLIANCE

The first variable to undergo scrutiny is the current implementation of any sustainable initiative by the ski resorts. Sustainable initiatives are defined as “strategically planned and implemented action or set of actions aimed at promoting long-term environmental integrity, social equity and economic viability, embedded within the sustainable development framework” (Brundtland, 1987; United Nations, 2015). All resorts (100% positive answers) reported the implementation of some kind of sustainable initiative, demonstrating a sector-wide awareness over the importance of integrating environmental and/or social responsibility actions into the strategic management of the ski area. These initiatives encompass a wide range of activities which span from the compliance with green economy principles to waste reduction strategies and biodiversity protection. The full alignment of the sample on the matter suggests that sustainability has become a normative expectation for Alpine destinations, particularly in areas such as Alto Adige that over the last decades have built a strong reputation for environmental consciousness (Bonzanigo et al., 2016).

The reasons why ski resorts undertake sustainable initiatives can be diverse and multifaceted, including reputation-linked and regulatory functions, but from the research it emerges that there is increased consideration for the environmental well-being. As a matter of fact, 100% of the interviewees explicitly acknowledged the natural environment as a key stakeholder in their strategies, whose interests need to be accounted for when drafting the resort’s development plans. This finding suggests that the principles of stakeholder theory, which consider the mountain itself as a stakeholder (Hajian & Jangchi Kashani, 2021), are not only theoretically understood but also increasingly internalized

into governance models, especially in touristic destinations where the landscape is both a product and a prerequisite of the tourism offer (Dax & Tamme, 2023). In this perspective, the Marketing Director of Dolomiti Superski affirmed that the consortium “*does not work to speak about Dolomiti Superski, but rather to speak about the Dolomites themselves*”.

The consideration of nature’s interests could be partly attributed to reflections regarding the impacts of climate change, particularly with respect to snow and water availability and rising energetic demands. Once again, 100% of the sample expressed concerns over the topic of global warming, reinforcing the position that climate change is no longer a future or hypothetical scenario, but rather a managerial issue that requires to be properly dealt with through innovation and mindful investment decisions. In this regard, Kronplatz Seilbahn’s technical aspects manager declared that the ski resort is “*willing to invest money in innovative tools that can make a contribution to better protect the environment*”. This statement is backed up by the resort’s actions, given that it has heavily invested in the self-production of renewable energy and innovative green energy propelled machinery, such as the first hydrogen powered snowcat and Xelom’s fully electric snowcat. Despite the unanimous recognition of the pressing issue of global warming and its consequences for the ski industry, resorts do not perceive it as an immediate threat to their existence. Their current sense of security reportedly stems from their conviction that they have already implemented an adequate range of adaptive measures, such as artificial snowmaking, water storage systems and technological upgrades, which are considered, using the words of Alta Badia Brand’s director “*our due homework*”, and need to be brought forward to ensure the resort’s short to medium term operability. Moreover, ski resorts demonstrated long-term trust in innovation and human acumen to overcome climate change-related issues.

The transition from fossil fuels to renewable energy sources is the cornerstone of the green economy’s strategy to reduce the environmental risk and natural resources’ scarcity. The adoption of renewable energy sources is one of the 17 themes for sustainable development set by the Agenda 2030 (United Nations, 2025) and the European Council has stressed its importance in its Fit for 55 package, EU’s set of measures part of the European Green Deal that aim at cutting greenhouse gas emissions (European Council, 2019). Eight out of eight of the ski resorts under scrutiny have reported 100% use of clean energy for their lift systems and operations, primarily through the supply of certified

green energy provided by local contractors. Dolomiti Superski, being a service consortium, does not manage its associated members' infrastructures directly and thus was rightly excluded from the current and the following variables' analysis. The renewable energy type in question appears to be hydropower, as it constitutes the Alps' primary source of renewable energy, given that the Alpine arc is studded with water sources and dams that are able to convert water's mechanical energy into electricity. In fact, as Dolomiti Superski's Marco Pappalardo reports, the province of Bolzano is very rich in water and thanks to it, the district is able to produce a 30% surplus with respect to the whole province's energy requirements through hydropower only.

Ski resorts' compliance with the green transition objectives is not limited to external supply of renewable energy. Self-production of renewable energy, which can be achieved through photovoltaic installations, biomass plants or geothermal solutions, represents a new frontier and a strategic advancement in the sustainability trajectory of ski resorts. On-site generation of clean energy contributes to the increasement of the regional share of renewables in the energy mix, reinforcing broader territorial resiliency, circular energy systems and climate targets. Beyond the unquestionable environmental benefits, self-production of renewable energy plays a critical role in enhancing energy independence, allowing resorts to better align their strategy with energy consumption patterns, particularly during peak winter months. Fifty percent of the sampled resorts reported on-site or consortial production of renewable energy demonstrating growing efforts towards the compliance of green transition requirements. Ski resorts are often located in decentralized Alpine context where the energy transmission infrastructure may be limited or costly and thus the self-production of clean energy, beyond economic savings, represents an example of local resilience. Schladming Dachstein is a trail blazing resort in this field, owning three facilities that independently produce and consume clean energy. Schladming's resort is comprised of four different ski areas that account for a total 123 kilometers of slopes. The Reisneralm Ski area is supplied by an independent hydroelectric power plant that produces twice the electricity needed for the operability of its entire area including lifts, snowmaking and gastronomy. It also possesses a mountain station, located in Dachstein and called Energy Crystal, that is fully cladded with photovoltaic panels, responsible for covering up to 80% of the station's own energy needs. Kronplatz Seilbahn is particularly sensible to the topic as well, as it is determined to decouple from the

national energy supply and reach 100% of energetic independence in the near future through investments in a privately owned decentralized solar field in Southern Italy. As of now, Kronplatz has already achieved the independent production of 0,5 megawatt of solar energy, roughly 50% of the resort's energy demand, that gets instantly consumed in the completion of daily operations. Moreover, Kronplatz Seilbahn owns a biomass-powered district heating plant used to heat its facilities located both in Riscone and on the Plan de Corones' mountain top. The construction of the district heating plant has allowed the company to get rid of all of its oil burners.

