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Society of the Melting Snow

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In Austria, skiing is an integral part of popular identity, but the impact of global warming is pushing winter sports higher and higher – both in terms of altitude and social class. Demographic changes and the inadequacy of tech fixes force us to question skiing monoculture. Yet, for now, alternative visions for the alpine region are struggling to take root.

“On Friday night I put the skis/On my car and then I drive /To Stubaital or Zell am See / Because there, on top of the mountains/They always have the best snow!”

So begins Wolfgang Ambros’ Schifoan (Skiing), one of Austria’s most popular pop songs. For nearly 50 years, this paean to skiing has been more than just essential background music to Austria’s winter entertainment; it could almost be said to be the alpine republic’s unofficial anthem.

But five decades after its release, all is not well on top of the mountains. Climate change and the associated rise in temperatures are depriving many ski resorts of their most important resource: snow. This is particularly the case in the lower-lying ski areas of Austria. Even the usual fixes are not working: as soon as the thermometer hits 3 degrees Celsius, artificial snow cannot settle, rendering the snow cannons useless. Smaller resorts are the worst affected, given the cost of operating the cannons when they do work: artificial snow costs around 3.5 to 5 euros per square metre to generate. Since the turn of the millennium, more than 20 Austrian ski resorts have had to close, and once well-used cable car operators have gone into administration.

This may become a source of acute national pain. Ever since the 1970s, Sonnenkar, 2023 Austrians have held the sport – and its heroes like Franz Klammer and Annemarie Moser-Pröll – in high regard.

A sport for all

The 1970s were a decade of new beginnings and growth for Austria. Until then, this small country at the edge of the Iron Curtain had been largely overlooked. But the economic prosperity and social liberalisation engineered by Chancellor Bruno Kreisky brought international attention – and a breath of fresh air – to what had been a rather sleepy and conservative country. Along with it, Austrians gained a previously unknown self-confidence.

Kitzsteinhorn, 2023. ©Florian Rainer

The economic upturn prompted a significant rise in incomes in the country. Between 1971 and 1976, they climbed by up to 13.8 per cent each year, and for the remainder of the decade continued at up to 8.9 per cent annually. The rise of skiing and winter tourism was integral to this development, and is part of the collective identity of generations of Austrians. On 5 February 1976, children were let off school at 11 am to follow the downhill race at the Innsbruck Winter Olympics live on television or radio. When Franz Klammer, who hailed from a tiny village in the Austrian Alps, won the gold medal, the whole country erupted in a frenzy of joy.

Klammer was followed in the 1990s by Hermann Maier, who, after crashing spectacularly in the Men's Downhill race at the 1998 Winter Olympics in Nagano, Japan, went on to win gold medals in both the Giant Slalom and the Super-G. It could have been a plot from a Hollywood movie: former bricklayer goes straight from catastrophic failure to the ultimate sports success. For decades, epic tales like this about the heroism of Austria's skiing stars were hugely important for the mood of the entire nation.

The popularity of these new stars led to a growing love of skiing as a pastime. What had started out as an elitist leisure activity for the well-heeled was transformed into a sport for all. Affordable skiing lessons enabled children throughout the country to learn the basics. And alongside this, ski tourism became a significant contributor to the economy. Once barely visited valleys flourished, and people's fortunes were transformed. Until the early 20th century, thousands of children from smallholder families in Tyrol and Vorarlberg had been taken to so-called *Hütekindermärkte* (herder children markets) every year, where they were hired out for the summer to rich farmers in southern Germany, who generally treated them like serfs. Now, though, the business opportunities created by the rise of ski tourism have meant that the descendants of those children have achieved considerable prosperity.

Shifting snow line

The figures from the Austrian Chamber of Commerce speak for themselves. In 2022 there were nearly 70 million overnight stays as a result of winter tourism, generating a revenue of 12.6 billion euros and 6.7 billion euros in value-added income. The sector employs around 250,000 people, and approximately 70 per cent of the income from winter tourism is generated in alpine regions. Furthermore, ski tourists spend around 25 per cent more per person per day than summer visitors on average. For several decades now, developments in the supply and demand for skiing holidays have enabled Austria to benefit from two almost equally profitable tourist seasons. Tyrol is a particularly good example of this: in 1965 it had just 5 million overnight stays in the winter season, but by 2019 (before the pandemic) that figure had risen to over 27 million. Since 1995, it has regularly had more tourists in winter than in the summer.

This successful model is now under threat. Yet the realisation that climate change will lead to massive changes in Austrian ski tourism is not new. As early as 2013, a study commissioned by the Federal Ministry of Economy found that 1 degree Celsius of warming would, by 2030, shift the snow line upwards by about 150 metres. This would leave around 190 Austrian ski resorts below the natural snow line, meaning that the tourism industry in those areas would need to create new offerings if it was to survive. State Secretary for Tourism Susanne Kraus-Winkler is well aware of this. In response to questions from the *Green European Journal*, her office wrote, "In addition to traditional winter sports, lower-lying areas in particular will need to come up with new tourist offerings unrelated to skiing." Nevertheless, Kraus-Winkler is confident that "state-of-the-art snowmaking systems, sustainable ascent aids, and innovative design will ensure that Austrian ski resorts are fit for the future."

