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# SWOT analysis of winter travelling in the Alps: A Delphi Approach for 2030

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## Abstract

The Alps are one of the most important and popular tourism destinations within Europe. Even though culture, attitude towards and history differ within the alpine regions, tourism is a crucial economic factor. The different alpine regions form the Alps as an overall tourism destination, but are also competing with each other in terms of tourism arrivals and overnight stays. However, central questions about future developments and challenges are similar regardless of country or region. The purpose of this research was to bring experts from all across the Alps together, to identify relevant developments and trends, and to elaborate major forthcoming challenges including appropriate measures to strengthen alpine winter tourism with the help of a Delphi survey. Experts from the industry as well as academic experts with different origins and professional backgrounds supported this research. This contribution is an excerpt of the comprehensive research and focuses on the SWOT analysis made by specifications regarding strength/weaknesses and opportunities/threats. Results show of variety of current and upcoming areas of activities. Furthermore, recommendations are derived to meet these challenges.

**Keywords:** Alpine winter tourism, SWOT analysis, Delphi approach, Forecast

## Introduction

The Alps are one of the most important and popular tourism destinations within Europe. Eight different countries on a total of 190.959 square kilometres host over 100 million guests per year (Permanent Secretariat of the Alpine Convention, 2009). Even though culture, attitude towards and history differ within the alpine regions, tourism is a crucial economic factor. The different alpine regions form the Alps as an overall tourism destination, but are also competing with each other in terms of tourism arrivals and overnight stays. However, central questions about future developments and challenges are similar regardless of country or region. In the last years much effort was undertaken in developing year-round products and destinations (Weiermair & Bayer, 2016), partly influenced by current issues in politics and public. The wide spread discussion about climate change and its impact as well as the related image of the Alps within media may lead to the conclusion, that the future of winter tourism in the Alps is limited. But nowadays public image of the Alps is still strongly connected with winter, snowy landscapes and a unique winter atmosphere (Siller et al., 2015). Furthermore, the winter season is more valuable than summer season in terms of economic impact for some alpine destinations (BAK Basel Economics AG, 2016). The winter product as well as its quality and importance vary between alpine regions, but common facts and figures in order to compare destinations across the Alps are missing. It can be assumed that several upcoming trends and challenges in winter tourism will not only affect single regions, but the Alps as a whole. The purpose of this research was to bring experts from all across the Alps together, to identify relevant developments and trends, and to elaborate major

forthcoming challenges including appropriate measures to strengthen alpine winter tourism. As some challenges already exist and forthcoming challenges should be identified in a timely manner, the year 2030 was chosen as a timeframe. Winter travelling in the Alps is understood as a wide and interdisciplinary subject, which does not limit itself exclusively to winter sports, but also includes other travel motives and holiday purposes. Due to the interdisciplinary approach, the research topic was evaluated from various sides. Experts from the industry as well as academic experts with different origins and professional backgrounds supported this research.

### **Methodological approach Introduction**

The Alps are one of the most important and popular tourism destinations within Europe. Eight different countries on a total of 190.959 square kilometres host over 100 million guests per year (Permanent Secretariat of the Alpine Convention, 2009). Even though culture, attitude towards and history differ within the alpine regions, tourism is a crucial economic factor. The different alpine regions form the Alps as an overall tourism destination, but are also competing with each other in terms of tourism arrivals and overnight stays. However, central questions about future developments and challenges are similar regardless of country or region. In the last years much effort was undertaken in developing year-round products and destinations (Weiermair & Bayer, 2016), partly influenced by current issues in politics and public. The wide spread discussion about climate change and its impact as well as the related image of the Alps within media may lead to the conclusion, that the future of winter tourism in the Alps is limited. But nowadays public image of the Alps is still strongly connected with winter, snowy landscapes and a unique winter atmosphere (Siller et al., 2015). Furthermore, the winter season is more valuable than summer season in terms of economic impact for some alpine destinations (BAK Basel Economics AG, 2016). The winter product as well as its quality and importance vary between alpine regions, but common facts and figures in order to compare destinations across the Alps are missing. It can be assumed that several upcoming trends and challenges in winter tourism will not only affect single regions, but the Alps as a whole. The purpose of this research was to bring experts from all across the Alps together, to identify relevant developments and trends, and to elaborate major forthcoming challenges including appropriate measures to strengthen alpine winter tourism. As some challenges already exist and forthcoming challenges should be identified in a timely manner, the year 2030 was chosen as a timeframe. Winter travelling in the Alps is understood as a wide and interdisciplinary subject, which does not limit itself exclusively to winter sports, but also includes other travel motives and holiday purposes. Due to the interdisciplinary approach, the research topic was evaluated from various sides. Experts from the industry as well as academic experts with different origins and professional backgrounds supported this research.

## Methodological approach

A Delphi survey was conducted in 2016 to identify major challenges and future areas of activity for winter travelling in the Alps. The Delphi approach as a technique is “the most popular judgemental forecasting method in tourism” (Lin & Song, 2015, p.1099) and therefore allows an outlook for the year 2030. In the following the procedure for this specific Delphi is explained. Figure 1 shows the timing of the Delphi procedure:

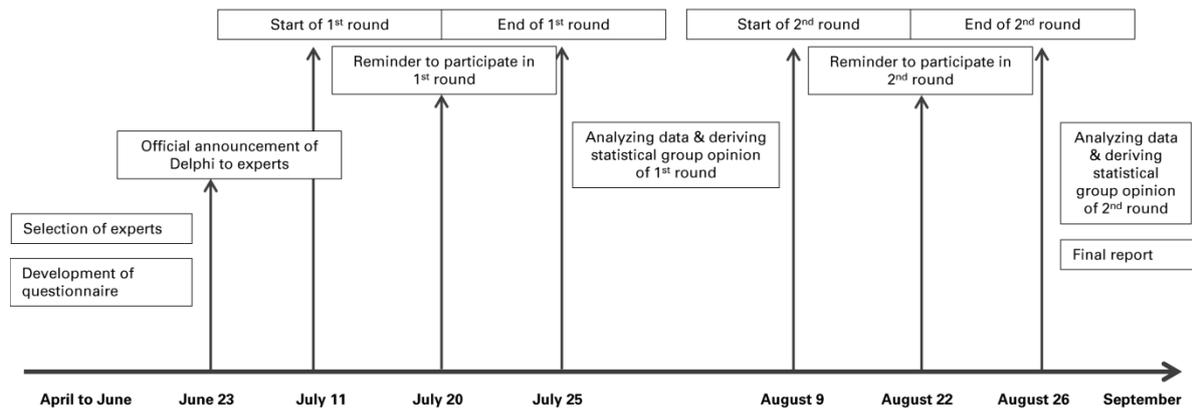


Figure 1. Time schedule of Delphi survey.

As of its interdisciplinary and transboundary approach, the survey should contain experts from the industry (IE) and academics (AE), both with different professional backgrounds, specializations and origins. 88 experts were asked to join the survey. In the 1st round the questionnaire was sent to all experts, except those who explicitly denied their participation. In the 2nd round the same questionnaire including the group response of the 1st round was sent to all experts who completed the 1st round. A total of 33 experts completed the 1st round and still a total of 27 experts used the 2nd round to reconsider their 1st round responses. The names of the experts were coded in numerical sequence with AE for academic expert and IE for industry expert to ensure anonymity. Table 1 shows the responses of 1st and 2nd round with respect to professional background and origin. The 1st round was completed by 13 academic experts and 20 experts from the industry. 11 academic experts and 16 industry experts participated in the 2nd round.

Table 1. Anonymized list of Delphi participants.

Expert code	Origin	Professional background	1st round	2nd round
AE01	Austria	eTourism	completed	not completed
AE02	France	Geography	completed	completed
AE03	Switzerland	Destination management	completed	completed
AE04	Italy	Sustainable tourism	completed	completed
AE05	Austria	Technology	completed	completed
AE06	Switzerland	Regional development	completed	completed
AE07	Austria	Family business	completed	completed
AE08	Austria	Tourism development	completed	completed
AE09	Austria	Innovation	completed	completed
AE10	Switzerland	Tourism development	completed	completed
AE11	Germany	Strategic management	completed	not completed
AE12	Austria	Destination management	completed	completed
AE13	Italy	Entrepreneurship	completed	completed
IE01	Italy	Mobility	completed	completed
IE02	Switzerland	Tourism politics	completed	completed
IE03	Germany	Media	completed	not completed
IE04	Austria	Cable cars	completed	completed
IE05	Austria	DMO	completed	completed
IE06	Germany	Environmental protection	completed	completed
IE07	Austria	Marketing	completed	completed
IE08	Italy	Brand management	completed	completed
IE09	Switzerland	Product development	completed	completed
IE10	Italy	Marketing	completed	completed
IE11	Germany	Winter sports	completed	completed
IE12	Germany	Winter sports	completed	completed
IE13	Austria	Public relations	completed	completed
IE14	Germany	Environmental protection	completed	completed
IE15	Switzerland	Tourism politics	completed	completed
IE16	Italy	Accommodation	completed	not completed
IE17	Italy	Cable cars	completed	not completed
IE18	Austria	DMO	completed	completed
IE19	Germany	Marketing	completed	completed
IE20	Austria	Retail	completed	not completed

As one of the main common problems of Delphi surveys (Lin & Song, 2014), the panel mortality – the reduction of participants from the first to the second round – could be kept very low. As experts from France, Switzerland, Italy, Germany and Austria were integrated into this project, the questionnaire was multilingual: although all questions were formulated in English, participants were welcome to answer open questions in Italian, French, German and English.

The questionnaire for the Delphi survey was developed in a two-stage procedure and includes both results from a comprehensive literature review as well as issues discussed by a consulting experts' circle, which follows the Delphi approach (Vorgrimler & Wübben, 2003). As a result five thematic blocks with both open and closed questions had to be answered by the participants. Those five blocks contained 15 questions in total and addressed strength and weaknesses,

opportunities and threats as well as destination management, mobility issues, and products and markets.

The present contribution is an excerpt of the comprehensive research only and focuses on the SWOT analysis made by specifications regarding strength/weaknesses and opportunities/threats. Responses were statistically evaluated by MAXQDA. The coding for qualitative data was conducted in an independent two-stage process and results were merged to a final coding to avoid subjective assessment. In a 2nd round the experts were asked to reconsider their 1st round responses by comparing them with the group responses.

## **Results**

The presentation of the Delphi results follows a uniform structure. Responses and their explanations are provided in ranges, depending on their number of mentions. Notable differences which exist in the final round between academic and industry experts' opinions are emphasized. An analysis of the data regarding origin has not been prepared due to the small or rather different sample size of the single countries.

As the most common development with a positive influence the experts stated changes in travel and consumer behaviour (see table 2). The Alps will be able to satisfy the needs of (potential) guests for authenticity and regionality as well as the increasing needs for quality, convenience and multi-optionality in terms of different activities. The increasing needs for a healthy lifestyle and a variety of sporting activities and the needs for nature and tranquillity are another important part of changes in travel and consumer behaviour, but are presented separately due to the high number of specifications. The number of responses decreased to 74 in the second round, just a few adaptations and changes were made by the experts, which leads to quite similar results as in round one. However, comparing academic and industry experts' opinion reveals considerable differences. Both panels stated changes in travel and consumer behaviour as the most influencing development. But whereas academics empathized the need for security and the need for nature and tranquillity as well as the increase of innovation activities as will having major impacts, experts from the industry stressed the need for nature and tranquillity and the need for a healthy lifestyle and a variety of sporting activities as having a more valuable influence on the growth of winter travelling in the Alps. The need for security and the increase of innovation activities will play a much smaller role from the industry's' point of view.

In addition to the question of developments with positive influence on the growth of winter travelling in the Alps the same question was included regarding developments which may have negative influence. Again there have been no notable differences between the first and the second round. The lack of young skiers, challenges posed by climate change and the high cost structure for provider and the high price level for customers will be the most challenging developments by the year 2030 (see also table 2). Academics evaluate the high cost structure and price level, changes in travel and consumer behaviour as well as the lack of offspring and challenges posed by climate change as the developments with the most negative influence. On the contrary, experts from the industry see mainly the lack of offspring and challenges posed by climate change as negatively influencing the growth of winter travel by the Alps, followed by the high cost structure and price level.

Table 2. Comparison of opportunities and threats for winter travel in the Alps in 2030.

OPPORTUNITIES	THREATS
2nd round (% of 74 responses in total)	2nd round (% of 78 responses in total)
<p><b>CHANGES IN TRAVEL &amp; CONSUMER BEHAVIOUR (27%)</b></p> <ul style="list-style-type: none"> <li>▪ Caused by social trends and demographic change</li> <li>▪ Need for quality, convenience, multi-optionality, price sensitivity, etc., travel behaviour of older people</li> <li>▪ Need for authenticity &amp; regionality, economic prosperity of specific population groups/regions</li> </ul> <p><b>NEED FOR NATURE &amp; TRANQUILITY (19%)</b></p> <ul style="list-style-type: none"> <li>▪ As a counter-model to busy cities (urbanization)/ everyday life</li> <li>▪ Need for natural scenery and nature based experiences</li> <li>▪ Good air quality, mountain freshness</li> </ul> <p><b>NEED FOR A HEALTHY LIFESTYLE AND A VARIETY OF SPORTING EXPERIENCES (16%)</b></p> <ul style="list-style-type: none"> <li>▪ Social megatrends health, sports, outdoor recreation as lifestyle elements</li> <li>▪ The Alps are able to fulfil the needs of a variety of (sporting) experiences</li> <li>▪ Activities such as winter hiking or ski touring become more important</li> </ul> <p><b>NEED FOR SECURITY (12%)</b></p> <ul style="list-style-type: none"> <li>▪ Travel safety will affect trip decisions</li> <li>▪ Image of the Alps being safer than other places in the world</li> <li>▪ Political development in winter beach destinations</li> </ul> <p><b>OPENING UP NEW MARKETS (11%)</b></p> <ul style="list-style-type: none"> <li>▪ Increasing demand from new geographical markets such as parts of Asia, Eastern Europe, etc.</li> <li>▪ Rejuvenation of existing customer segments</li> <li>▪ New target groups in existing markets: people who are looking for “soft” winter activities and migrants</li> </ul> <p><b>INCREASE OF INNOVATION ACTIVITIES (8%)</b></p> <ul style="list-style-type: none"> <li>▪ Challenges posed by climate change will foster innovations</li> <li>▪ Digitalization will foster innovations</li> <li>▪ General growth of tourism sector including investments &amp; new products</li> </ul> <p><b>NEED FOR EASY &amp; AFFORDABLE ACCESSIBILITY (7%)</b></p> <ul style="list-style-type: none"> <li>▪ Caused by travel behaviour: trend towards short trips</li> <li>▪ The Alps are within easy reach by car from several agglomerations</li> <li>▪ Current efforts to enhance intermodal mobility</li> </ul>	<p><b>LACK OF YOUNG SKIERS /OFFSPRING (24%)</b></p> <ul style="list-style-type: none"> <li>▪ Children do not grow up with ski experience, missing offers at schools, decrease of associations</li> <li>▪ Demographic change</li> <li>▪ New Europeans/migrants do not ski</li> </ul> <p><b>CHALLENGES POSED BY CLIMATE CHANGE (23%)</b></p> <ul style="list-style-type: none"> <li>▪ Unpredictability of the weather, snow conditions, lack of snow, costs of artificial snow creation</li> <li>▪ Guests: expected and perceived winter atmosphere could cause disappointment, short-term bookings</li> <li>▪ Public image is determined by communicated media image</li> </ul> <p><b>HIGH COST STRUCTURE &amp; PRICE LEVEL (18%)</b></p> <ul style="list-style-type: none"> <li>▪ For providers due to investments to offer snow guarantee, high quality, wide range of products, etc.</li> <li>▪ For many guests winter sports, especially skiing, are no longer affordable</li> <li>▪ Prices are expected to increase because of higher investment costs</li> </ul> <p><b>CHANGES IN TRAVEL &amp; CONSUMER BEHAVIOUR (14%)</b></p> <ul style="list-style-type: none"> <li>▪ Caused by social trends: need for multi-optionality, price sensitivity, etc.</li> <li>▪ Caused by demographic change: travel behaviour of &amp; missing offers for older people</li> <li>▪ Caused by increasingly bad image of the Alps: dangerous (ski accidents, avalanches), cold, dark</li> </ul> <p><b>INCREASING GLOBAL COMPETITION (10%)</b></p> <ul style="list-style-type: none"> <li>▪ Emerging winter sports destinations (e.g. Eastern Europe)</li> <li>▪ Increased demand of other (cheaper) holidays forms in winter: sun &amp; beach, cruises, etc.</li> </ul> <p><b>DECREASE IN PRODUCT QUALITY (5%)</b></p> <ul style="list-style-type: none"> <li>▪ Product loses its authenticity and is interchangeable</li> <li>▪ Missing entrepreneurial behaviour, tourism attitude investments and innovations, product is outdated</li> <li>▪ Focus solely on alpine skiing, missing alternative offer</li> </ul> <p><b>DECREASE IN ENVIRONMENTAL QUALITY (4%)</b></p> <ul style="list-style-type: none"> <li>▪ Environmental pollution, e.g. caused by transportation</li> <li>▪ Excessive building development, touristic development of further areas</li> <li>▪ Loss of natural quality</li> </ul>