Kronplatz Seilbahn's decoupling from fossil fuels is not limited to eliminating oil burners, as it has embraced HVO (Hydrotreated Vegetable Oil) as the fuel powering its snow cats. The substitution of fossil fuels with ecological ones is a trend that other ski resorts are following, as 75% of the sample has claimed to have adopted HVO as their machines powering fuel, even though it is more expensive than traditional oil obtained from petrol. While fossil fuel reduction is a strategic target according to Agenda 2030, practical and technological barriers seem to limit immediate full transition to alternative fuels as ski resorts, such as Monte Rosa Ski, have lamented difficulties in retrieving enough HVO to power their whole fleet of snowcats. Concerning carbon neutrality, Funivie Pinzolo, a lifts company part of the Madonna di Campiglio ski area, is the only ski resort in the scope of the current research to have achieved this remarkable goal. The feature was obtained by simultaneously working on mitigation and compensation strategies. The former has been achieved through internal energetic efficiency measures while the latter, carbon footprint compensation, has been performed through investments in international projects such as a hydroelectric power plant in India and a water management project in Indonesia.

In conclusion, the data reveal a sample of highly engaged but heterogenous actors, where sustainability is universally acknowledged but implemented at different levels of maturity. Most resorts operate within a strong environmental governance culture, particularly in the Trentino Alto Adige region, yet divergences emerge in technological capacity, investment level and operational depth.

4.4 WATER MANAGEMENT AND TECHNICAL SNOW

In recent decades, the ski industry has faced growing challenges due to the declining availability of natural snowfall, direct consequence of global warming that, as anticipated in the literature review, has been particularly impactful in the Alps. Warmer temperatures and shifting precipitation patterns have led to shorter and less predictable winters, posing a serious threat to ski resort's operability. As the administrative director of Monte Rosa Ski testified: *"Today the sole reliance on natural snow supply is not sufficient to ensure the resort's operability over the course of a winter. Without the help of artificial snowmaking, economic and social sustainability can not be not granted."* These declarations are particularly concerning considering that Monte Rosa, which possesses 540 snowmaking machines spread across its slopes, is a historically snowy mountain range and Monte Rosa Ski develops itself at a considerable altitude and reaches up to 3,275 meters of elevation at Punta Indren, its highest lift station. This natural phenomenon has nudged ski resorts to adopt technical adaptation strategies aimed at ensuring snow reliability. Among these, the deployment of artificial snowmaking systems and the construction of water storage basins have become a necessary infrastructure, in this way reshaping not only the mountain's appearance but also the managerial and environmental logic of winter tourism.

Further corroborating Monte Rosa Ski's administrative director words, artificial snowmaking machines have been adopted by 100% of the sampled resorts, reflecting a structural shift in the risk management of alpine tourism. The enormous relevance of technical snow has been highlighted in all interviews and snowmaking machines are said to be functioning *"since the 1st of November at every useful date that presents the sufficient meteorological conditions for creating technical snow"*. Snowmaking has evolved over the course of the last 40 years, initially used as a contingency tool now it has become a core operational asset, indispensable to grant the viability of ski resorts amid erratic snowfall patterns. The use of snowmaking machines, which implies expenditures in energy and water consumption, serves the economic sustainability function as well as a communication tool, projecting stability and reliability to skiers which, as declared by Daniela Vecchiato APT Alpe Cimbra director, *"would cancel their reservations if the slopes' skiability were not to be guaranteed"*. Nonetheless, the

dependance on snowmaking machines exposes resorts to dual vulnerability, namely the availability of suitable environmental conditions, like adequately low temperatures, and the supply of enough water to sustain snowmaking.

APT Alpe Cimbra's director doubled down on water availability, identifying it as the resort's biggest challenge. Thus, the presence of water storage basins becomes apparent as a key infrastructural element, in fact 100% of the sampled ski resorts responded positively to the presence of such basins in their inventory of territorial physical capital. These basins do not only provide water for the creation of technical snow as their value extends beyond snowmaking. Modern basins are designed to be multi-functional water management assets that are used for the storage of rainwater, for hydrogeological safety, firefighting readiness, drought mitigation and even landscape restoration. This multi-functionality increases their value as key territorial infrastructure, playing an important role in managing the water cycle and enabling a more integrated approach to land and resource management. By a matter of fact, many resorts highlighted the basin's key role in water management, especially in relation with snow making. The creation of technical snow, as the resorts themselves call it, can happen when there are the climatic conditions for it, meaning that the temperature is cold enough for the combination of water and pressured air originating from the snowmaking machine to freeze once released into the atmosphere. This process is completely natural as it does not include any kind of chemical and so once spring comes, the snow, which was originally created using water drawn from the storage basins, gradually melts and is channeled towards the basins which can fill up to capacity and serve as multi-purpose territorial assets during the warmer seasons. This closed loop model supports ecological sustainability as it respects the natural cycle of water and reduces reliance on potable water sources. From the interviews it was also possible to recognize the crescent trend of the enlargement and creation of privately owned water storage facilities by ski resorts. These infrastructural investments can store rainfall and have the double advantage of respecting the environmental sustainability, by contrasting scarcity of water resources, and reducing the company's costs, as water is an important cost item for ski resorts, given the pressing need of guaranteeing skiability through the support of snow making machines.

4.5 SUSTAINABLE TRANSPORTATION OPTIONS

Moving on in the sample analysis, five out of nine ski resorts have calculated their carbon footprint, revealing partial but growing awareness on the need for quantitative climatic accountability. Those that have undertaken this costly process identified the arrival of visitors as the primary source of carbon dioxide emissions, particularly due to car-based means of transport from urban centers to mountain valleys. These results reflect the broader trend in tourism-related carbon audits, where transportation, especially private mobility (Schiefelbusch et al., 2007), dominated the emission profile. In accordance with the trend cited above, Dolomites Val Gardena's Christina Demetz highlighted that: *"surely the biggest impact on tourism itself is the CO₂ produced by the cars coming and going from our valleys. Cars are responsible for the biggest environmental impact here in the Alto Adige region as they account for more than 50% of the produced CO₂".* The car's impact can be even larger for small and remote valleys, like in the case of Alta Badia. Alta Badia is surrounded by mountains and can only be reached through a mountain pass, for these reasons there is no train system and mobility is difficult and car reliant. Given such, the car's environmental impact is even greater and as Alta Badia Brand's director noted *"90% of our carbon footprint comes from the arrival of visitors into the valley and there is not much we can do about it"*.