Sportgastein, 2023. ©Florian Rainer

The Chamber of Commerce agrees. Of Austria's 23,714 hectares of piste, 75 per cent are now equipped with snowmaking systems, which, according to the Chamber, "guarantees perfect skiing right through to the end of the season". To ensure this remains the case, cable car operators are constantly striving to open up new high-alpine areas. All the same, even in supposedly snow-sure zones, the dramatic consequences of climate change are becoming increasingly obvious. When the Alpine Ski World Cup season opened in Sölden in late October 2023, the races were held on a narrow band of artificial snow surrounded by scree, despite taking place in a glacier region at an altitude of around 3000 metres.

A recent study on the shift to higher alpine resorts provides a sobering analysis of the trials Austria faces. "The increasing melting of the glaciers and permafrost will pose challenges for these ski resorts, too," write its authors, Anna Burton and Oliver Fritz from the Economic Research Institute and Robert Steiger from the University of Innsbruck. Quite apart from the climate-induced limits placed on the use of artificial snow, its production requires huge quantities of water and energy. For instance, the annual electricity needed to make snow on Austrian ski slopes could meet the needs of 60,000 households, and the 47.1 million cubic metres of water sprayed by the snowmaking systems each year would be enough for 235,000

households.

Despite this, the Chamber of Commerce is convinced that this approach is sustainable: 90 per cent of the energy used for the snow cannons comes from renewable sources, cable car operators have reduced their energy consumption by 20 per cent over the last 10 years, and 100 per cent of the water from the artificial snow is returned to the natural cycle, it claims.

Behavioural changes and innovation

Burton, Fritz, and Steiger, however, see a clear need for changes to ski tourism. “Climate change is the main factor, but demographic changes and higher costs resulting from rising prices are also forcing an adjustment in the offering.” Their reference to demographics is significant, since it is not just about changes in the age pyramid. The people who learned to ski in the 1970s are now reaching retirement age and are often no longer as active as they used to be, or have found other forms of physical activity. There are also far fewer ski schools now than there were in the industry’s heyday. Additionally, climate change has led to the closure of many smaller ski areas near Vienna, Graz, and Linz, meaning that children now seldom ski outside the school holidays. Higher numbers of migrants in those urban centres, who either cannot afford a skiing holiday or simply have little interest in the sport, have also contributed to its decline in popularity among the general population.

Burton, Fritz, and Steiger also anticipate “a shift in demand towards the summer and shoulder seasons”, and add that “climate protection efforts centred on climate-friendly guest travel to and from the resorts must be intensified.” Currently, approximately 80 per cent of Austria’s ski tourists travel by car, causing enormous but avoidable exhaust and noise pollution in the narrow alpine valleys. Many Austrian ski resorts can be easily reached by a combination of train and shuttle services. Furthermore, no one needs to take their full ski equipment with them: of the 396,000 pairs of skis sold to Austrian retailers in the 2022/23 season, 70 per cent were hired out – and this is a rising trend.

Kay Helfricht, a mountain researcher with the Austrian Academy of Sciences and co-author of an international position paper entitled “Prospects for snow sports in the face of climate change”, states that, for winter sports to reduce their carbon footprint, measures such as “not creating snow on the entire piste, but only where it is actually needed” will be required.

The position paper contains a number of recommendations, including determining where the harmful climate impacts of sectors and businesses are, and creating “a basis for business decision-making with respect to climate protection”; carrying out site-specific vulnerability analyses to document the sensitivity and adaptive capacity of the respective winter sports areas; and, most importantly of all, “the implementation of sustainability and resilience strategies to improve the robustness and adaptability of winter sports and strengthen their capacity for innovation in all relevant fields of activity”.

Brixen, 2023. ©Florian Rainer

A mountain code

This problem is not a uniquely Austrian one. Since the 1990s, 18 ski resorts have closed (and their ski lifts dismantled) in Germany , while 10 have closed in South Tyrol in Italy. The decline in Switzerland is even more dramatic: by the end of 2022, 69 ski resorts had shut their doors and only one of them, San Bernardino, dared to open up again for the 2023/24 season. Three hundred million Swiss francs (a little over 300 million euros) is set to be invested in that resort over the coming years, with investors pinning their hopes on its altitude: the San Bernardino ski slopes are between 1600 and 2500 metres above sea level, meaning that, at the very least, it will still be possible to create artificial snow for the foreseeable future.

But there is some cause for hope. A scheme by the Austrian Alpine Association is pointing the way to a more sustainable alpine future. The “Mountain Villages” initiative brings together 38 villages in Germany, Switzerland, and Italy, all of whom have pledged to uphold the principles of the Alpine Convention. These include the preservation and protection of natural and human habitats in the Alps through the principles of prevention, polluter pays and cooperation. The mountain villages see

themselves as “model regional development centres that showcase sustainable alpine tourism with all its relevant traditions”, with a particular focus on “excellent quality in terms of landscape and environment and [commitment] to the preservation of local cultural and nature conservation values”. They also emphasise “communal responsibility, capability, and independence, as well as […] the environmentally-aware and responsible conduct of guests when staying in the mountains”.

Small family businesses, the use of traditional local products, and connectedness are at the heart of the project, which also insists on the greatest possible restraint in the expansion of resorts and other large-scale tourism infrastructure in the mountain region. “The aim is to create close ties between producers and consumers at the local and regional level, as well as to ensure the long-term conservation and care of the typical elements of the cultural landscape,” say its organisers.

Text by Michael Schmid, photos by Florian Rainer. Translated from the German by Paula Kirby | Voxeurop.

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