It can be noted that the Alps will be able to successfully fulfil some already existing or upcoming trends regarding travel and consumer behaviour which will have a positive influence on the growth of winter travelling in the Alps by the year 2030. The fact that the Alps with its unique and

authentic structure, arrangement and tradition in terms of public services, public infrastructure, environment and agriculture cannot be imitated will be the most important strength in 2030 (see table 3).

Table 1. Comparison of strengths and weaknesses for winter travel in the Alps in 2030.

STRENGTHS	WEAKNESSES
2nd round (% of 74 responses in total)	2nd round (% of 69 responses in total)
<p><b>UNIQUENESS: THE ALPS CANNOT BE IMITATED (20%)</b></p> <ul style="list-style-type: none"> <li>▪ The Alps are an overall authentic uniqueness</li> <li>▪ The Alps offer high quality of public services, infrastructure, nature, agriculture, related goods, society, etc.</li> <li>▪ The Alps have a long tourism tradition with traditionally established structures and a strong lobby</li> </ul> <p><b>TOURISM INFRASTRUCTURE (19%)</b></p> <ul style="list-style-type: none"> <li>▪ The Alps offer a wide range of tourism offers/attractions/activities</li> <li>▪ The Alps offer a wide range of winter sports infrastructure of overall high quality</li> <li>▪ The Alps offer a value chain structure of high quality</li> </ul> <p><b>NATURAL BEAUTY AND UNIQUENESS (18%)</b></p> <ul style="list-style-type: none"> <li>▪ The Alps offer a high quality of natural environment</li> <li>▪ The Alps offer a unique combination of nature, snow, sun, etc.</li> <li>▪ The Alps offer a variety of outdoor activities/ experiences in one of the most beautiful environment</li> </ul> <p><b>HIGH QUALITY OF TOURISM OFFERS &amp; HOSPITALITY (18%)</b></p> <ul style="list-style-type: none"> <li>▪ The Alps have a good reputation in terms of overall high service quality</li> <li>▪ The Alps offer a high quality of receiving facilities and infrastructure</li> <li>▪ The Alps offer a high quality of hospitality, friendliness and peace of mind</li> </ul> <p><b>EASY ACCESSIBILITY (11%)</b></p> <ul style="list-style-type: none"> <li>▪ The Alps are within easy reach by car from several agglomerations</li> <li>▪ The Alps benefit from trend towards short trips/holidays</li> </ul> <p><b>COUNTER-MODEL TO BUSY CITIES / EVERYDAY LIFE (8%)</b></p> <ul style="list-style-type: none"> <li>▪ The Alps offer the possibility to escape from people's day to day life, offer a place for relaxation</li> <li>▪ The Alps offer outdoor activities in one of the most beautiful environment and a variety of experiences</li> <li>▪ The Alps offer good air quality</li> </ul> <p><b>SAFETY &amp; SECURITY ISSUES (7%)</b></p> <ul style="list-style-type: none"> <li>▪ The Alps offer high security standards</li> <li>▪ The Alps offer a safe political environment</li> </ul>	<p><b>LACK OF INNOVATION &amp; ENTREPRENEURIAL BEHAVIOUR (29%)</b></p> <ul style="list-style-type: none"> <li>▪ Lack of adaptation to new consumer and travel behaviour, respectively to new leisure travel activities</li> <li>▪ Missing innovation spirit and aspiration for success</li> <li>▪ Business models are too constricted; focus only on skiing; ageing infrastructure and accommodation</li> <li>▪ Missing radical innovations</li> <li>▪ Difficulty of defining at least a few strategies which are shared on an alpine level (communication policy off- and online, use of social media)</li> </ul> <p><b>LACK OF COORDINATED OFFERS / HIGH-QUALITY OFFERS (19%)</b></p> <ul style="list-style-type: none"> <li>▪ Outdated offers and products of poor quality</li> <li>▪ Still dissected service chains (lack of cooperation) and just a few good "packages"</li> <li>▪ Lack of qualified personnel</li> </ul> <p><b>HIGH COST STRUCTURE &amp; PRICE LEVEL (15%)</b></p> <ul style="list-style-type: none"> <li>▪ Providers are forced to invest in infrastructure and products (including snow- making systems)</li> <li>▪ Skiing is already expensive and might become a sports for the upper class due to the high price level</li> </ul> <p><b>ACCESSIBILITY AND MOBILITY ISSUES (14%)</b></p> <ul style="list-style-type: none"> <li>▪ Poor accessibility, especially by alternative transport modes</li> <li>▪ Increasing traffic, especially by cars, causes air pollution and noise</li> <li>▪ Increasing traffic at several times causes crowded streets and villages</li> </ul> <p><b>UNCERTAINTY OF SNOW CONDITIONS AND WEATHER (12%)</b></p> <ul style="list-style-type: none"> <li>▪ Increase of winters with less snow and poor weather</li> <li>▪ The traditional picture of the white winter wonderland, winter atmosphere cannot be fulfilled</li> <li>▪ Summer/sea destinations are more predictable in terms of customer expectation</li> </ul> <p><b>SUSTAINABILITY ISSUES (12%)</b></p> <ul style="list-style-type: none"> <li>▪ Further use of natural resources to respond to mass tourism</li> <li>▪ Mass tourism in specific destinations: crowding, environmental and air pollution</li> <li>▪ Increased constructions and tourism development in areas of untouched nature</li> </ul>

In combination with the traditionally established tourism infrastructure and the high quality of tourism offers as well as of its hospitality and its unique natural beauty, the Alps will have an overall competitive advantage related to winter travel. The comparison of academic and industry experts indicates only minor differences: academics rate tourism infrastructure as the most important strength, followed by the high quality of tourism offers and hospitality, and the natural beauty and uniqueness. On the other hand, industry experts are focusing on the Alps' overall uniqueness, tourism infrastructure and its natural beauty and uniqueness.

The experts pointed out six superordinate topic areas as the biggest weaknesses of winter travelling in the Alps by 2030 (see also table 3). The lack of innovation and entrepreneurial behaviour, the lack of coordinated and high quality offers, which is contrary to one of the biggest strength, as well as the high cost structure and price level and the uncertainty of snow conditions and weather, will be most challenging. Academics and industry experts agree that the lack of innovation and entrepreneurial behaviour will be the biggest weakness of winter travelling in the Alps, since the alpine winter industry tends to be not able to adapt to new consumer and travel behaviour because of missing innovation spirit. But besides that the comparison between both panels reveals certain differences. Academic highlight accessibility and mobility issues even more challenging than the high cost structure and price level. While accessibility issues seem to be only of minor importance, industry experts are well more concerned about the lack of coordinated and high quality offers and the uncertainty of snow conditions and weather.

Figure 2 summarizes all results in the form of a derived SWOT analysis.

<p style="text-align: center;"><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>▪ <b>Uniqueness: the Alps cannot be imitated</b></li> <li>▪ <b>Tourism infrastructure</b></li> <li>▪ <b>Natural beauty and uniqueness</b></li> <li>▪ High quality of tourism offers &amp; hospitality</li> <li>▪ Easy accessibility</li> <li>▪ Counter-model to busy cities / everyday life</li> <li>▪ Safety &amp; security issues</li> </ul>	<p style="text-align: center;"><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>▪ <b>Lack of innovation &amp; entrepreneurial behaviour</b></li> <li>▪ <b>Lack of coordinated offers / high-quality offers</b></li> <li>▪ <b>High cost structure &amp; price level</b></li> <li>▪ Accessibility and mobility issues</li> <li>▪ Uncertainty of snow conditions and weather</li> <li>▪ Sustainability issues</li> </ul>
<p style="text-align: center;"><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>▪ <b>Changes in travel &amp; consumer behaviour</b></li> <li>▪ <b>Need for nature &amp; tranquillity</b></li> <li>▪ <b>Need for a healthy lifestyle and a variety of sporting experiences</b></li> <li>▪ Need for security</li> <li>▪ Opening up new markets</li> <li>▪ Increase of innovation activities</li> <li>▪ Need for easy &amp; affordable accessibility</li> </ul>	<p style="text-align: center;"><b>THREATS</b></p> <ul style="list-style-type: none"> <li>▪ <b>Lack of young skiers /offspring</b></li> <li>▪ <b>Challenges posed by climate change</b></li> <li>▪ <b>High cost structure &amp; price level</b></li> <li>▪ Changes in travel &amp; consumer behaviour</li> <li>▪ Increasing global competition</li> <li>▪ Decrease in product quality</li> <li>▪ Decrease in environmental quality</li> </ul>

Figure 2. SWOT analysis for winter travelling in the Alps in 2030.

## Discussion and Implications

Research shows that for instance most of the Tyrolean winter tourism destinations, and possibly also other alpine winter tourism destinations, have at one point already been in a stagnation phase with regards to Butler's tourism area life cycle. In order to overcome such stagnations, rejuvenation strategies prove to be necessary. However, a recurring problem is the fact that only few destinations actually take advantage of potential summer tourism opportunities and strictly focus on the winter tourism product within their rejuvenation strategies. Moreover, action is mostly taken in a reactive as opposed to a proactive way, resulting also in a lack of effective radical innovations. Some form of differentiation as well as the ability to successfully manage change with the help of the right set of indicators seems to be vital (Müller, Peters, & Blanco, 2010).

Travel and consumer behaviour are at the same time crucial for alpine winter tourism as well as one of the most researched areas in the fields of tourism (Cohen, Prayag, & Moital, 2014). This is mainly due to their importance for marketing management and measures, because the more information about the consumer available to providers, the better can memorable experiences and successful tourism products be offered (Barsky & Nash, 2002). Already in 2003 Weiermair & Steinhauser (p. 3) provided a state-of-the-art characterization of the "new tourist" which is still valid today: "Decision and behaviour patterns of the 'old tourist' are greatly different from those of the new one. The new tourist has been described as more experienced, more flexible, more independent, more quality conscious and 'harder to please'. Quality and value for money are the prime determinants of the market place. Today's tourists are hybrid in nature and do not consume along linear and predictable lines. The new tourist wants to be different from the crowd and asks for individualized products. Individualization in this sense also implies optimising opportunities for the customers by choosing best fitting solution to their needs." Similarly, Bieger & Beritelli (2013) described several trends in changes in demand: time is rare commodity for today's guests, therefore they are looking for different experiences in a short time frame. Furthermore, they ask for wide range of products and offers to satisfy their need for those multi-experiences. The compilation and consumption of these experiences is very individually, mass products are out-of-date. For marketers and suppliers it is crucial to know about current behavioural and attitudinal aspects of their (potential) customers, but even more about prospective consumer and travel behaviour in order to adapt and apply suitable strategies and products in a timely manner.

In order to be able to identify potential trends in winter tourism demand, more information seems to be necessary when it comes to the different types of winter tourists that visit the Alps. The Austrian National Tourist Office has identified a total of three winter tourism segments (Sicking, 2015). Although the findings are with regards to the Austrian market, similar tourism segments may also be found in many other alpine regions. The first, and most traditional, segment includes those tourists who visit an (mostly rural) area to practice winter sports such as skiing, snowboarding and cross-country skiing (Sicking, 2015). Destination choice criteria are closely linked to satisfying the demand for attractive ski resorts and beautiful mountain environments. Although tourists may engage in wellness or winter walks, the prime activity for them is slope-related. If tourists are satisfied with their experience, they tend to be loyal and repeat customers. Tourists' needs are clear and can be narrowed down to a few prevailing topics. In Austria, this segment is by far the largest one (Sicking, 2015). Nevertheless, winter sports tend to be a declining primary motive which leaves destinations with the need to adapt product offers and image (Dunkelberg, Bausch, & Sonntag, 2016). Due to new consumer needs, demographic changes and climatic issues it will be vital to further emotionalize and stage winter sport tourism (Kröll &

Neuner, 2015). In line with those arguments, the second segment seems to be crucial for future winter tourism demand. So-called winter recreationist value snow experiences but do not engage in skiing, snowboarding or cross-country skiing. They tend to be older than average and focus on a holistic nature experience. Destination choice criteria are related to mountain environments but instead of slope characteristics, this segment values attributes such as fresh air, health-supporting climate and attractive landscapes. Although tourists within this segment especially value tranquillity and relaxation, they also engage in sporting activities. Those activities primarily include winter hiking, snowshoeing, sledging or ice skating while being able to enjoy the winter atmosphere. Tourists also value culinary experiences and wellness. Although the segment currently amounts to only 1% of winter tourism demand, it shows high potentials. With the help of targeted communication and suitable offers, this market may be built up in the future. Thirdly, winter tourism demand is also generated by tourists visiting cities. 2 out of 3 million additional winter overnight stays in Austria can be attributed back to an increase in city visits, making winter city tourism a growing market segment. In comparison to the other segments, tourists within this segment tend to be more international and also younger than average. Tourists are attracted by the diversity of cultural offers, culinary experiences and shopping possibilities. They demand an attractive mix of activities and most of them are keen on visiting Christmas markets during their stay (Sicking, 2015).