In order to lower carbon emissions in their valleys, ski resorts are actively promoting sustainable modes of transportation, such as trains, regional buses and shuttles. The entirety of the sample affirmed to be undertaking sustainable transportation initiatives, thus signaling a sector-wide recognition of mobility as a critical sustainability frontier. Virtuous examples on the promotion of sustainable mobility activities are Schladming-Dachstein and Kronplatz. The former fosters initiatives such as OBB Kombiticket, a train journey with Schladming as its destination combined with a discounted ski pass, hence providing a tangible incentive to take the train. This initiative is supported by the hotels, who provide shuttle services from the train to the hotel and from the hotel to the ski slopes and viceversa, highlighting the importance of cooperation among different territorial organizations in providing an efficient public transport. Moreover, the Schladming-Dachstein ski area provides a fleet of free e-cars for its guests, who can use them to

sustainably travel and can re-charge them at any of the multiple e-charging stations scattered across the valley.

Kronplatz Holding, which includes Kronplatz Seilbahn, Turistik, Gastronomie and Mobility, has become through Kronplatz Mobility the contract public service provider for Pusteria Valley and adjacent valleys. The company holds under its payroll 170 employees, 100 buses and provides public transportation for around seven million kilometers each year. Kronplatz's efforts to foster alternative means of transportation is not limited to Kronplatz Mobility as Kronplatz Seilbahn has realized a ski slope called Ried that creates a direct connection between the ski resort and the regional train line. Skiers can take the train from Brunico or other villages along the train line, arrive in Perca and be directly on the ski resort's slopes. This innovative and ambitious project aims at connecting via train the city of Bolzano with a network of ski resorts, comprehending Kronplatz and four others along the Pusteria Valley with the ultimate goal of changing consumers' travel habits by providing an effective and efficient alternative to the car. Another interesting scheme to discourage the use of the car was undertaken by Alta Badia Brand in collaboration with local hotels. In this call, guests would leave their car keys at the reception and the longer the key stay there, the bigger the reward will be at the end of the vacation. This kind of activity does not make much of a difference in terms of emission savings but does lots in raising awareness about the presence of alternative means of transportation and in providing a spark to change guests' travel habits.

Moreover, eight out of the nine ski resorts offer their guests free regional transportation cards, such as the Trentino Guest Card or the Alto Adige Guest Pass, demonstrating a concrete commitment to reducing car dependency. These cards grant unlimited access to public transport across the entire reference province, thus providing a cheap travel alternative that significantly lowers barriers to sustainable travel. Ski areas internalize transport costs and embed these cards into accommodation packages, in such a way supporting a modal shift towards public and low-carbon transit. This approach produces great benefits not just for the environment but for the destination's underlying community as well. In fact, destination accessibility improves given that a lower number of cars in the valley generates a lesser degree of noise and of traffic. Lastly, several ski resorts are increasingly advocating for the year-round use, especially during the summer, of their ski lifts as sustainable mode of transportation. In order to reduce road traffic, cut emissions

and alleviate pressure on fragile alpine ecosystems, ski resorts encourage visitors, hikers, and bikers to use cable ways instead of private vehicles to access high-altitude areas. Overall, as evidenced by the sample's statements and initiatives on the topic, mobility emerges as a central axis in the sustainability strategies of Alpine ski resorts.

4.6 WASTE MANAGEMENT & GSTC

Eight out of the nine sampled ski resorts implement structured waste separation and recycling programs. These systems are often carried out in collaboration with local municipalities and are integrated into both operational procedures and visitor education campaigns. There are cases where ski resorts have independently adopted innovative waste reduction strategies such as the elimination of single-use plastics. It is the case of Dolomiti Superski's Buy & Re-use My Dolomiti Card, which contributed to saving an amount of plastic equal to 90 football fields. Dolomiti Superski's actions towards waste management do not stop here as they plan to implement a digital Smart Pass that will gradually substitute the physical plastic ski pass, thus making a further step towards the abandonment of plastics while embracing digital technologies. Other waste management initiatives include "Move the waste" from the high-altitude environments to the valley, fostered by San Martino di Castrozza, and the world's first waste-compacting snow groomer owned by Kronplatz Seilbahn, which displays their willingness to invest in environmental protection.

Waste management has the potential to become an issue of particularly big magnitude during events such as the FIS World Cup, the world's premiere Alpine Ski competition. World Cup races are awarded to some of the best ski resorts in the world and six of those happen to be in the research's sample. These events place the resort under international scrutiny and require strict environmental protocols, often catalyzing infrastructural upgrades or environmental certifications. However, the benefits are coupled with high risk of environmental strain, crowding and waste management issues. Schladming every year holds the most important Slalom race of the season, the Nightrace. Since 2013, the resort has constantly worked to optimize its waste management practices to alleviate the impact on the environment. As a result, Schladming-Dachstein is one of the five ski resorts in this sample to have achieved the GSTC certification (GSTC, 2025). The Global

Sustainability Tourism Certification encompasses aspects of the three pillars of sustainability to offer a globally recognized standard for sustainable tourism. A limited compliance rate of 55.5% underscores the limited, yet growing, trend towards third party sustainability validation (Niñerola et al., 2019), including certifications such as the S.E.A. and the ISO 14001, both detained by Funivie Pinzolo. Resorts such as Kronplatz and Alta Badia demonstrate how embedding GSTC-aligned practices, such as carbon footprint monitoring, accessibility policies and community engagement, into large scale FIS World Cup events can strengthen a resort's case for formal sustainability certification. In this way, World Cup events serve as both stress test and accelerators for integrated destination management systems.

4.7 BIODIVERSITY PROTECTION AND TERRITORIAL CO-GOVERNANCE

During the interview with Alta Badia Brand's director, Roberto Huber, he stated that *"today you start from the sustainability when creating an event, not the opposite anymore"*. Huber's statement well portrays the change in mentality and strategy that the most sustainability prone organizations have undertaken. The reversal of perspective reflects a broader shift in Alpine destination management, where environmental integrity and biodiversity protection are increasingly treated as a foundational criterion, rather than a constraint, reflecting an expanding awareness of the ecological dimension of tourism impacts. Still, only five out of nine ski resorts embarked upon local flora and fauna protection initiatives, hence signaling that the shift toward a more sustainable mentality has not yet been completed. Out of the virtuous resorts, Kronplatz Seilbahn is the one which stands out the most, thanks to its biodiversity preservation procedure that gets put into action when building a new ski slope. First of all, the resort completes an environmental study, where the renaturation of the territory cleared of trees is outlined. Successively, the resort's workers gather all the seeds of herbs and plants that are part of the underbush and, once the slope is completed, reseed them where they had originally found them, thus restoring the same natural biodiversity that was into place before the slope's construction.

On the other hand, while first-hand biodiversity protection initiatives are not so common among ski resorts, all of them have developed or supported environmental education programs, both for the tourists and for the company's own staff as, according to Monte Rosa Ski's marketing sales officer: *"safeguarding a land means to educate people to treat it with care"*. On this matter, Gianni Baldessari, Funivie Pinzolo general director stated that ski resorts should: *"consider their employees as the guardians of their asset"* and given such should strive to *"promote initiatives to change the mentality of the people who work for the ski resort, because it is only possible to convince the stakeholders if we are the first to believe that"*. Baldessari's words highlight the prominence of internal sustainability awareness programs, given that, according to him, companies can move forward only if they do it as one. In this perspective, environmental education initiatives for tourists are of the utmost importance in order to provide them with the necessary guidelines to responsibly behave in a fragile environment as the Alpine one. These initiatives range from interpretative signage and guided hikes to climate education in collaboration with local NGOs. In this regard, both Schladming-Dachstein and Dolomites Val Gardena have hired rangers to raise awareness over the topic and monitor tourists' behaviors. A mountain destination's main goal is to obtain a clientele made of eco-sensible visitors, which would take care of the natural setting they are exploring on their own. According to Huber, the objective of a destination is to encourage tourists to assume direct accountability for the protection of the environment, treating it as if it were their own. Achieving this requires effective communication and the cultivation of meaningful relationships with local residents. In line with the arguments outlined above and Huber's view, education appears to be a key driver of behavioral change and long-term sustainability culture within mountain communities.

Excluding once again Dolomiti Superski from the current variable analysis due to its enormous geographical extension, 50% of the ski resorts are located either wholly or partially within designated natural parks or protected areas. The positioning of an economic activity within a protected area's framework requires strict adherence to environmental regulations, enhances landscape protection and poses the need to cooperate with conservation authorities. Nevertheless, it can also become a source of competitive advantage for a resort through the embeddedness of sustainability into a territorial governance model, fostering cooperation and coordination between different,

yet complementary, entities. For example, Pinzolo adopted natural park practices even outside protected boundaries, emphasizing the spillover effects of conservation ethics. This is the vision that Funivie Pinzolo, its territorial APT and the Adamello-Brenta Natural Park are pursuing, in fact, as Baldessari states: *“The entire territory must have common vision, common values, a common and coherent identity profile and the tenacity to hold tight onto certain positions”*. This shared vision possesses high relational transaction costs but is the only way to obtain a significative alignment that fosters long-term sustainable growth. Such triarchic territorial co-governance incorporates that all three territorial institutions work together and each fulfills its role (Bonzanigo et al., 2016; Wagenseil et al., 2022). In this light, the lifts company needs to create and provide an enticing summer and winter product for its customers; the local APT, regional tourism board, needs to properly communicate these products to the public and the Adamello-Brenta Natural Park needs to be the guarantor of biodiversity protection. This enlightened view strives for the coordination and alignment of the interests of different bodies to achieve common goals (Roxas et al., 2020). Such a philosophy is supported by other ski resorts as well, such as Alpe Cimbra and San Martino di Castrozza. The latter, in fact, has released a policy document called *“Towards a sustainable tourism”* which created a normative framework which aims at guiding local institutions, its partners and its stakeholders in a sole direction, as if it were a unique company.

4.8 SOCIAL SUSTAINABILITY

For a long time, emigration of young people dominated most rural areas of the Alps, albeit unevenly in terms of timing and intensity. For several decades until the 1980s, almost the entire Italian Alps were affected by emigration, with decisive factors being agro-social structures and the scarcity of jobs, which drove people's exodus towards the cities (Bender & Kanitscheider, 2012). A trend reversal began in the last quarter of the 20th century, which prompted re-migrants and amenity migrants to move towards the mountains (Beismann et al., 2011). The main reason for this significative shift can be attributed to the birth of mass tourism in mountain valleys, especially winter tourism related to ski activities. According to the words of Monte Rosa Ski's administrative director: *“the only territories that are not suffering from depopulation are those where*

the touristic component is strong and enables the local people to remain anchored to their land". Tourism became the primary source of economic development, at times even triggering environmental imbalances, but providing the social revitalization of dying local communities (Cantiani et al., 2016). A striking example of this dynamic can be observed in the experience of the Kronplatz area, as Kronplatz Seilbahn's Jan Terzariol explained. Over the 1960s, the area was characterized by subsistence agriculture and limited employment opportunities. The 1963 development of the first ski infrastructure, under the form of a community-driven effort, generated not only income, but a circular economy system in which *"the idea at the base was to draw tourists here in order to bring some wellness to the Pusteria Valley, the money spent at the cable cars would then have been reinvested into the village and its local activities"*. In the village, a ski rental was built, hotels started to attract visitors and job opportunities were created for electricians, plumbers and so on, fostering an economic chain that would create wellness and income due to the mountain's presence. This narrative highlights how winter tourism catalyzed not just financial growth, but social sustainability as well by preventing depopulation due to labor shortages and ensuring the continuity of cultural and occupational identity. Indeed, Terzariol affirms that: *"without the well-being brought by tourism, people would have had to leave"*. In this sense, winter tourism acted as both a necessary economic accelerator and as a social safeguard.