Furthermore, it has been found, that German tourists consider snow and a winter atmosphere to be the most positive attributes related to alpine winter tourism (Siller et al., 2015). Other studies indicate that snow security is a vital element when it comes to destination offers, especially within the segment of winter sport tourists (Roth, Krämer, & Görtz, 2012). However, snow has to be considered as a “very climate-sensitive touristic resource” (Steiger, 2010, p. 251). As such, climatic changes may have the potential to impact future winter tourism demand. It becomes increasingly important to estimate how winter (sport) tourists may react to climatic changes and which snow-independent offers might be attractive (Unbehaun, Pröbstl, & Haider, 2008).

Winter sport tourism may also be considered as an experience. This definition should foster the understanding, rather than the mere description, of the behaviour of tourists engaging in such sporting activities, even if the main purpose of the trip might not have been sport-related. An interaction of people, place and activity will then contribute to a unique sport tourism experience (Weed, 2008). Sport tourism is a major contributor to the overall volume of winter travelling in the Alps. For example, 55% of all winter trips made to/within Austria can be directly attributed to winter sports (Sicking, 2015).

Especially within alpine regions, a unique selling proposition is important to attract visitors, with destination image as well as tourist satisfaction being two vital elements in assessing the potential of repeat visitation and the competitiveness of a destination (Hallmann, Müller, & Feiler, 2014). It has been found that two key factors mentioned by the demand-side in terms of destination competitiveness are an excellent accessibility to and a reliable infrastructure within a winter sport destination. Practical implications include offering not only railways and good roads but also ensuring the traffic ability of such roads during snowfall or investing into new infrastructure and attractions (Hallmann et al., 2014). The size of ski resorts and slope offers seem to be most important when choosing a suitable ski resort whereas the higher the skiing ability, the larger the ski resort chosen. Other important selection criteria for choosing winter sport resorts include guaranteed snow, good slope preparation, quality of accommodation, quality of lifts and cableways, friendliness and hospitality and slope safety (Partel, 2014). The destination’s brand

plays an important role when it comes to the perception of a holiday destination by the customer. A study into alpine skiing tourists from Saint Petersburg illustrates that brand awareness is an important factor. Awareness influenced their willingness to travel to a ski destination, while these tourists noted that advertising affected their preferences and ski destination choices (Voronova, 2011).

Some studies show a high potential of future skiers. Manova (2010) indicates that there are around 38 million interested non-skiers with no prior experience within the countries of Austria, Germany, the Netherlands, Italy, United Kingdom, Czech Republic, Poland, Rumania and Russian urban centres. It is further specified that there are around 11 million Germans between the age of 14 and 70 who have either never skied or stopped skiing but are interested in starting or continuing to ski (Sicking, 2015). Moreover, over 7 million Italians state that they would like to enhance their skiing skills (Amadori, 2012). Nevertheless, countries such as Germany, Italy, Czech Republic, Hungary and Belgium will have increasingly saturated markets. New and attractive future ski tourism potential could come from countries such as the Netherlands, Great Britain, Poland or Switzerland. In the long-term, new and financially strong market opportunities may emerge in relatively new ski tourism segments especially from Asia (Sicking, 2015).

It has been shown that family is a vital motivator for introducing children to winter sports and skiing (Arbesser, Grohall, Helmenstein, & Kleissner, 2010). The chance of children starting to ski is primarily linked to ski affinity of their parents (Plaz & Schmid, 2014). Children who start skiing at an earlier age than 13 are more likely to become serious skiers than children who started skiing at a later age (Hungenberg, Gould, & Daly, 2013). A key challenge when it comes to future ski tourism potential is fostering affinity within younger age groups. Nowadays for example, the largest percentage decrease of ski tourists in Tyrolean regions is evident for skiers who are under the age of 29 (Spreng, 2015).

One aspect that has to be mentioned within this discussion is skiing and migration development. It has been questioned, if one reason for the decrease in ski affinity within European regions might be migration. A study conducted in Switzerland has for example found that the share of Swiss skiers with migration background is relatively little (Lamprecht, Fischer, & Stamm, 2015). Whereas immigrants to Switzerland from Northern and Western Europe are likely to ski, immigrants from Southern Europe, Eastern Europe and outside of Europe display little ski affinity. It has been shown that the number of children with migration background that practice skiing is below national average (Fischer et al., 2010). On the other hand, studies show that the sporting behaviour of people with migration background becomes more similar to the national average the longer people have stayed in the country. Moreover, it is questioned if a lack of immigrant skiers can be traced back to a lower ski affinity or if actually income is the determining factor that keeps them from skiing. The study concludes by proposing to focus on keeping up the ski affinity within the Swiss market, as it seems to be the more important market with regards to skier volume (Plaz & Schmid, 2014).

Nevertheless, beginners can be found in many different age groups. Especially with regards to this target market, low market entry barriers, ease and accessibility are essential in every part of the ski tourism offer, from the booking process to the availability of ski busses and the orientation within the ski resort. It is important to foster positive emotions with a focus on safety, fun and relaxation (Manova, 2013). Novices need to be excited by service and quality in order to keep them from quitting to ski (Grabler, 2010). Moreover, it is important to understand which

individual characteristics (e.g. effort, identity, perseverance, seriousness, commitment) help skiers to go beyond a novice level and continue to ski. In terms of economic benefits, this proves to be important as it has been found that committed skiers ski more often and are more willing to purchase ski-related merchandise, thus having a higher overall level of ski-related spending (Hungenberg et al., 2013)

Ski schools also tend to positively influence ski sports in general. This can be illustrated with the fact that dropout rates seem to be lower for people who visited a ski school, especially those who started skiing as a child. It was also found that the higher the satisfaction with a ski school, the higher the enthusiasm for skiing in general (Manova, 2013). One essential aspect in line with those arguments are so-called winter sport weeks, yearly ski courses organised by schools. Such courses, especially in Austria, are a long-standing and effective tradition. It has been found that as much as one in five Austrian skiers started to ski because of such a programme. During the last decade, the number of courses has significantly decreased although such school courses prove to be essential in effectively strengthening winter sport activities within societies (Arbesser et al., 2010).

In terms of managerial implications, this calls for offering affordable and progressive (school) ski lessons, but also for the creation of initiatives with the goal to show parents how they can influence children's motivation for alpine skiing. However, only addressing the children of active skiers would result in the loss of a much broader potential customer base. Therefore, it is proposed to increasingly work together with schools or community programmes to build further ski awareness (Hungenberg et al., 2013). Austrian cable railways, for example, succeed in providing winter sport experiences for around 120 000 children and pupils each year. This is achieved with the help of a variety of initiatives, most of them for free (Spreng, 2015). Other programmes include the "Bring Children to the Snow" campaign by the International Ski Association (FIS) which aims at promoting snow activities to children between the age of 4 and 14 (Arbesser et al., 2010).

However, it is noted that less and less people will be able to afford skiing holidays in the future with skiing increasingly turning into a small luxurious niche sport (Aigner, 2016). This is in line with a study by Roth et al. (2012) showing that the main reason for people to not ski within the next 12 months are price, family reasons and health issues. Nevertheless, some consumers are still willing to pay price premiums for ski resorts which offer snow, fun parks and free ski busses. Also, adults are willing to pay a price premium for ski resorts in Austria and Switzerland (as compared to Italian resorts) (Pawlowski, 2011). On average, skiers within the French market spend 900 euros for ski tourism during school holidays, whereas the sum decreases to 720 euros outside the school holiday season with the development of low-cost ski offers abroad being much faster than in France (Delon, 2014).

Other factors that have the potential to impact a dropout include lack of time, safety reasons and lack of interest and fun (Arbesser et al., 2010). Interested non-skiers with no prior skiing experience state that what keeps them from skiing is mostly time and money but not interested non-skiers state health reasons as the number one thing that keeps them from skiing (Grabler, 2010).

## Outlook and Limitations

Snow is both the foundation of and the central experience commodity for winter vacations in the Alps, as snow experiences are unique and not substitutable. As snow is the central good for winter travelling in the Alps, this sector is very vulnerable to the impacts of climate change and earth warming. It is therefore of high importance to implement a development with a sense of proportion, an increasing risk management as well as innovative, variable and additional offers. Current market research explicitly shows that movement (e.g. skiing, hiking), active relaxation in wintry atmosphere and fresh air constitute the most positive associations with alpine winter holidays (Siller et al., 2015). Experiencing nature and landscape, sports, activities and fun are the central motives for a winter vacation in the Alps. The biggest challenges for further developing the so called snow experience economy in a sustainable and successful way are to generate future winter sports enthusiasts (offspring), combined with the demographic change occurring in the main incoming markets. Alternative leisure offers and migration-related developments (the new Europeans) will lead to a decline of winter affinity in the source markets.

However, this research also has some limitations. Some of them are related to the approach used, as the Delphi method holds some critical issues in terms of repeatability and objectivity (Grisham, 2009; Lin & Song, 2014). Secondly, this research aimed for statements made for the Alps as an overall tourism destination, which means that experts from specific destinations were asked to evaluate and forecast in a transboundary view. However, some responses provided tend to be on a very local scale.

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# Arctic charity tourism

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## Abstract

The purpose of this article is to introduce a new tourism-approach: charity tourism. In contrast to other studies, I consider whether business (especially expensive winter tourism) can be connected to charity. Specifically, I focus on the needed changes in understanding tourism in general. Tourist operators and tourists need to avoid consumer attitude and need to follow the “The Golden Rule”. Under the “winter tourism” I analyze Arctic territories (High-Arctic, Low-Arctic and sub-Arctic territories). Using qualitative method of analysis, I find evidence of possibility to manage a “Arctic Charity Tourism” as a project of the Arctic Council or as an independent NGO. The Arctic region has many different problems with infrastructure, education of people in the Arctic, territorial, social, and health development. Thus, I demonstrate that every Arctic tourist is able to take part in the further Arctic development.

**Keywords:** International tourism, Charity, Indigenous people, Winter tourism

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*“Do to others what you would have them do to you”  
(The Golden Rule)*

## Introduction

Today, tourism is one of the main directions of a state’s political, social, and economic development. Tourism accounts for one out of eleven jobs in the world, contributes to ten percent of the Global GDP and seven percent of worldwide exports (World Travel & Tourism Council, 2016). Tourism is divided into two big groups: local and international tourisms. Local tourism is a possibility for citizens to know their country from different perspectives, and to deeply understand people from other regions. As for international tourism, it is an effective way for investments (internal and external), which leads to economic development. Additionally, international tourism provides opportunity to show and to see the real side of a state, without any political and journalistic embellishments. Moreover, international tourism leads to the international political development between two (or more) states.

Throughout history, Northern countries and Arctic regions have been attractive. Due to difficult climate, challenges and risks, people tried to reach, to cross, or to live in the Far North. However, each challenge could not be solved alone. As for the Arctic, tourism needs to be supported by international cooperation in order to guarantee the safety. Today, despite the current international tensions, the Arctic participating states cooperate with each other, conduct

research, try to solve the Arctic problems, reduce the consequences of global warming, and share international Arctic stations. From tourism perspectives, all experts, researchers, and travelers are tourists. Unfortunately, they are consumers and most of them follow only consumer' goals. They travel, have a rest, do business and research, but sometimes influence the North environmental and do not fulfill the basic travel rules. The Arctic has a historical example: after the Second World War and the Cold War some Arctic territories are polluted and needed to be clean (Bennett, 2011; Jiahao, 2008). Therefore, I propose to re-orient the existing winter tourism in the "usefulness" and concern the Arctic participating states and people to follow the "The Golden Rule" - "So in everything, do to others what you would have them do to you".

Since the main subject of this paper is studying the role and further impact of the project "Arctic Charity", I propose to investigate **how development of winter tourism contributes to the development of the Arctic region by means of charity.**

### **Chapter 1: Current winter tourism analysis**

In the academic field, "winter tourism", especially the "Arctic tourism" is mostly represented in terms of three perspectives: the path of tourism development, climate change, and new economic and geopolitical opportunities (Barre et al., 2016; Horejsova & Paris, 2013; Lemelin, Dawson, & Stewart, 2012).

The first group of academics analyzes the development of the Arctic tourism from the first trips of sailors (in 19<sup>th</sup> century) until today's cruisers. The first Arctic tourists were also obsessed with the desire to reach the unknown Arctic. It was a period of the geographical discoveries. In the 19<sup>th</sup> century, usually, tourists had a commercial goal to find rich fishing territories. Since the 20<sup>th</sup> century, the Arctic interest has turned to geopolitical and geo-economic interests. Then, visiting Arctic places was not only for geographical discovers, shipping and for commercial benefits, but also for building research- and military stations, appropriation of the Arctic territories and discovery of resources (Kuznetsov, 2016; Lukin, 2016b).

In the 20<sup>th</sup> century, despite the state's oriented purpose to own the Northern territories, the real tourism has been started, especially "Winter Far North tourism". In the 1970-s the first Soviet skiers' groups began to visit the Arctic and in the 1990-s the first Arctic cruises have been launched (Kuznetsov, 2016, p.73). During that time the maximum number of tourists was around 500 people, but today, the Arctic hosts thousands of tourists (AECO, 2015). The 21<sup>st</sup> century is the new wave of the Northern tourism development, because of technical, navigation and infrastructure development. However, most of the operators still to follow only the commercial goal to earn money via exotic North and they might do not know how to work in the Northern territories.

The second group of researchers focuses their study on a connection between tourism and vulnerable Northern environment, especially Arctic climate. The climate change contributed to the increase in tours to the Far North and tourist period. On the one hand, longer tourist period leads to economic and tourism development, but also leads to a threat of mass tourism (Duhaime & Caron, 2009). Formally, Norway and Iceland declared that they are opposed to mass tourism, but today they are relatively popular touristic places (Keil, 2017). Keil (2017) provides several perspectives from different authors about future and features of Arctic tourism. His article demonstrates a great variety of current opinions in opportunities of Arctic tourism. On the one

hand, arctic researchers state that the Arctic is not for everyone, firstly because of safety issues of tourists and the vulnerable Arctic climate (Heimtun, Jóhannesson, & Tuulentie, 2015; "The Arctic will never be a destination for mass tourism," 2016). On the other hand, R.H. Lemelin and J.Dawson (2012) analyze the Arctic tourism as a "doom tourism" and "last chance tourism", because of climate change, rapid ice melting and very vulnerable Arctic flora and fauna. They criticize tourist operators that despite of these factors, managers still offer the tours.

T.Horejsova (2013) strongly criticizes the lack of responsibilities and lack of strong regulations of the Arctic tourism (p.120). Despite the critics of legal rules of the Arctic tourism, there are responsible organizations (such as UNWTO), working groups, NGOs, and non-profit organizations that analyze development of the Arctic tourism: Arctic Council working group on sustainable development, Barents Euro-Arctic Council working group for tourism, the Northern Forum, the Sustainable Model for Arctic Regional Tourism (SMART), the Sustainable Arctic Tourism Association, the Nordic Council of Ministers for Sustainable Arctic Tourism. Today, the main documents that regulate the tourism in the Arctic regions are the ten principles of Arctic tourism and a code of conduct for Arctic tour operators (WWF, 2017).