The same argument can be made to this day about the essentiality of tourism for the Alpine arc. Notably, Dolomiti Superski is the job provider of 3,000 individuals and the sole tourism sector generates the 18% of the Dolomites' region GDP, without considering the induced impact, according to Dolomiti Superski's marketing director. Alta Badia Brand's director stretches this concept even further by declaring that in Badia Valley: *"The assumption is that 100% of those who live here, live off tourism, even if indirectly. Even the artisan who claims not to depend on tourism ends up, at the end of the season, renovating hotel rooms and if it weren't for those rooms, he would have a quarter if the work, if any at all"*. These reflections are particularly strong and context-specific, therefore should not be generalized to all Alpine areas, however, in small communities such as La Villa and Corvara in Badia, tourism represents the core of the local economy, often being the only viable economic sector given the harshness and the challenges posed by the mountain environment.

Nevertheless, the significance of the touristic sector for mountain destinations remains undeniable, and its indirect economic impact should be taken into account as well. While the extent of this impact may vary depending on the macroeconomic conditions of the area, Funivie Pinzolo's director estimates that for every euro generated by the cableway company, there is a return of ten euros to the local economy through the tourism supply chain, including hotels, second homes, local shops, service rentals and so on. A similar estimate conducted by Monte Rosa Ski showed a multiplying effect of nearly 6, confirming the profound role of tourism in fostering not only economic, but also social sustainability through the generation of widespread economic value across multiple sectors that ensures the redistribution of income within the community, hence supporting year-round livelihoods. It is the case of Kronplatz, through both its Seilbahn and Mobility departments, which, during the winter season, employs the farmers who work the fields during the summer and would be left without a stable job during the cold seasons. Reporting Baldessari's words, social sustainability is the most difficult sustainability pillar to perceive, it is the most hidden sustainability facet, yet from a business perspective, it becomes essential. Collectively, the findings above outline the importance of tourism for mountain destinations and the close interdependence between economic and social sustainability.

This interdependence between tourism and territorial well-being becomes even more evident when considering the centrality of skiing within the Alpine Mountain tourism economy. Across all interviews, stakeholders expressed a strong consensus on the indispensable role of Alpine skiing in sustaining the tourism value chain during the winter season, with APT Alpe Cimbra's director declaring that *"99,99% of Alpe Cimbra's visitors come to ski"* and would cancel their reservation in case the skiability were not to be assured by the resort. Institutions like Alpe Cimbra play a key role in this fragile balance, acting as aggregators of public and private actors to develop co-governance territorial initiatives. Similarly, Schladming Dachstein's Darum Tourismus frames tourism as an economic accelerator, generating benefits beyond the fruition of ski-related services on sectors such as infrastructure and gastronomy. Given the above, tourism must maintain its reliance on the mountain landscape and strive to protect it, as compromising it would most likely mean compromising the resort's attractiveness.

4.9 SOCIAL SUSTAINABILITY AND LOCAL PRODUCTS PROMOTION

Every resort interviewed acknowledged the central social function of tourism within its underlying community, suggesting a broadly shared awareness about its contribution beyond mere economic activity. Tourism is thus perceived as a keystone institution within the local socio-economic system that is vital for population retention, generational continuity and the preservation of territorial identity. In fragile, and mostly poor, mountain territories where agricultural productivity is low and industrialization impracticable, tourism has allowed local populations to remain rooted, offering a dignified livelihood compatible with place-based values and lifestyles. The importance of a place-based approach is stressed to make the most out of territorial potential and develop strategies that can properly address local conditions and foster a harmonious, balanced sustainable development. A place-based approach can also make it possible to navigate through complex problems connected to sustainable development of a certain area and meet the peculiar conditions of a place, engaging its local actors into collaborative processes of problem solving and decision making (Cantiani et al., 2016).

Interviewees all agree on sustainability requiring a long-term vision, which includes caring for the environment as a precondition for being able to live and work in the territory, hence demonstrating a deeply rooted territorial stewardship. Dolomiti Superski's long-term positioning goal coincides with this view, as the resort aspires to be perceived as an identity territory that has at heart its nature and strives to safeguard it in the best possible way. In this perspective, environmental care and social continuity are seen as mutually reinforcing, given that by safeguarding typical landscapes, ski resorts ensure their longevity at the very source on which both tourism and local life feed off. This commitment to the territory extends to cultural and intergenerational dimensions such as support of local traditions, promotion of sustainable mountain education and investments in workplace wellbeing for locals.

The sample's answers have demonstrated a shared commitment (100%) to the promotion of territorial products and excellence, underscoring sustainable territorial development goals. The initiatives' scope can be varied, as will be described later, but it consistently aims to reinforce local identity, circular economies and cultural continuity. For instance,

Monte Rosa Ski has introduced a multi-use voucher system to support not just strictly local but regional excellences, in such a way fostering the overall growth of the whole Aosta Valley region. In fact, the multi-use voucher allows its user to visit touristic attractions outside of the reach of both the ski resort and its underlying community, such as the Bard castle on the bottom of the valley or even the Mont Blanc skyway. A corresponding case of regional promotion has been undertaken by Funivie Pinzolo, whose supply chain is conceived as a community-based system that seamlessly integrates regional excellence with a shared value framework, in such a way fostering mutual support and collective identity among stakeholders. In Alpe Cimbra, the collaboration with Slow Food Trentino connects tourism to a local land market, promoting the consumption of perishable local foods which serves as an indirect incentive to agricultural employment and food heritage. Similarly, Schladming-Dachstein's Genusspartner Huts emphasize the use of regional ingredients in alpine huts, aiming to create a closed loop culinary economy that strengthens both local gastronomy and local producers.

Val Gardena is not particularly rich in terms of farming prowess, given the way the valley is structured, and thus is not able to fully supply itself with strictly local products. Given such, the Dolomites Val Gardena sources itself with regional food supplies, rather than national ones. Moreover, it established a brochure with the aim of showcasing local products and incentivizing their production by promoting them through the slogan "*Made with Love in Val Gardena*". Lastly, Alta Badia promotes its deeply rooted Ladin cuisine and Slow Food Events as gateways to the region's identity. There, the Ladin traditions are to this day very much alive, and farmers are recognized as the stewards of the landscape, with traditions like haymaking viewed not only as environmental practices, but rather as dearly protected cultural heritage. The preservation of cultural practices, such as the aforementioned haymaking or the transhumance, exemplifies how cultural heritage can be a cornerstone for sustainable development. Recognizing and integrating cultural values into sustainable frameworks ensures that development respects and maintains the unique identities of mountain communities (Ghirardello et al., 2022).

4.10 SOCIAL SUSTAINABILITY, CULTURE AND LANGUAGE

As migration patterns have reversed in the last few decades and mountain valleys are increasingly appealing for city dwellers, there is a crescent influx of residents into mountain areas. Alpine communities generally stand to benefit from this trend in highly diverse ways, ranging from increased purchasing power to increased knowledge, innovative potential and even civic engagement, all of which may contribute to strengthening the local economy. Conversely, the arrival of new ethnic and cultural groups could also present challenges, as it may threaten the preservation and transmission of cultural heritage of historical ethnolinguistic minorities (Loeffler et al., 2011), such as the Ladin, Walser or Cimbrian enclaves. In the case of the Ladin tradition cultural development and transmission are actively supported through institutional and regulatory frameworks. In Alto Adige, Ladin speakers benefit from both cultural and employment protections, such as language-group-specific job allocations in the public sector, reinforcing both visibility and parity with multilingual governance. Alto Adige is a particularly virtuous example of coexistence between multilingual and ethnical groups as Italian, German and Ladin speakers are perfectly integrated with one another, fostering cultural exchange while maintaining each its characteristics.

Another initiative that the province of Bolzano has enacted to preserve the unique Ladin language and culture, is a moratorium on new tourist beds on Ladin majority counties such as Badia and Gardena Valleys. This regulatory mechanism preserves community integrity and mitigates the effects of over-tourism, aligning directly with principles of social sustainability. The Ladin identity has therefore remained rooted in the territory, with *Ladinismo* being nowadays more embedded than ever in the social and symbolic fabric of these communities. Furthermore, Ladin identity is not only a matter of heritage but also a powerful differentiation strategy in tourism management, where uniqueness is a key competitive asset. This is the reason why Alta Badia Brand asks its partner hotels and institutions to provide, for example, the menu in Ladin, in order to differentiate themselves from competition by exploiting their uniqueness. This differentiation strategy can be brought forward because the inhabitants of Ladinia, actually feel Ladin and live in their own traditional ways. If it weren't like that, it would not have been possible to use Ladin as a marketing strategy as, in Huber's words: "*Tourism must be authentic, the*

best possible thing we can do is to make the visitor feel like one of us during his stay, both in having fun and in taking good care of the surrounding environment". In this regard, Alta Badia Brand has the Nos Ladins initiative, a span of time in which the host is "ladinized", as he/she passes the day in close contact with a local, living his regular life. This kind of initiative leads to the creation of a bond with both the community and its environment, stimulating a responsibility support of the visitor towards the hosting community, thanks to the creation in him of a sense of belonging, even only for the short amount of time corresponding to his stay.

Going back to the research's sample, seven out of nine resorts need to deal with their area's linguistic minorities. The results highlight the growing awareness of the role played by ethnolinguistic identities in shaping the cultural fabric of mountain destinations. In areas like South Tyrol and Trentino, where Ladin and Cimbrian communities are historically rooted, tourism operators should demonstrate sensibility to the preservation of these cultural minorities. It is the case of the preservation and defense of the Cimbrian culture by the APT Alpe Cimbra, while the actions in place in the Ladin setting are clearly outlined in the section above. The peculiarity of these languages and cultures calls for greater integration into destination branding and the protection of their identities can enhance the authenticity of the visitor experience while also strengthening social cohesion.

The last variable analyzed is the presence of cultural protection and nine out of nine resorts have declared to implement some sort of measure, demonstrating a shared understanding that preserving local heritage is essential for both identity maintenance and sustainable tourism. Dolomites Val Gardena represents the main benefactor and sponsor of local Ladin cultural associations, in fact, out of the roughly fifteen traditional costumes outings that get performed each year, ten are sponsored by the destination itself, in order to promote traditional heritage and offer a sight of the local culture to its visitors. Indeed, the promotion of Ladin culture is one of Dolomites Val Gardena's unique selling propositions, further reflecting a shift in perception, where culture is no longer just a background scenery but rather an actor in plain sight, a value-generating component capable of differentiating a destination from competition and fostering pride and continuity within the community. A very interesting social sustainability initiative promoted by APT Alpe Cimbra is the Roots' Tourism, through which expatriates, mostly

coming from Brazil, have the chance to come back to Italy to visit their grandparents' village, their house, meet with distant relatives and, more in general, learn about and get in touch with their roots. This initiative represents a great cultural opportunity but also a powerful social and territorial sustainability tool. As a matter of fact, this kind of tourism strengthens personal and community identity, creates a sense of belonging, new forms of visitor loyalty and has positive ripple effects on the local economy.