The third group is represented by analytics of future tourism development. Many academics provide variations of the further development of the Arctic tourism by analysis of advantages and consequences of the mass Arctic tourism (Horejsova & Paris, 2013; Lukin, 2016b; Snyder, 2007).

Y.Lukin (2016b) provides several evidence of the success and future development of Arctic tourism. Also, he states that the Arctic tourism is independent sphere and today, it becomes the special type of tourism. Compared to the other geographically based tourist destinations, the Arctic has five features: 1) unique Arctic nature and cultural historical potential such as national parks, UNESCO; 2) attractiveness of the mysterious Arctic; 3) social psychology to find adrenaline and energetic activities. Today, extreme tourism is a popular form of tourism. As for the Arctic, tourists dive to the Northern Sea, jump with a parachute, camp there; 4) popularization of the Arctic tourism in the market and increasing number of tour operators; 5) the necessity of international support and cooperation in order to maintain the Arctic tourism (Lukin, 2016a). Y.Lukin (2016b) supposes that investments, development of the national parks and infrastructure might lead to Arctic tourism development. However, he also provides 12 risks of possible outcome such as intervention to the northern culture, lack of investments, low level of Northern tourism service (pp.97-98). In my opinion, the most important risks are a lack of understanding of the vulnerability of the Arctic and an impact of tourists on the way of life of indigenous peoples. However, G.Duhaime and A.Caron (2009) suggest that involvement of indigenous people to the process of Arctic economic development would have a positive outcome in general economic and social ratio of the Arctic regions (p.22). Furthermore, T.Horejsova (2013) believes that susceptibility of the Arctic environment, oil spills, noise, pollution, and lack of regulations are the most dangerous threats for the Arctic. By contrast, she also mentions the advantages of the Arctic tourism: economic benefits, employment, and development of the far North territories. She believes that the Arctic tourism could save the Arctic features because tourists want to see the real Arctic.

Despite the attempts to raise prices and limit the number of tourists, demand is still growing. Previously, the price of visiting the North Pole was significantly higher, but today, there is a possibility to find a trip for 8-9,000 USD. Nevertheless, this price is not available for everyone, which automatically limits the number of tourists. Therefore, Kuznetsov (2016) proposes to create

interactive visit-centers. People would have a chance to visit the Arctic virtually via presentations, photos, videos and special visualization equipment (p.74). Additionally, the main challenges of the Arctic tourism's implementation are Arctic climate, expensive and difficult transportation. Therefore, the Arctic tourism is still not stable. However, annually number of tourists is rising (AECO, 2015).

Summarizing the existed literature, many researchers and scientists analyze specifically tourism in the Arctic. The selected literature demonstrates an empirical gap in the scientific research about the impact of tourism and Arctic oriented projects on the Arctic development and on indigenous peoples. Another empirical gap is territorial oriented research, which should be broadly expended because Arctic and Northern territories have many environmental, social and economic similarities. Thus, I assume that there is a strong probability that the development of winter tourism could lead to development of the Northern regions.

### *Theoretical framework*

The project "Arctic Charity" fits three theories: Globalization; New Regionalism; and the Sociology of tourism (Cohen, 1996; Jegorova, 2013). During the Arctic's history, this region faces with many challenges such as territorial competition among the states, the Second World War, the Cold War, the collapse of the USSR with abandoned research stations, and with globalization. Before the rapid industrial development in the Arctic regions, indigenous populations had few contact with non-arctic communities. However, globalization trends significantly changed social, economic, and political spheres in each country. On the one hand, globalization opens many opportunities and leads to a country's development, but also, globalization leads to economic and political challenges, such as migration, unstable economy, and weakness of a country's international role. However, globalization has opened the borders of many countries for tourism and many social local projects have gained international support (charity, volunteers). In terms of changed international order after the Second World War, globalization and interdependency, the theory of "Neo Regionalism" has been appeared. The main concepts of this theory are voluntary initiatives, interdependency, multidimensional approaches of organizations and main actor is the global system (Jegorova, 2013, p.128).

Analyzing the Arctic, the increase of migration to the Arctic regions from other territories has opened a threat of vanish the indigenous languages and culture. However, due to globalization, Arctic indigenous people from around the world can communicate, and support their culture together. Today, the Arctic is a place of peaceful negotiations and cooperation. Thus, most of the implemented Arctic projects are maintained by cooperation of the Arctic participating states. In terms of the climate change, difficult environment, and in order to provide safety for tourists and Arctic scientific research, the Arctic participant states are interdependent (the circumpolar states, and the Arctic Council's observers). Today, the Arctic development is represented not only by the geographical opportunities (Northern Sea Route and resources) but also by international tourism. Therefore, during the last 15 years the Arctic became a region with global value.

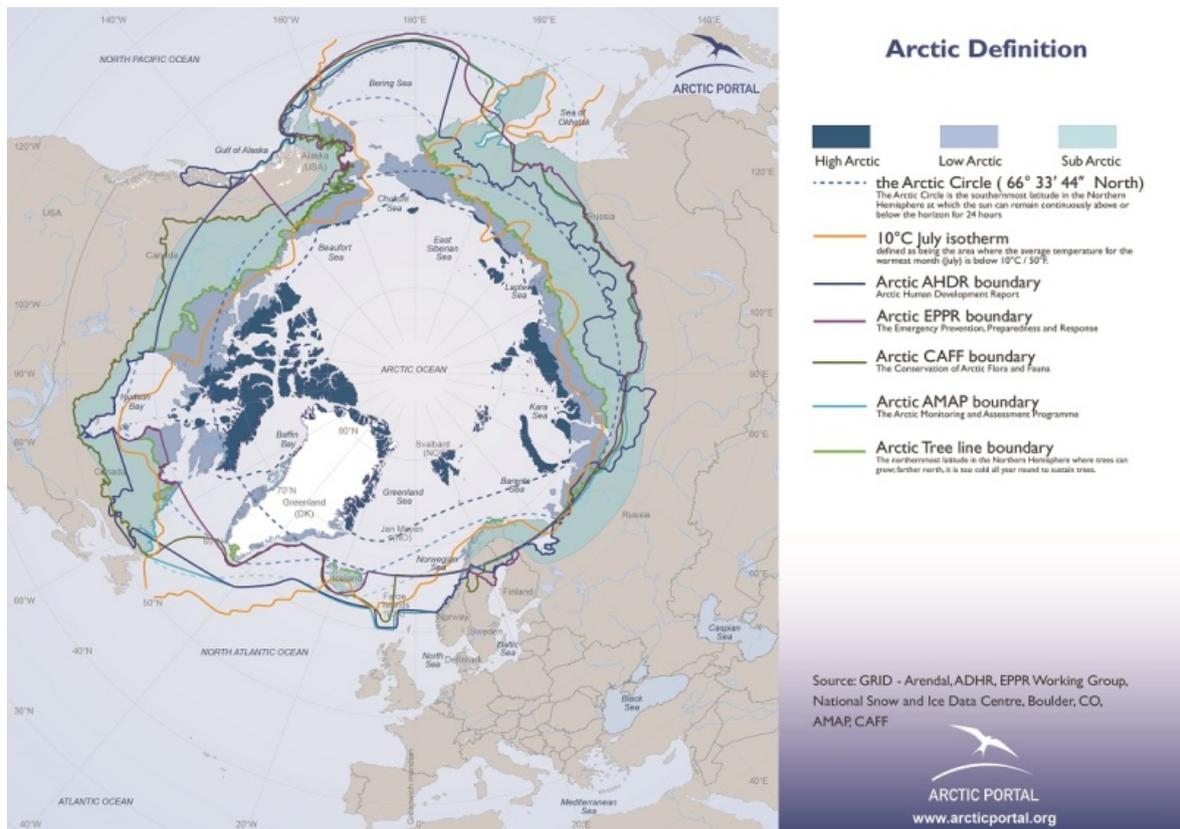
According to the tourism theory of E.Cohen (1996), tourism is a commercial hospitality with a possibility to have a rest, to travel. Also, he believes in significant social aspects of tourism such as ethnical identification, uneven social level of development between rural and urban areas, and attraction of different cultures. Another sociologist and tourism researchers R.Bachlaitner and A.H.Zins (1996) define tourism as a complex of tourists' behavior and value of cultural, economic

and environment impacts. Both, E.Cohen and R.Bachlaitner, state that tourism has social, cultural and economic impact of a hosted country. However, some researchers believe in “indiscipline” of tourism in general. J.Tribe and E.Wickens (2004) do not accept the study of tourism as an academic discipline, because study of tourism is closely connected with other disciplines (such as sociology, and geography) and does not have long history. Some researchers simplify the definition of tourism as “away from home”, or “travels for recreation” (“Polar tourism (research)” 2015). Due to many different types and purposes of tourism, there is no clear definition of tourism. Thus, I analyze tourism as a combination of moral and tourist rules.

Summarizing the above-mentioned theoretical view, it should be noted that winter tourism, especially in the Arctic regions, is the perspective direction of development mainly for the circumpolar states. Moreover, due to globalization and interdependency, this type of tourism needs to be global oriented. Of course, any risks and negative impact of international winter tourism have to be taken into account. Therefore, in my analysis, I am going to investigate the global winter tourism in the Arctic regions though the social voluntary perspective – the Arctic Charity.

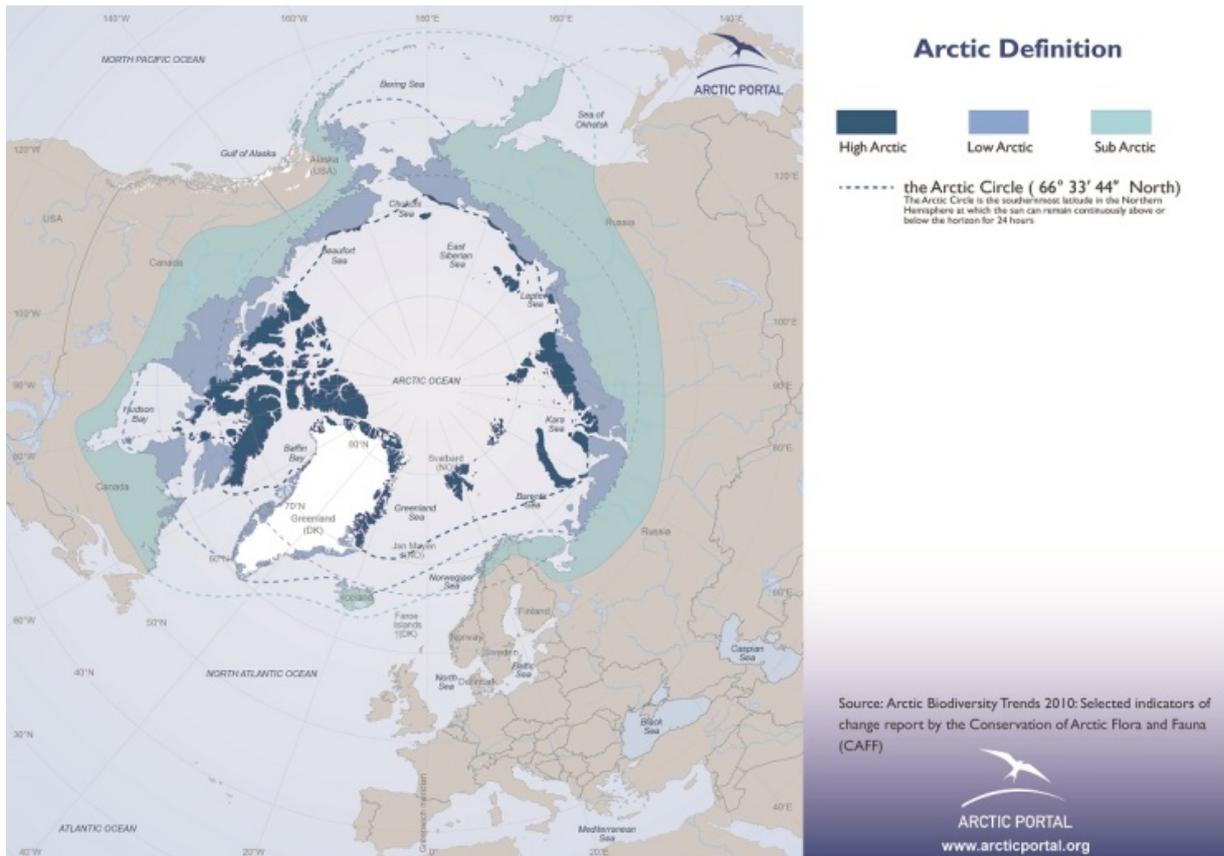
The literature analysis and the analysis of theoretical approaches lead to the hypothesis: Development of winter tourism significantly contributes to the development of the Arctic region by means of charity.

There are many different definitions of the “Arctic tourism” and “winter tourism”. All of the definitions are different by geographic principals. See map 1.



Map 1. Arctic Definitions. Source: The Arctic Portal (“Arctic Definitions,” 2017).

Within the chosen territorial field of analysis, it is important to define on which population would the “Arctic Charity” be oriented. According to the Arctic Human Development Report (AHDR, 2014), 4.05 million people live in the Arctic and unfortunately, since 2000 population is declining (- 1.4% during 2000-2010). In order to avoid selection bias, the project “Arctic Charity” is oriented on the whole Arctic population from the eight circumpolar states. It would be unfair to analyze only indigenous people, or only people who live above the Polar Circle, because of three factors: geographically wide spread of sub-Arctic territories, assimilation of the indigenous people, and migration to the Arctic from other regions. Therefore, due to wider orientation of my research, I analyze the boundary of “winter tourism” by the Arctic Portal, which includes High Arctic, Low Arctic, and Sub Arctic territories (See map 2).



Map 2. Arctic Definition. Source: The Arctic Portal (“Arctic Definitions,” 2017).

In order to understand efficiency and find the risks of the “Arctic Charity”, I analyze the role of the Arctic tourism in general and analyze contribution of the “Arctic Charity” to the development of the Arctic regions and use available databases: Arctic Human Development Research, Arctic Social Indicators 2010, 2015 (Larsen & Fondahl, 2014; Lebech, 2015; Nymand Larsen, 2010).

According to the geographical framework of my research, the main countries of the analysis are the circumpolar states. They cooperate with each other in many spheres but, unfortunately, they do not have a common Arctic tourism strategy and they primarily focus of their national touristic goals. The “Arctic Charity” will lead to further their partnership in common social, economic and tourism spheres.

## Chapter 2: The role of tourism

Tourism, as a branch of economy, is a connection between supply (tourists) and demand (touristic operators). Today, this connection is significantly increasing. Number of tourist operators is also rapidly increasing. Furthermore, many companies offer different Arctic or winter tours' packages (see the list of 100 companies, p.23)<sup>1</sup>. These tours include icebreakers, airplanes, visiting the Arctic regions, camping, rafting boats, introducing the culture of indigenous peoples, and activities with sled, Arctic dogs, reindeers, and diving or even skydiving at the North Pole. All these excursions (which means adventures or activities) satisfy the tourists' demand.