Complementing the topic of social sustainability, this broad pillar encompasses the concepts of equity, both of gender and of possibilities. Several resorts have developed comprehensive approaches to social sustainability to promote inclusion, accessibility and community engagement. For instance, Funivie Pinzolo has introduced gender equality measures which have fostered gender equality certifications and inclusive workplace practices, such as enhanced paternity and maternity leave and the ground-breaking employment of women in traditionally male-dominated roles, challenging long-standing stereotypes. Similarly, Alpe Cimbra and Monte Rosa demonstrated great commitment to ensuring the accessibility of their facilities to people with disabilities and elderly guests, making the mountain environment within everyone's reach through structural and experiential adaptation. Moreover, educational programs in local schools aim to minimize the arising of social tensions between tourists and residents by promoting awareness of the indispensable value of tourism for the local mountain economy, while also revealing professional opportunities. In conclusion, several resorts have underscored the importance of not only promoting local products, but also valorizing cultural, historical and architectural heritage which are key to understanding the history and territorial identity of a people (Ghirardello et al., 2022).

5. CONCLUSIONS

5.1 SUMMARY OF FINDINGS

The present research's main scope was to explore the multifaceted concept of sustainability through the lenses of mountain and Alpine ski resorts, focusing on its environmental, economic and social dimensions. Based on nine qualitative interviews with key ski sector stakeholders from resorts situated in different Alpine sections, several major insights have emerged.

The main findings highlight how sustainability has become an essential requirement for the effectiveness and institutional legitimacy in Alpine tourism, serving as both regulatory and reputational framework. All interviewees framed sustainability not just as a mere technical measure but as a baseline concept for the achievement of long-standing development. From an environmental point of view, the research demonstrated a high degree of maturity in key infrastructural and energy-related measures, especially concerning the decarbonization process of ski lifts operations through the embracement of clean sources of energy. Moreover, the widespread use of hydropower along the Alpine arc, snowmaking basins and low-emission technologies point to a robust alignment with Agenda 2030 and European Green Deal climate objectives. However, energetic autonomy remains limited, with all of the interviewed resorts still dependent on national grids for their supply of energy, although some have taken decisive steps in the right direction. Additionally, while the use of biofuels such as HVO is increasingly emergent, it is not yet systematically adopted and empirical carbon calculations, crucial for the assessment of inefficiencies, are inconsistently applied across the sample.

Moving on to water management considerations, water supply emerged as a core operational concern, with artificial snowmaking now bona fide necessity for all resorts. The universal deployment, enlargement and construction of water basins represents an adaptive response to climate-related issues yet underscores the sector's vulnerability to regional droughts and shifts in hydrological availability. In terms of transportation, all resorts acknowledged its great relevance to sustainability, as car emissions represent the main carbon footprint component of mountain valleys and have undertaken different degrees of measures to provide visitors with alternative and more sustainable means of

transportation. The widespread introduction of public-participated guest cards proved to be an effective low-carbon mobility tool; however, the lack of uniform carbon footprint assessments reflects disparities in technical capacity, strategic priority and resource availability.

Waste management practices appeared to be largely standardized, with nearly universal practices in recycling and separation. Environmental education emerged as a fully institutionalized dimension of sustainability, indicating shared normative values among resorts. On the cultural side, the findings have shown that heritage protection is widely acknowledged (100%), though policies supporting linguistic diversity are present only in communities that include a linguistic minority.

Moving on to the social assessment, all nine resorts affirmed the social role of tourism, reflecting a holistic view of sustainability in which community resilience, workforce stability and cultural cohesion are inseparable from economic and environmental performance, underscoring the importance of pursuing all three pillars of sustainability simultaneously in order to foster a long-term development. In several cases, such as Schladming Dachstein and Funivia Pinzolo, integrated governance models were put in place, helping align tourism strategies with broader territorial goals, with data suggesting that when local communities and institutional actors engage in joint activities, sustainability transitions are more coherent and, consequently, more impactful.

These findings strongly resonate with the research's five guiding principles outlined in the conclusion of the literature review. The first concept, ski resort's creation of value for its stakeholders, has been thoroughly demonstrated along the research and the stakeholder that appears to have the most to gain from the resort's presence on the territory, is the underlying community itself. The second guiding principle, the essentiality of ski tourism in preventing mountain depopulation, finds its confirmation in the research's main conclusion about social sustainability. Although, as Huber pointed out, tourism is not sustainable in its strict environmental significance, it becomes the most sustainable activity in the mountain valley as it is the enabler of the economic and social resiliency of the community itself. The third guiding principle is respected and confirmed by the research's findings. The interviews demonstrated how, even though social sustainability practices are widely acknowledged and all resorts affirm the social role of tourism, its

effective integration into actual strategies can be sometimes lacking and uneven compared to its environmental counterpart as some resorts appear to be more focused on the environmental and economic aspects. The reason for this might be attributed to the resort's corporate organization. The fourth guiding principle, the leverage of cultural identity and heritage as assets to enhance destination attractiveness, is confirmed as nowadays resorts utilize their cultural peculiarities and traditions as one of their unique selling points, as in the case of Alta Badia Brand which promotes, defends and fosters Ladin culture. The fifth and last guiding principle, the transition of renewable energy and technological innovation as the primary pathway towards climate adaptation, is clear throughout the research as resorts have all invested into renewable sources of energy and innovations to enhance their energetic and resource efficiency.

5.2 THEORETICAL CONTRIBUTIONS

The present study contributes to the growing body of literature on the topic of sustainable tourism by providing an updated and context-specific understanding of how sustainability is nowadays operationalized in the Alpine ski sector. While previous research largely focused on environmental numerical metrics or tourist behavior, this thesis shifts the focus towards the too often forgotten social sustainability and, more specifically, towards territorial co-governance, stakeholder dynamics and the structural integration of sustainable practices. In particular, the current research contributes to the advancement of knowledge in three ways.

First, the research empirically substantiates the claim, often cited but rarely tested, that social sustainability remains the least integrated pillar within tourism strategies. The research highlights tangible and real examples of institutional gaps, hence deepening the understanding of why social sustainability, despite being widely acknowledged, often struggles to be embedded into policy and practice.

Secondly, the research builds upon the concept of territorial governance, illustrating how resorts like Schladming-Dachstein and the Ski area Madonna di Campiglio serve as examples of virtuous stakeholder coordination and alignment between tourism and broader regional development goals, in such a way reinforcing the theoretical proposition

that sustainable tourism in mountain areas can not be decoupled from local governance systems and community engagement.