Despite the connection between tourists and tourist operators, the host place plays an important role. In order to host tourists, states need to develop their infrastructure, economic and touristic sectors. According to the World Tourism Organization (hereafter UNWTO), France, USA and Spain are leaders in the tourist arrivals (See Figure 1). The rank means that in these countries hotels' service, infrastructure and other tourist services are well developed and tourism plays a significant economic role.

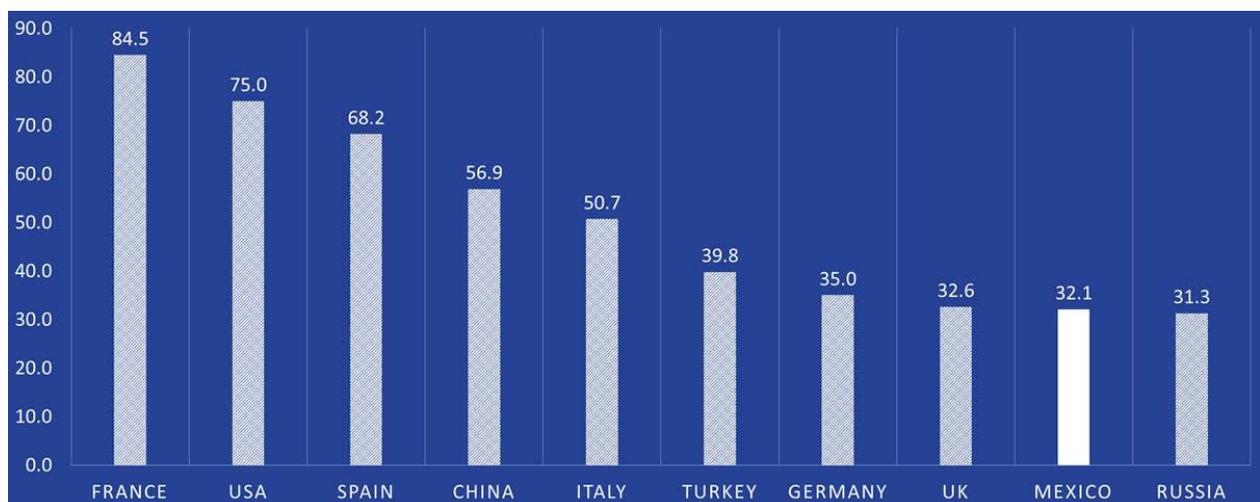


Figure 1. Tourist arrivals by principal destination- millions (2015). Source: UNWTO, World Tourism Barometer (7th Heaven Properties, 2016).

Today, tourists have many different variations of tourism: adventure tourism, eco-tourism, extreme tourism, cultural tourism, sport tourism, and many other types that are based on the special purposes, directions or activities. Every tourist can choose one of them, basing on their income and wishes. The Arctic special environment relates to the eco-tourism. However, Kuznetsov (2016) notes that usually, tourism does not relate to one special type. Thus, today, tourism is a sphere with established combined rules and directions. Also, he believes that eco-tourism should be based not only on the nature trips, but also accompanied by environmental education and communication with hosted society and their culture.

<sup>1</sup> The list is based on the Internet offers

### **Chapter 3: Purposes and advantages of the “Arctic Charity”**

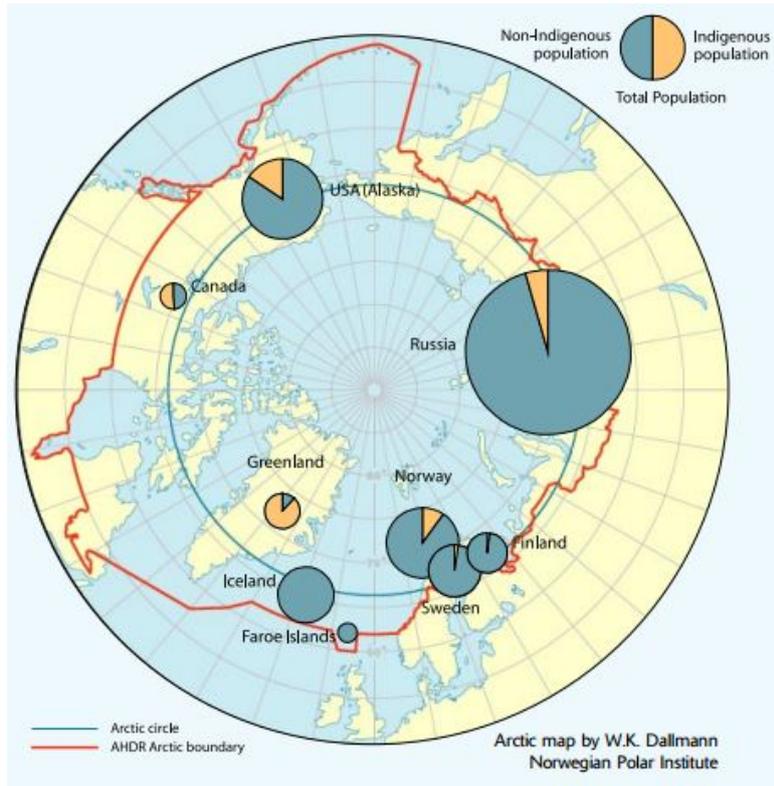
“Arctic Charity” is a new approach of winter tourism with combination business with pleasure. The most important feature of the project is the additional opportunity to develop the Far North regions. Most of the Northern regions are worse-developed than the capitals and the circumpolar states in general. Due to the climate conditions, and low infrastructural development, the delivery costs are high, industrial development is difficult, products’ supplement is weak, and prices in the Arctic regions are high. Also, the circumpolar states have problems with territory-management, waste, supplying their northern region, industrial development etc. Therefore, any donation for northern people (especially for children) will be useful and significant. I believe that the circumpolar states need to develop the regions, at first, and only then using advantages of the tourism. Today, these countries need to manage practical tourism, with concrete and real results. For example, the Russian program of cleaning the Russian Arctic territories. Volunteers from different countries join the project and combine Arctic tourism with a socially useful work (Sitdikov, 2016; “Volunteers to help clean Arctic island,” 2016).

In order to understand the purposes of the “Arctic Charity”, we need to analyze the basic economic and social conditions of the northern regions. According the Economy of the North 2008 (see figure 1), the most densely populated areas are Khanty-Mansi (1 488 300) and Arkhangelsk (1 280 200). However, the share of indigenous people is respectively 1.4 and 0.5. These mean that the percentage of migrations from other territories dominates. The highest shares of indigenous people and share of children aged 0-14 years in the total populations are in Nunavik, Greenland and in Nunavut (but in Nunavik live only 10 815 people). The lowest shares of indigenous people are in Murmansk, Arkhangelsk and in Lapland (0.2, 0.5 and 0.8 respectively). However, Iceland and Faroe Islands do not have indigenous people at all. The Map 3 demonstrates share of indigenous people in the Arctic.

Regions	Total population	Aboriginals	Females	Youth	Life expectancy	Infant mortality	Tertiary education	Personal disposable income	Dependency ratio	Composite index <sup>1</sup>
		Share of aboriginal peoples in the total population	Share of women in the total population	Share of children aged 0-14 years in the total population	Years	Per thousand live births	Share of tertiary education graduates in the total population	USD-PPP		
Alaska	670 053	13.1	48.5	21.5	76.7	6.7	24.7	32 811	0.6	9
Labrador	26 364	37.8	49.3	20.6	76.1	4.4	9.4	19 044	1.3	6
NWT	41 465	49.8	48.8	23.9	79.1	4.2	19.4	30 339	0.7	8
Nunavik	10 815	89.2	49.1	36.3	63.5	17.3	9.6	19 532	1.9	4
Nunavut	29 475	84.5	48.7	33.9	70.4	10.0	11.9	24 495	1.6	5
Yukon	30 375	25.0	49.7	18.8	76.4	11.0	23.4	29 761	1.0	8
Faroe Islands	48 183	0.0	48.1	22.8	78.9	4.4	23.0	15 275	0.7	7
Lapland	184 935	0.8	49.9	16.3	78.6	5.9	20.7	14 000	1.5	7
Oulu	465 018		49.7	19.8	79.0	4.2	22.7	13 847	1.4	7
Greenland	56 901	88.6	47.0	24.8	68.3	15.4	n.d.	15 237	0.9	5
Iceland	299 891	0.0	49.6	21.8	81.2	1.4	23.5	17 957	0.8	8
Finnmark	72 937	9.2	49.2	20.5	77.6	4.3	21.4	18 687	1.1	7
Nordland	236 257		50.0	19.3	79.4	3.3	19.8	18 700	1.2	7
Troms	153 585		49.6	19.7	79.0	3.7	25.1	18 550	1.0	8
Norrbotten	251 886	3.6	49.3	15.6	79.5	5.1	13.6	14 721	1.3	6
Västerbotten	257 581		50.0	16.1	80.4	3.1	19.4	14 139	1.2	7
Arkhangelsk	1 280 200	0.5	53.3	16.3	64.8	10.2	12.1	7 465	1.1	3
Chukchi	50 500	20.9	47.9	21.7	58.9	23.2	14.6	19 267	0.3	5
Evenk	17 000	19.3	50.0	24.2	59.1	21.3	11.5	9 765	0.5	4
Karelia	693 100	0.0	54.2	15.5	63.8	7.6	13.7	6 734	1.0	3
Khanty-Mansii	1 488 300	1.4	50.8	19.9	68.8	7.5	15.9	16 851	0.7	6
Komi	974 600	1.0	52.5	17.5	64.2	7.0	12.2	10 710	1.1	4
Koryak	22 600	34.2	50.0	22.0	56.0	33.0	9.9	12 389	0.6	3
Magadan	168 500	8.7	51.6	17.0	63.4	14.2	15.4	10 682	0.8	4
Murmansk	857 000	0.2	51.6	15.7	65.2	10.3	15.5	9 853	0.9	5
Nenets	42 000	14.3	51.2	22.3	62.2	15.2	9.9	..	0.5	4
Sakha	950 000	2.4	51.5	23.6	65.6	10.6	14.6	10 733	1.0	5
Taimyr	38 400	19.0	51.8	22.9	63.8	7.4	13.3	11 641	0.7	5
Yamal-Nenets	532 600	5.9	50.7	21.3	68.9	13.0	16.8	20 447	0.5	6

<sup>1</sup> This index is based on the 6 indicators: female proportion, life expectancy, infant mortality, tertiary education rate, personal disposable income and dependency rate.

Figure 2. Basic economic and social conditions, Arctic regions, 2006. Source: the Economy of the North (2008).



Map 3. Share of indigenous and non-Indigenous population. Source: Arctic social indicators (Nymand Larsen, 2010, p.19).

The majority of non-Indigenous population could be explained by migration to the Arctic regions because of governmental subsidies, jobs in the resources' extraction sectors, and governmental policies (for example, Soviet policy of resettlement in Northern regions). Figure 3 demonstrates the population of migrants to the Arctic regions.

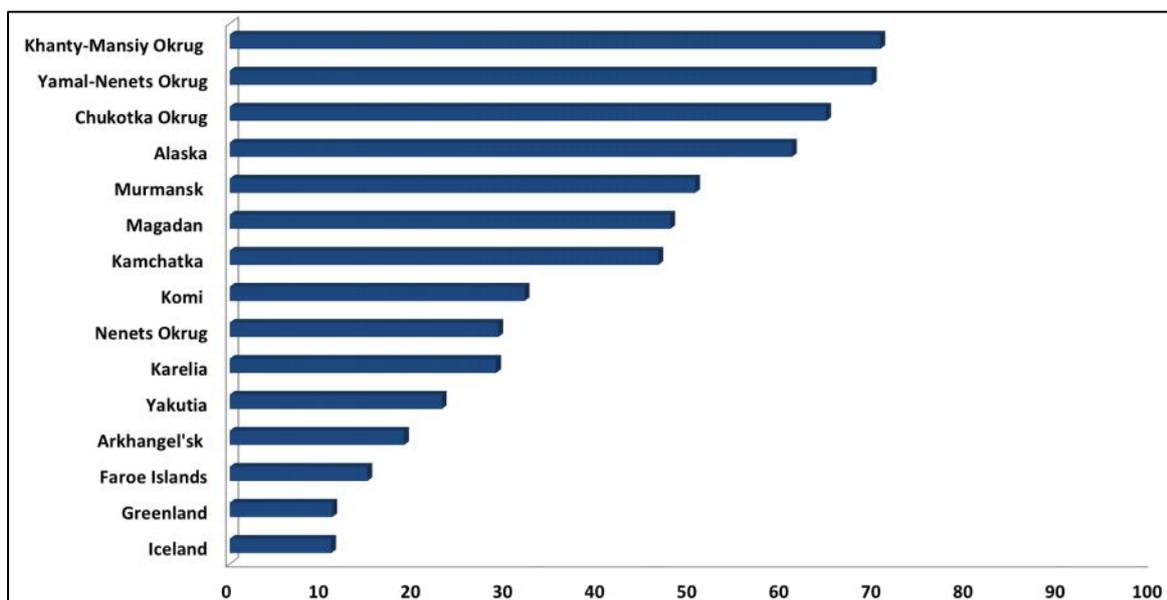


Figure 3. Percent of population born outside region in selected Arctic regions (2010). Source: Arctic Human Development Report (Larsen & Fondahl, 2014).

The difference between number of indigenous and non-Indigenous population shows the vulnerability of culture and language of indigenous people. However, this does not mean that all projects in the Arctic regions should be focus and oriented on the indigenous, because indigenous and non-indigenous children get education together, graduate from the same schools, use the same libraries and all of them want live in well-developed places. Therefore, the “Arctic Charity” does not divide these two groups of population and focus its purpose to all people that are living in the Northern regions. Figure 2 demonstrates that Troms, Alaska and Iceland have the highest share of tertiary education. However, in Labrador, Nunavik, Koryak and Nenets regions the share is around two times less. Alaska is the region with the highest personal disposable income (32 811 USD-PPP), the income in Karelia is 4.9 less.

Life expectancy is a universal indicator of the development of the country in general, as well as social and health development. Since 1950, the global life expectancy has been increased by 22 years (from 47.7 to 67.9) (Larsen & Fondahl, 2014, p.63). According to the World Health Organization, the highest life expectancy is in Japan (83.7 years) (“World Health Statistics,” 2014). According to the data of Economic and social conditions of the Arctic regions, 12 regions relate to the group above the World’s life expectancy (70.0-79.9 years). However, other 12 regions relate to the group under the world’s indicator (60.0-69.9 years), and three of these regions Koryak, Chukci, and Evenk have even lower level of life expectancy (50.0-59.9 years). From the Arctic regions, the longest life expectancy is in Iceland and Vasterbotten respectively 81.2 and 80.4 years. By contrast, Koryak, Chukci, and Evenk regions have a life expectancy around 20 years below the Icelandic level.

Summarizing the basic economic and social data in the Arctic regions from Figure 2, the 14 out of 29 regions are under the grade “5” out of “10” of the Composite index. To analyze the Arctic GDP per capita and average wage in the Arctic, important to not include the income from hydrocarbons and minerals extracted (Nyman Larsen, 2010, p.19). According to the World Bank, in 2013, the Arctic GDP was equal with Malaysian GDP (Larsen & Fondahl, 2014, p.156). Furthermore, despite the Arctic richness of resources, and high level of development of the circumpolar states, these territories are in the early stage of development and subsidized by the government (Nyman Larsen, 2010, pp.13-14). J.N.Larsen and G.Fondahl (2014) criticize the Arctic economic outflows. They state that the great part of the Arctic economy is based on the resource extraction; but unfortunately, this goes out of the Arctic regions. Therefore, dependency ratio (unemployment or outside the labor force), low education level, low female population, and low disposable incomes prove a necessity of Arctic regions’ economic and social development<sup>2</sup>.

Another reason of the “Arctic Charity” is health ratio. According to the AHDR (2014), in some Arctic regions indigenous people have low level of health development. According to Poppel (2007) the circumpolar states rated the health development by indicators: excellent, very good, fair and poor. He confirms that it is difficult to understand how people rate “excellent” or “poor” but Figure 4 demonstrates social attitude towards level of health development.

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<sup>2</sup> More details and explanation of the economic and social data of the Arctic regions see the “Economy of the North 2008”.

	Canada	Greenland	Chukotka	Alaska	Total
Excellent	28%	19%	5%	15%	18%
Very good	27%	59%	10%	32%	38%
Good	33%	18%	34%	30%	26%
Fair	9%	4%	29%	20%	13%
Poor	2%	1%	23%	4%	6%
	100%	100%	100%	100%	100%

Figure 4. Self-rated health, by region (SLiCA). Source: Survey of Living Conditions in the Arctic: SLiCA Results (Poppel et al., 2007).

Summarizing the above-mentioned indicators, such as life expectancy, level of health development and level of economic development, all these factors confirm the necessity of general development of the Arctic regions. Principles of the “Arctic Charity” will lead to sufficient development of the Northern regions.

#### Chapter 4: Concept of the “Arctic Charity”

Since the Arctic area is relatively new on the market, there is a chance to introduce my approach in practice. First of all, tourism is a sphere, which is oriented on people’ wishes and human behavior. Thus, everyone can accommodate valuable and significant contribution to the Arctic development.

Due to the high price of winter tourism tours and increasing number of tourists, I propose to tour operators and tourists to donate 0.5% of the tour’s price for the further development of the Arctic regions. This approach will build a “checkpoint” in front the gate to the North. The Arctic Charity could be implemented trough the several opportunities:

1. New accepted international rule of tourism;
2. “Arctic Charity” as a NGO;
3. One of the Arctic Council’s programs.

In case the “Arctic Charity” would be accepted as a new additional rule of tourism; it would become a necessary part of a tour. Tourists and tour operators would need to follow the rule. However, there is a challenge of responsibility and implementation. Tourists and tour operators are not able to define the direction of the charity without a deep scientific analysis of the needs. Thus, an Arctic organization or the hosted country has to propose examples of charities’ investment. In case “Arctic Charity” become a NGO, it would be politically independent with a possibility to cooperate and financially help the “Arctic Charity” from tour operators, other NGOs and International organizations. There is no doubt, that NGO “Arctic Charity” would be responsible for implementation and the results of the activity.

However, I believe, that the most effective opportunity of the “Arctic Charity” implementation is acceptance the project by the Arctic Council because of three important reasons. The first is the fact that the Arctic Council is the main institution in the Arctic field. The second reason is a membership of indigenous people in the Arctic Council. Because the fact that the most of Arctic tourist operators are located not in the Arctic territories and due to vulnerability and a lack of understanding the indigenous’ culture by other countries, indigenous people needs to explain and be actively involved in any Arctic project. This can be realized through the Arctic Council sessions,

interviews or during conferences of indigenous peoples that are annually held (such as “World Indigenous Peoples Conference on Education”, “Indigenous Conference”, “International Indigenous Research Conference” etc.).

The third reason is political. Due to different Arctic strategies of the Arctic participant states, their national goals, and threats of financial dependency, the “Arctic Charity” needs to be accepted by each state on the basis of the Arctic Council. Otherwise, countries would be against of the project, because “Arctic Charity” might be used as a method of soft power and as external intervention. Therefore, the Arctic Council would define possible and accepted spheres for donation.

Examples of the Arctic Charity directions are:

1. Health development (hospitals, medical points, injections, prevention the infections and epidermises);
2. Education (kindergartens, schools, universities, workshops, supporting libraries, the culture and languages of indigenous peoples, digitalization and translations of rare indigenous literature);
3. Grants and organizing return visits;
4. Presentations, comments about a trip in order to explain the Arctic reality for other people, who cannot travel there;
5. Supporting and building national parks.

According to the “Arctic Charity”, every tourist, who would come to the North (any place in the High-, Low- or Sub- Arctic), may sign an agreement on the implementation of good and useful things. I believe that every tourist who can buy a tour to the Arctic or to the North Pole, can also donate at least 0.5% of the tour’s price. Otherwise, at least one book from a tourist for local northern libraries can impose significant contribution. Also, assistance in organizing international trips for northern children will lead to expand the Arctic children’ horizons.

## **Chapter 5: Risks of the “Arctic Charity”**

Despite the advantages of the “Arctic Charity”, the project has several risks that are obligatory have to be taken into account.

The first risk is a “brain drain”. Due to globalization and migration to the Arctic regions from other regions, the western model of education has been accepted as a unique model. However, indigenous people have special cultures and traditions, thus, they need to have a special model of education. Many Arctic researches are trying to build a system with respect to the Northern culture, traditions, and popular professions. For example, New Zealand has experience in implementing own education system, which is oriented on their indigenous population (Durie, 2005).

Because of insufficiency of implementation of the western model of education in the Northern regions, children graduate schools without an understanding of their future. Therefore, often, children from the Northern regions drop the schools (Dudeck, 2013). The choice to the specific profession is also difficult for them, because they cannot imagine how to apply their knowledge in the future.

Due to uneven development of Northern regions, difference in lifestyle, and usually a difference in standard of living, people migrate out rural areas. In 2008, urbanization reached 50% of the world's population. In the Arctic states, around 75% of population lives in the urban areas (See figure 5). For example, today, population in Murmansk and Archangelsk is over 300 000 people (Heleniak, 2013; WorldAtlas, 2016a, 2016b). As a result, there is a lack of universities in the northern regions. Thus, young people have to leave their home place in order to get a tertiary education (Larsen & Fondahl, 2014, pp.354-355). This also increases the percentage of school and universities quitting. Furthermore, after University young people do not come back to the small towns and villages because of a lack of opportunities to apply their professional knowledge. However, the socials interviews show that in case their home place would have more opportunities to find high quality job, they would love to come back. Another educational problem is temporary and migrated teachers. Usually, they do not have experience to work within the Northern cultures and they implement approaches from other regions (Larsen & Fondahl, 2014, p.319).

Therefore, in order to avoid this risk, the "Arctic Charity" does not offer a strict list of spheres for charity. Every direction should be specified, unique, and accepted by the Arctic academics and indigenous community. I believe that international educational workshops, seminars, lectures with international indigenous community would be useful (For example Arctic educational forum). Moreover, according to the ASI-2010, the increase of level of education will lead to the further economic and social development. Also, supporting the indigenous languages would lead to increasing language speakers, and realization of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) to get an education in mother language ("A/61/L.67 and Add.1," 2007).

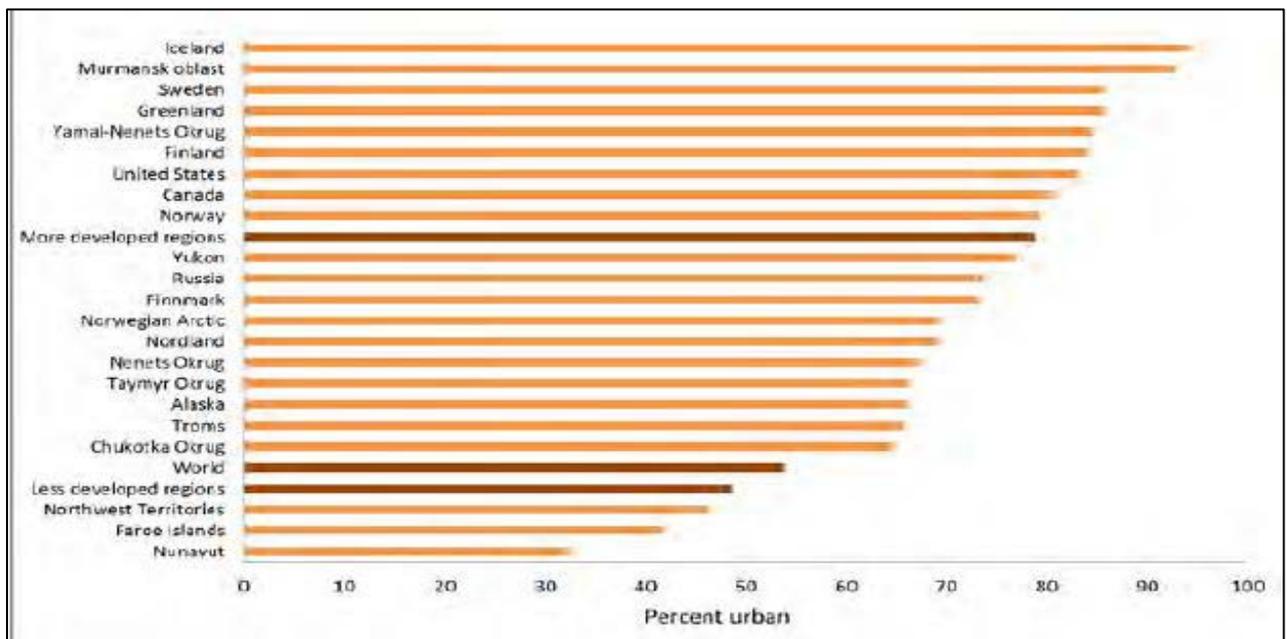


Figure 5. Percent urban in selected Arctic Countries and regions (2010). Source: Arctic Human Development Report (Larsen & Fondahl, 2014, p.96).

Therefore, summarizing all the above-mentioned points, I would like to add that Arctic and Northern regions always have been attractive for travelers. These places are special not only due

to their natural and climate conditions, but also because of the ability to unite people, researchers, tourists and even states. The opened winter tourism gave a chance for everyone to see and visit the Arctic regions. However, today's world has a lot of consumer attitudes and usually, winter tourism is an elite type of tourism and not everyone can become a part of the North. Thus, I believe that tourism should not be focused only on the economy. The "Arctic Charity" is the forgotten human relation to nature of our planet. Principles and goals of the "Arctic Charity" are oriented on help, initiation kindness and promotion the Arctic development by combining business with pleasure. The "Arctic Charity" can be implemented not only for indigenous and non-indigenous people in the Northern regions, but also for Arctic animals' protection and for national parks in the Northern regions.

I assume, that Arctic Charity tourism will attract more tourists, experts and scientists from many different countries, and more people around the world will know more about the Arctic regions. "Winter tourism" has a future, but how it will be managed depends on our behavior. Scientists and governments will continue to research the Arctic regions, to deal with consequences of climate change, and our responsibility is to avoid consumer attitude towards nature and to start thanking nature for all that we have.

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## Appendix: List of the touristic companies that offer Arctic and North tours:

1. Abercrombie & Kent - <https://www.abercrombiekent.com/travel-destinations/arctic-cruise/>
2. AdrenalinTour - <http://adrenalinetour.ru/>
3. Adventure Canada - <http://www.adventurecanada.com/>
4. Adventure Life - <http://www.adventure-life.com/arctic>
5. Adventure World - <http://www.adventureworld.com.au/arctic/>
6. AdventureSmith Explorations - <https://www.adventuresmithexplorations.com/arctic>
7. Arctic Adventure Tours - <http://arcticadventuretours.no/>
8. Arctic&Antarctic collection - <http://www.arcticantarcticcollection.com/>
9. Arctic Direct - <https://www.arcticdirect.co.uk/>
10. Arctic Expedition - [http://www.arcticexpedition.fi/Arctic\\_Expedition/Arctic\\_Expedition.html](http://www.arcticexpedition.fi/Arctic_Expedition/Arctic_Expedition.html)
11. Arctic Kingdom - <http://arctickingdom.com/safaris/scheduled-safaris/>
12. Arctic Odysees - <http://www.arcticodyseys.com/index.html>
13. Arctic Range Adventure - <http://www.arcticrange.com/>
14. Arctic Russia Travel - <http://www.arcticrussiatravel.com/contact-us/>
15. Arctic Sea Tours - <http://www.arcticseatours.is/en>
16. Arctic Tour - <http://www.arcticatour.com/>
17. Arctic tours - <http://www.arctic tours.is/>
18. Arctic Trucks - <http://arctictrucks.com/>
19. Arctic Wildlife Tours - <https://arcticwildlifetours.com/>
20. Arctic World - <http://www.arctic-world.com/north-pole-tour.html>
21. Arctic wonderland tours - <http://www.arcticwonder.com/>
22. Arctic Whale tours - <http://www.arcticwhaletours.com/>
23. Arktis-tours - <https://arktis-tours.de/>
24. Alaskan Arctic Turtle Tours - <http://wildalaska.info/arctic-circle-tour/>
25. Alaska tour&travel - <http://www.alaskatravel.com/alaska/north-pole.html>
26. Aurora Expeditions - <http://www.auroraexpeditions.com.au/>
27. Baikal Nature - <http://www.baikalnature.com/tours/658319>
28. Best Russian Tour - [http://www.bestrussiantour.com/incredible/north\\_pole](http://www.bestrussiantour.com/incredible/north_pole)
29. Beyond Arctic - <http://beyondarctic.com/>
30. Bodo - <http://www.visitbodo.com/?id=1335815367>
31. Capitan's Choice - <http://www.captainschoice.com.au/Luxury-Tours/Regions/Arctic-and-Antarctic/north-pole-cruise>
32. Churchill Wild - <http://www.churchillwild.com/>
33. Circumpolar expeditions - <http://www.arctictravel.net/expedition-tour-services.html>
34. Diamir – [www.diamir.de](http://www.diamir.de)
35. Deutsche Polarflug - <http://www.polarflug.de/index.php?p=1>
36. Discover the World - <https://www.discover-the-world.co.uk/destinations/arctic-holidays/north-pole>
37. Eclipse Travel - <http://eclipsetravel.com.au/arctic/north-pole/>
38. EderTreks - <https://www.eldertreks.com/region/arctic>
39. Expeditions - <https://www.expeditions.com/>
40. Expeditions Online - <http://expeditionsonline.com/arctic/>
41. Expedition Trips - <http://www.expeditiontrips.com/arctic-cruises-north-pole/>
42. Explore the North - <http://explorethenorth.se/>
43. Exodus travels - <https://www.exodustravels.eu/at/arctic-holidays>
44. EYOS - <http://www.eyos-expeditions.com/destinations/>
45. Fathom Expeditions - <http://www.fathomexpeditions.com/>
46. Five Stars of Scandinavia - <http://5stars-scandinavia.com/>
47. Fjord Travel - <http://fjordtravel.no/tours-cruises-norway/arctic-norway-tours-cruises/>
48. Fjällräven Polar - <http://polar.fjallraven.com/>
49. G Adventures - <https://www.gadventures.com/travel-styles/cruising/expedition-cruises/>
50. GNorth - <http://gonorth-alaska.com/travel-center/into-the-north/arctic-circle/>
51. Hurtigruten - <https://www.hurtigruten.us/>
52. Ice Axe Expeditions - <http://www.iceaxe.tv/>