The third aspect is that the study provides operationalization of the five guiding principles proposed in the literature review through the lenses of real-world Alpine cases. These principles, while theoretically grounded, are also shown to have tangible manifestations in infrastructure, planning and strategy.

In summary, by integrating insights from institutional theory, stakeholder theory and place-based approaches, the research fills a gap in the academic literature and extends the knowledge of sustainability scholarship in the mountain and ski context.

5.3 MANAGERIAL IMPLICATIONS

The research highlights several key implications for managers and stakeholders operating in the Alpine context, particularly within the ski resorts transitioning toward more sustainable and resilient models. Many researches on mountain sustainability have studied its environmental pillar, which is often at the forefront of resort strategy and planning, while this study reveals that social sustainability remains less systematically integrated, thus resort managers should strive to recognize that, in order to foster long-term viability, it is a necessity to promote the underlying community's well-being, cultural heritage and social equity. This entails embedding social sustainability into corporate strategies, staff training and guest engagement initiatives. In addition, it is worth noticing that cultural heritage, and consequent community well-being, depend on ecosystem health and cultural landscapes, thus making environmental and social sustainability self-reinforcing and inextricable concepts (Kosanic et al., 2023; Knez & Eliasson, 2017). Concerning social sustainability, findings have shown increasing awareness and implementation of accessibility measures for elderly and disabled visitors, as well as more inclusive employment practices such as hiring women in technical roles, highlighting how managers should continue to remove physical, social and cultural barriers. In such a way, mountain experiences will be available to all demographics, building more cohesive communities and generating income for the resort, which is successively turned into economic spillover for the tourism supply chain. In fact, resorts have shown to generate

considerable tourism multiplier effect, with up to ten euros of induced value per one euro of ski resort's ticket sales. Thus, managers should cultivate strong local networks, from artisans and farmers to accommodation providers, to maximize the multiplying effect by creating a local circular economy. This goal can be achieved through the promotion of local products, important instrument in reinforcing the link between tourism and regional development

Another topic of paramount importance is the enhancement of territorial identity through cultural valorization. The protection of local languages and traditions builds community heritage, such as the Ladin, Cimbrian and Walser cultures, which represents not only a cultural duty but a powerful differentiation strategy as well, in a context in which tourism markets are becoming more competitive and visitors more demanding. Managers should thus integrate root tourism strategies, local storytelling and partnerships with cultural institutions to preserve identity while creating unique visitor experiences. It is the case of Alta Badia Brand, which promotes the Ladin culture in multifaceted ways, such as through the Nos Ladins initiative and the collaboration with the Ladin Cultural and Linguistic Institute situated in San Martino di Castrozza.

The growing reliance on snowmaking technologies as enablers of the area's skiability and the expansion of water reservoirs, have underscored the industry's vulnerability to climate change. Managers must prioritize climate adaptation measures, invest in renewable energy and water cycle resilience to avoid going out of business due to unexpected events and adopt long-term planning frameworks that aim at balancing touristic development with natural resource conservation. Moreover, ski resorts' employees, local residents and, more importantly, tourists must undergo education programs to learn how to properly behave in a fragile context as the Alpine one is. These programs also foster a positive sustainability culture and reduce social tensions between tourists and residents. Managers are thus encouraged to invest in awareness-raising campaigns and participatory initiatives that empower locals and engage guests as co-stakeholders in the destination and territory's future.

Lastly, but certainly not for importance, ski resorts, often framed by the public as environmentally dangerous and based on economic monoculture, can evolve into key actors of sustainable regional governance when equipped with the right framework and

incentives. In this perspective, effective sustainability governance depends on the ability to coordinate diverse actors with often conflicting interests, including APTs, local governments, natural parks and the community itself. Managers should thus foster multi-stakeholder platforms and align resort strategies with broader regional sustainability plans to avoid fragmentation and absolutely avoid greenwashing. Additionally, managers should draft place-based strategies, as a standardized model would not fit the many nuances and facets that each destination and corresponding community presents.

In conclusion, as skiers carve their way through snowy slopes, the very existence of these Alpine temples carves out healthier and more resilient communities.

5.4 LIMITATIONS & FURTHER DEVELOPMENTS

While the present research has provided valuable insights into how sustainability is interpreted and applied within ski resorts, it is not exempt from limitations. First and foremost, the study's sample size of only nine ski resorts and the qualitative nature of the study limits the generalizability of the findings. Furthermore, although the resorts reflect a certain degree of diversity in terms of geography and governance model, they may not capture the full spectrum of experiences neither within the Alps nor within smaller, less developed or non-European ski destinations.

Secondly, the reliance on self-reported data introduces the possibility of social desirability bias, where interviewees may have emphasized best practices while under reporting shortcomings, failures or challenges. The absence of a direct observational or quantitative data set, such as emission measurements or socio-economic indicators, also constrains the capacity to validate and triangulate stakeholder claims. Thirdly, the concept of social sustainability, although its centrality to the current research, remains somewhat elusive and difficult to measure.

The interviews provided valuable narrative depth but further research, possibly implementing quantitative metrics, could enrich and complement the analysis, especially concerning social equity, job quality and community satisfaction. Additionally, future research could expand the sample size, expand the geographic scope to include ski resorts from different cultural and regulatory contexts such as North and South America and Asia,

or even create an in-depth focus study on a certain well-delimited area of the Alpine arc. Comparative studies could also provide a more nuanced understanding of how sustainability frameworks differ across countries and governance levels.

Additionally, longitudinal research would be valuable to assess the long-term consistence of the declarations made by ski resorts and the long-term effectiveness and adaptability of the sustainability strategies now being adopted. Another avenue for further study would include the integration of tourists' perspectives in order to evaluate how sustainability of communication affects their behavior and perception. Finally, future works should delve deeper into the intersection between the advent of new digital innovations and sustainability, exploring how data analytics, AI and smart infrastructure may support more adaptive and transparent governance in ski resort management. These new tools could be very helpful in improving carbon accounting through constant monitoring, to better manage working flows and enhance participatory decision making.

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