53. Ice Trek - <https://icetrek.com/join-a-trip/north-pole-and-arctic>
54. International Expeditions - <http://www.ietravel.com/custom-options/canada-arctic-wilderness-lodge>
55. Ikarus tours - <http://www.ikarus.com/arktis-kreuzfahrten.html>
56. Intrepid - <http://www.intrepidtravel.com/us/arctic>
57. Journeys International - <http://www.journeysinternational.com/destinations/polar/arctic/north-pole-90-degrees-north>
58. Kola Travel - [http://www.kolatravel.com/arctic\\_expedition.htm](http://www.kolatravel.com/arctic_expedition.htm)
59. Knightly Tours - <http://knightlytours.com/arctic/>
60. Kreuzfahrten& Universal Reisen - <http://www.seereisebuchen.de/arktis-kreuzfahrten>
61. KruizInfo - <http://www.kruizinfo.ru/arctica/tours/45/>
62. LUEX - <http://www.luex.com/spitzbergen-arctic-ski-and-sail.html>
63. Luxury Holliday - <http://www.lholiday.ru/country/arctic-2.shtml>
64. National Geographic - <http://www.nationalgeographicexpeditions.com/expeditions/polar-bears-cruise/detail>
65. Natural habitat - <http://www.nathab.com/our-trips/>
66. Noble Caledonia - <https://www.noble-caledonia.co.uk/>
67. Nordic Travel - <http://nordictravel.ru/>
68. Northern Alaska Tour Company <http://www.northernalaska.com/>
69. North Pole Trekking - <http://www.northpoletrek.com/>
70. Oceanwide Expeditions - <https://oceanwide-expeditions.com/the-arctic/cruises>
71. ONE Ocean Expeditions - <http://www.oneoceanexpeditions.com/>
72. Peregrine - <http://www.peregrineadventures.com/en-us/arctic>
73. Polar adventures - <http://www.polaradventures.de/>
74. Polar Cruises - <http://www.polarcruises.com/arctic>
75. Polar Explorers - <http://polarexplorers.com/>
76. Polar Kreuzfahrten - <http://polar-reisen.at/>
77. Polar Quest - <https://www.polar-quest.com/>
78. Polaris tours - <https://www.polaris-tours.de/>
79. Polar-Travel - [http://www.polar-travel.com/english/arctic\\_201617/00015.htm](http://www.polar-travel.com/english/arctic_201617/00015.htm)
80. Poseidon - <https://poseidonexpeditions.ru/arktika/>
81. Quark Expeditions - <http://www.quarkexpeditions.com/en>
82. Sevprostor – <http://www.sevprostor.ru/>
83. Silversea - <http://www.silversea.com/>
84. Special - <http://www.specialtravelclub.ru/kruizy/arktika>
85. Spitsbergen-Svalbard - <https://www.spitsbergen-svalbard.com/arctic-expeditions-join-us.html>
86. Starling - <http://www.starlingreizen.be/en>
87. Steppes Travel - <http://www.steppestravel.co.uk/north-pole-holidays>
88. Touch the Arctic tours - <http://www.touchtheartictours.com/>
89. TourIqaluit - <http://www.touriqaluit.com/>
90. Travel Voyage - <http://www.voyageconcepts.co.uk/travel/>
91. The North Pole Expedition - <http://northpoleexperience.com/>
92. The PlanetD - <http://theplanetd.com/>
93. Tui - <https://www.tui-wolters.de/reiseziel/arktis.html>
94. VICAAR - <http://www.northpolextreme.com/beginindex.html>
95. Victory - <http://www.victory-cruises.com/arctic.html>
96. Waterproof Expeditions - <http://waterproof-expeditions.com/expeditions>
97. Windrose - <https://www.windrose.de/expeditionskreuzfahrten/>
98. Wild Norway - <http://www.wild-norway.com/category/expeditions/>
99. World Expeditions - <http://www.worldexpeditions.com/au/index.php>
- 100.50 North Nordic - <https://www.fiftydegreesnorth.com/>

# Future of winter tourism in Turkey: Destination strategies for the Erzurum-Erzincan-Kars Winter Tourism Corridor (WTC)

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## Abstract

Since 1980s, tourism in Turkey has been encouraged to become a major industry because of its economic benefits. Yet, incentives have been supplied mainly for mass summer tourism development. Today, winter tourism, among other alternative tourism types, is one of the foremost options to diversify the tourism offer in the country. The main objective of this study is to explore strategies for winter tourism destinations through the case of the recently proposed Erzurum-Erzincan-Kars Winter Tourism Corridor (WTC) in Northeast Turkey. Thus the study examines alternative strategies for WTC that were proven successful in other winter tourism destinations. Because of its exploratory nature, a qualitative approach has been pursued. Initially 21 winter tourism experts from 16 benchmark destinations have been identified and interviewed for best practices. Then, suggested strategies were validated by three different workshops in the three provinces of the WTC. Finally, the authors reached a consensus on the list of 20 destination strategies under three main categories: development, management, and marketing. Although the strategies proposed in the study are specific to the WTC, it is thought they can also be adapted to other winter tourism destinations at the early stages of their life cycles. Validation of these strategies for different spatial settings and tourism types is suggested for further research.

**Keywords:** Winter Tourism, Strategy Formulation, Destination Development, Destination Management, Destination Marketing, Turkey

## Introduction

Since 1980 tourism in Turkey has been subsidized to become a major industry because of its economic benefits such as income generation, employment, multiplier effects and so on. Yet, these incentives were supplied mainly to beach destinations which improved mass tourism. Although serving to a large volume, mass tourism has its disadvantages such as seasonality, and low per tourist spending. Realizing these challenges from 1990s tourism policy in Turkey has also shifted to target a more diversified product with the aim of reducing the dependency to beach tourism. From the 6th Five Year Development Plan (1990-94) onwards, winter tourism among other alternative tourism types (i.e. cultural tourism, MICE, health tourism, golf tourism, eco-tourism, marine tourism) has been considered as an option to facilitate a more sustainable tourism development in Turkey (Dincer & Cetin, 2015).

Winter tourism potential of Turkey has been discussed in *Turkey Tourism Strategy 2023* policy paper, and a master plan concerning winter tourism development was suggested by the Ministry of Culture and Tourism (MoCT, 2007a). Improvements in physical infrastructure, enlarging the

domestic demand and facilitation of national and international winter sport events have been recommended. The Winter Tourism Corridor (WTC) as displayed on Figure 1, including three provinces (Erzurum, Erzincan and Kars), was also discussed in this document and a call is made to develop these as winter destinations. Despite the discussions over the past 30 years this winter tourism potential was realized except a limited success in previously established destinations such as Erciyes. Yet, winter tourism in the WTC in Northeast Anatolia, especially in terms of its relative resilience against climate change (Demiroglu et al., 2016), is considered to offer a much better potential than its predecessors.

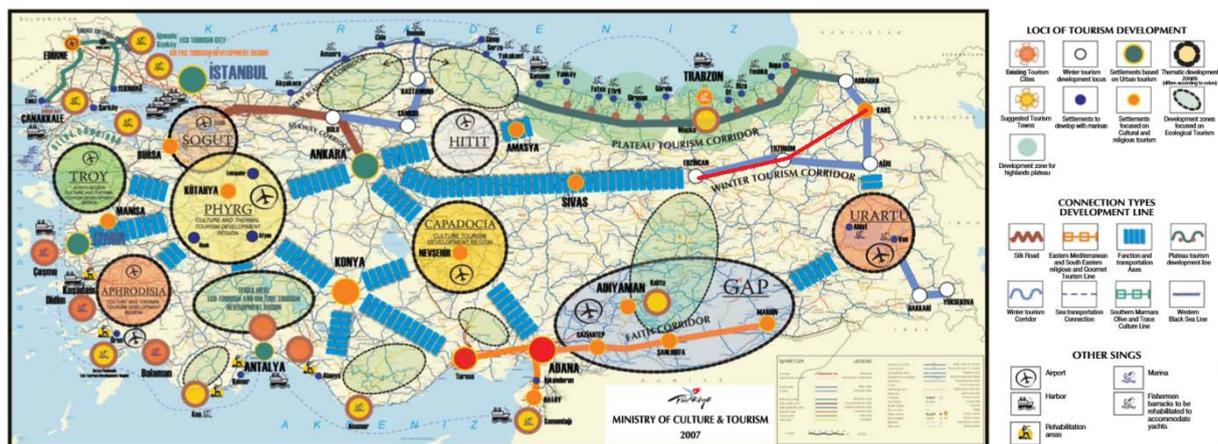


Figure 1. The WTC within the Turkish Tourism Strategy 2023 Conceptual Action Plan (Source: adapted from MoCT, 2007b: 62-63).

This paper aims to explore destination strategies proven successful in various winter tourism destinations and adjust them to WTC based on destination governance literature, expert in-depth interviews and workshops conducted with stakeholders. Analysing Turkey as a case in winter tourism destination development is important because a heavy physical investment is already realized in many different provinces without a holistic destination development perspective and a concrete strategy. Thus a large number of slopes, lifts and equipment are (to be) underutilized and some of these are even left to decay. The first section of the paper discusses the winter tourism potential in Turkey and describes the current situation WTC in Northeast Anatolia. Finally, based on an empirical field work, the paper concludes with various strategy suggestions based on the findings of qualitative data collected from stakeholders.

## Winter Tourism in Turkey and the WTC

While issues such as climate change (Demiroglu et al., 2013), market stagnation (Vanat, 2016), and hyper-competition (Flagestad, 2015) are causing major concerns over the sustainability of winter tourism, emerging destinations and markets such as China, Russia and Turkey provide new opportunities for the future of the industry. In Turkey, winter tourism industry is undergoing a rapid transformation. While public institutions previously dominated the areas of infrastructure, promotion, and publicity in the past 30 years, this trend has changed, especially in the Western resorts of Turkey. Investments in both building new and renewing existing ski areas and resorts have also continued to grow; and expected to continue in the next decade. The publicity and the popularity of skiing and other snow sports has started to increase among the Turkish population,

and a winter tourism culture has emerged. The willingness of public and private entrepreneurs in further developing the industry remains strong.

Turkey has great potential to provide suitable physical areas for snow sports. The sum of areas above a 2,000 masl snow reliability threshold and below a 3.500 masl acclimatization limit is approximately 83,000 km<sup>2</sup>. Compared to the total 192,000 km<sup>2</sup> area of the Alps, which span over the most important ski destinations such as France, Switzerland, Austria, Italy, Germany and Slovenia, the single potential of Turkey would sound even stronger (Göymen et al., 2017). Figure 2 displays the most complete and accurate database on the inventory of ski areas in Turkey. The map distinguishes those areas with a relatively superior lift quantity as “ski resorts,” which cater to the national and the regional markets rather than their immediate peripheries.

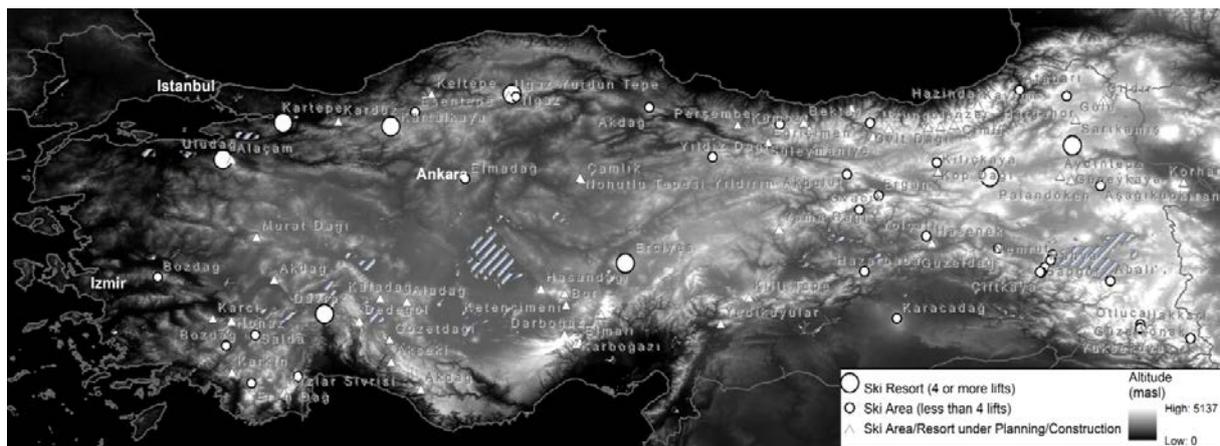


Figure 2. Distribution of Ski Resorts and Areas in Turkey (Source: Göymen et al., 2017).

In order to utilize Turkey’s winter tourism potential further, various authorities and stakeholders have proposed and undertaken numerous development plans. For instance, the Ministry of Culture and Tourism has identified 48 sites suitable for ski resort development and declared 15 more “Tourism Centres” and “Culture and Tourism Conservation and Development Zones” that would increase the number of licensed beds from 9,549 to 78,645. The Turkish Ski Federation, in addition, has recently announced a 12-year, USD 48.5 billion worth mega project to develop 100 resorts with 5,000 hotels in 42 provinces, to raise the number of domestic snow sports enthusiasts from one to four million, and eventually to bid for the 2026 Winter Olympics (Hudson & Hudson, 2015). Besides these national authorities, many local governments and municipalities and private entrepreneurs are also undertaking various ski area and resort development projects.

In this context, the “Winter Tourism Corridor (WTC)” along the Erzincan-Erzurum-Kars route was one of the initial projects defined in the Action Plan 2007-2013 (MoCT, 2007b), and subsequently, a series of largely public-funded physical investments were realized in the three provinces, especially centred around the existing ski resorts of Palandöken and Konaklı in Erzurum, Ergani in Erzincan, and Sarıkamış in Kars. Today, an EU-funded project is in effect to further widen the scope of the corridor.

Yet, Turkey’s potential development into a global winter tourism domain will require consideration of various internal and external factors. The current focus is concentrated on physical investments on lifts, slopes and equipment, neglecting a holistic perspective on destination development. Value chain recognition, destination governance, product

development, marketing, positioning and branding, capacity building, and sustainability of winter tourism still emerge as main challenges for WTC.

Different than previous studies exploring destination development in existing destinations at various stages of their life cycle, this study focuses on a region that is yet to be established as a destination and analyses it from its early inception. Literature on winter tourism destination development also concentrates on established destinations and do not address the special considerations for planned or new destinations. Hence the current literature is focused on destination development re-design and marketing at best. The case of the WTC however is able to reflect winter tourism destination development from its outset. Thus this study offers a more relevant version of destination development in potential winter destinations that are not current tourism destinations.

## **Methodology**

The main objective of this study is to explore successful strategies for winter tourism destinations and adopt these to the WTC in Turkey. No single list would identify all strategies applicable to all destination at all times. Selection of site is important to demonstrate more meaningful examples to destination stakeholders and planners. WTC is a unique case not only because it is at early stages of its development but also represents a holistic destination containing three provinces with different characteristics. Because of its exploratory nature, a two step qualitative approach was considered to be more suitable for the study.

In order to identify successful strategies in other winter tourism destinations, during the first phase of the study 16 benchmark destinations were identified. 21 winter tourism experts from these winter tourism resorts were interviewed during Nov. 2016. In order to identify respondents a snowball technique was used to recruit participants at each winter destination. At the end of this process seven respondents representing four destinations in Italy (Cortina, Courmayeur, Madesimo, Val di Sole), six respondents from six winter tourism destinations in Austria (Ischgl, Kitzbuehl, Ötztal, Schladming, Tirol, Zillertal), four respondents from Turkey (Erciyes, Kartalkaya, Uludag), two respondents from France (Chamonix, Val D'isere) and one participant from Bansko, Bulgaria were interviewed (See Appendix). The main enquiry was to find strategies needed for development of the WTC in Turkey as a winter tourism destination. The interviews took 47 minutes on the average and were all electronically recorded and transcribed verbatim. The main inquiry were the strategies that experts consider as key to their destinations' success. Additional probing questions as to how, who and why were also asked to identify the details as to implication of these strategies and their adoption to WTC. At the end of this process authors agreed on data saturation and decided that respondents started to repeat previous strategies mentioned by other experts. The transcriptions were then content analysed and various strategies were identified.

During the second stage of the field work in order to validate the strategies suggested by winter tourism experts, and discuss their integration at WTC three different workshops in the three provinces of the WTC (i.e. Erzurum, Erzincan and Kars) were also organized during December 2016. Stakeholders (e.g. industry professionals, government officials and scholars) were invited to these workshops. Their feedbacks on possible strategies and their adoption to WTC were sought. A total of 61 stakeholders (22 from Erzurum, 20 from Erzincan and 19 from Kars) participated to the workshops although 75 responded to rsvp. The design of these meetings were

arranged in workshop structure rather than a focus group format in order to encourage interactive discussion and brainstorming on the strategies suggested by the winter tourism destination experts. During the first half of the workshops participants were presented with the strategies suggested by the experts of the benchmark destinations and the second half of the workshops were spared for the debate on integration and implementation of the strategies to WTC.

Thus provincial workshops also served as a member check because various experts were also invited. The provincial workshops were also recorded and coded. At the end of this process strategies were identified by each author individually. A total of 36 strategies were identified, although most of them overlapping the interclass agreement was only 66%. This was expected as there was no initial coding scheme imposed on judges because of the exploratory nature of the study. Authors then discussed their classifications during several meetings. Various strategies were merged (e.g. human resources training were integrated with capacity building), some were divided (e.g. positioning strategies into branding and competition) others that were not applicable at WTC were removed (e.g. sponsoring international winter sport figures from the destination) and a consensus on a final version of strategies was achieved at the end of the third discussion. During discussions a deductive approach was also used based on the information presented in destination literature. The findings are presented in the next section.

## **Findings**

Interviews with the professionals from benchmark destinations show that there is not a single formula of successes for a winter destination. Each destination has advantages and disadvantages. However there are common strategies proven to be successful. Based on transcribed data and interclass agreement, these strategies were classified under three main categories; development strategies, management strategies and marketing strategies.

Table 1. Categorisation of destination strategies for the WTC.

<b>Destination Strategies</b>	<b>Destination Development</b>	Institutionalization & Governance
		Technical Product
		Tourism Culture
		Managing Supply & Demand
		Accesibility
		HR & Capacity Building
		Investment Facilitation
	<b>Destination Management</b>	Seasonality & Diversification
		Sustainability
		Improving Tourist Experience
		Event Management
		Funding
	<b>Destination Marketing</b>	Improving Resident Demand
		Distribution Channels
		Cooperation
		Loyalty & Recommendation
		E-marketing
		Branding
Collaboration & Strategic Alliances		
Competition		

### Destination Development Strategies

Destination development strategies include activities that focus on the setup of the destination during its birth. During this stage, destination governance organization (i.e. DMO, DMC, CVB) would be created; improvements in accessibility, developments in infrastructure and product, creation of tourism culture and enhancements in HR capacity are the general objectives of destination development strategies. The DMO emerges as the main actor in design and implication of these activities. Yet, public organizations dealing with incentives, subventions, building permits, education, training, transportation are also stated as major stakeholders. Destination management strategies are listed as the following.

#### *Destination governance and institutionalization strategies*

Destinations are amalgam of tangible and intangible services, attractions and products created and offered by different stakeholders. By interacting with these resources and stakeholders, tourists create their own experiences (Cetin & Bilgihan, 2016). The total value tourists extract from these individual experiences might be maximized if the stakeholders are coordinated to offer

a consistent message and align their efforts on a shared vision of the destination. Considering various actors and factors involved in creation of the overall tourist experience, destinations need a governing body to create, lead and implement destination wide strategies. Existence of an effective DMO was among frequently mentioned factors for destination success by experts.

The role of meta management in destination success has also been acknowledged in the literature (e.g. Bornhorst et al., 2010; Sainaghi, 2006). Yet, such structures have been neglected in Turkey except the Provincial Directorates of MoCT operating in each city. However these offices lack the structure, funding and expertise to act as an efficient coordinating body. Resource management, product development, investor facilitation, communication with and coordination of stakeholders, visitor information and reservations, destination promotion, internal marketing, training, research, fund raising, networking, developing and implementing destination wide strategies have been identified as major responsibilities of DMOs both by respondents and the literature (Sainaghi, 2006; UNWTO, 2007).

Although the importance of DMOs is acknowledged there are debates on their structure. For example, a public DMO (community model) lacks outcome orientation, usually inefficient in taking and implementing decisions. A private DMO (corporate model) on the other hand is more market focused yet has limited concern for the long term sustainability and usually have problems with funding (Flagestad & Hope, 2001; UNWTO, 2007). Hence a combination of two; a public-private company to develop, manage and market the destinations at WTC is suggested by most respondents. Considering the current role of the public investments particularly in management of ski infrastructure at WTC, high level involvement of municipalities is required. Moreover, because WTC as a destination is at the introduction phase of its life cycle the private stakeholders have limited knowledge and finances to set-up and manage the DMO. Adding the complexity and centralization of the legislative framework in Turkey, public involvement at the DMO becomes imperative. All experts except two also agreed on involvement of the local government to management of DMOs. Because of different characteristics of destinations; a two level governance is suggested; three provincial DMOs at each province (i.e. Erzincan, Erzurum and Kars) and a central corridor DMO for the whole WTC.

### *Technical product strategies*

These strategies relate to technical issues. Improving the ski related physical infrastructure such as technical equipment and their maintenance, variety of slopes, types of lifts, snowmaking, night illumination, grooming, connection and transfers between different slopes, design and management of ski pass and adoption of the most appropriate technology to handle ski related demand are considered important activities. One major problem with WTC for example is the fragmented management of the lifts. Currently five different organizations operate the lifts in WTC without a common ski pass. Clydesdale (2007), states that larger resorts generally gain more revenue per visit from skiers than the smaller resorts, as they have higher skipass prices, including multiple lifts and more profit centres generating income. Although WTC has considerable size and number of ski lifts available, because of the fragmented management, the lifts are seen as loss centres rather than profit generating services. Consequently, since the ski areas in WTC do not share a common skipass, they are identified as individual products in the market and evaluated for their single size and characteristics. A central corridor DMO would be responsible in creating and managing the WTC ski-pass, which would also be more attractive for potential visitors. Various experts stated that the size of a ski area is one of unique selling propositions particularly

in international markets. R3 for example mentioned that creating a joint skipass improves revenues by threefold.

### *Creation of tourism culture*

Training and education of locals and commercial organizations on foreign languages, service quality and intercultural communication are important activities that need long-term attention considering social interactions with locals and hospitality as important part of tourists' experience (Cetin & Bilgihan, 2016). Community involvement in a destination would also support a stronger ownership and commitment for tourism development strategies. Hence, benefits of tourism (social, infrastructural, and economic) should be communicated with the community to enhance internal marketing and create a positive understanding of tourism among locals. Dwyer and Kim (2003) also argue that resident support is an important element of destination competitiveness. Local NGOs should also be consulted and supported so that a better partnership with the community would emerge.

### *Managing supply and demand*

Aligning demand and supply was also stated as a challenging issue for winter destinations. This also relates to the seasonal nature of winter demand, too much investment on bed capacity would for example create underutilization in slow periods. If supply exceeds demand, it is possible that the prices will fall which would damage the economic sustainability and image. Thus investments and incentives should be well planned based on projected demand. The current accommodation capacity in the region is well below the lift capacities. Participants also mentioned the need of a range of different categories of facilities in the destination, within the large-small and luxury-economy continuum (R10, R21).

### *Accessibility strategies*

Physical accessibility of the destination, proximity to generating regions and transport networks are all stated as important factors that affect tourism demand by the participants. The relationship between space-time accessibility and market demand have been well supported in the literature (Tan et al., 2016). WTC is geographically located more remote to generating regions than most other winter tourism destinations. All three destinations have airports that are currently accessible from major cities in Turkey. According to stakeholders air accessibility of WTC destinations would still be improved by providing local incentives for charter airlines, facilitating new routes to generating regions and offering lower landing fees. R6 stressing the importance of accessibility mentioned: "Access to the market is a crucial point for the success of a winter destination. It should be well connected and convenient to reach in terms of transportation."

### *Human resources & capacity building strategies*

The lack of qualified employees has been frequently mentioned as one of the weaknesses of WTC. Various facilities in the destination are importing staff from other cities because of the scarcity of qualified employees. This creates additional costs in wages and housing and increases labour turnover. From the perspective of sustainability local employment is also important. Thus local human resources should be developed through certificate programs in different professions in order to meet the quality and quantity improvements at WTC. The enhancements in local HR would also be handled in coordination of the DMOs. Improving the stakeholders' professional

level and enhancing HR were frequently mentioned by the experts during the interviews. R13 claimed; "When the tourist is in the destination there is an overall perception. It is not just about the slope or the hotel... If one stakeholder performs below expectations the whole destination image is affected."

### *Strategies to facilitate investment*

In WTC there is a very limited capacity for long-term investments. In the absence of required capital, various vital investments (e.g. ski lifts) have been undertaken by public stakeholders. However most public stakeholders lack the necessary knowledge and skills to manage these investments effectively. Thus DMOs should also be responsible for investment facilitation for private sector, providing statistics, forecasts and business advice to attract professional and financially strong tourism investments to the destination. The DMO should also lobby with public actors concerning finance of the projects, national level promotion, tax reductions, general infrastructure, legislation, building permits and land allocations.

### **Destination Management Strategies**

These strategies focus on management of tourism activity within the destination and improvement of visitor satisfaction during the visit. The general objective of destination management strategies is sustaining the development of the destination in such a way that the tourist experience is enhanced, the stakeholders are satisfied and environment is preserved. Buhalis (2000), discusses four main strategic management objectives for destinations. These are; ensuring long-term prosperity of locals (1), maximizing visitor satisfaction (2), maximizing profitability for entrepreneurs (3), and minimizing negative tourism impacts by creating a balance between economic benefits and environmental costs (4). The destination management strategies include;

#### *Minimizing seasonality and diversification strategies*

Winter tourism demand in the region peaks between December to March whereas the rest of the year the capacity is underutilized as in other winter destinations. However, the region has different potential products that might be used to overcome the impact of seasonal demand. Cultural tourism, thermal and spa tourism, MICE, high altitude sports camps, golf and nature based tourism are alternative products that were frequently mentioned. Investing on diversification of tourism in winter destinations might not only extend the tourism season but also attract different tourist segments and create a better experience for winter tourists. Supporting the importance of minimizing seasonality R2 mentioned: "Seasonality is a challenge for all winter destinations, particularly in the age of global warming... The most successful of winter destinations are the ones which overcome the seasonality problem with off season activities and developed year around tourism."

#### *Sustainability strategies*

The impact of growth in tourism should also be considered and negative side effects should be managed. During the process of development priority should be given to the environmental, social and economic integrity of the destination rather than one sided short term benefits (Ritchie & Crouch, 2000). Improving local participation, enhancing benefits for locals, local procurement,

waste management, recycling, using environmentally friendly energy, preserving flora, fauna and wildlife and respecting the carrying capacity were mentioned as various sustainability practices. Particularly landscaping and air pollution are listed as important issues that need attention in the region. DMO should also monitor various sustainability indicators (e.g. GHG emissions, waste generated per tourist, local employment, carrying capacity for attractions, tourist spending) at the destination to prevent any undesirable consequences.

### *Improving tourist experience*

In order to create loyal customers that spread positive word of mouth destinations should be able to exceed the expectations of their customers. To do so destinations require in depth knowledge of the needs of their visitors (Go & Govers, 2000). Marketing research, monitoring quality through satisfaction surveys, establishing standards for services and data mining are important tools listed to be used to understand tourist expectations and perceptions. Hence a central data collection and analysis function is required at DMOs. These analyses might provide valuable information on areas that need improvement concerning service quality, physical facilities, social activities, queue management, human resources, standardization of services and so on. Importance of tourism and visitor satisfaction should be stressed as a common goal in destinations. Hence the social activities and nightlife referred to as après-ski in the winter sport centres should be encouraged as well. R9 mentioned: "Entertainment is becoming an important part of tourist experience and a major source of revenue in winter destinations. Our USP is for example 'Relax. If you can.' We support entertainment events, parties, concerts etc. to offer a better experience besides the skiing."

### *Event management strategies*

International events to a destination not only bring extra business in terms of both participants and spectators but also improve the image of the destination (Chen, 2016). Attracting ski related events were frequently mentioned by respondents as a viable strategy. Thus a committee responsible for developing event related projects, creating consortia, preparing bids, arranging funds and sponsorship, coordinating stakeholders and realizing events is suggested under each DMO. These events and festivals would also improve participation of locals and facilitate local support for tourism. Hence facilitating these events, lobbying to bring them to the destination, offering incentives and the necessary infrastructure to event organizers are effective strategies that might be coordinated by DMOs. A press office at central corridor DMO that would amplify the PR impact of events is also recommended.

### *Funding strategies*

The DMOs responsible for overall development, management and marketing of WTC need funds to operate and realize their responsibilities. The DMO budget has also been identified as an indicator of destination competitiveness in the literature (e.g. Cetin, 2014). Therefore there is a problem of creating finances needed. DMOs should be funded through a mix of both public (e.g. development agencies, municipalities and governorships) and private (e.g. membership fees, sponsorship and entrance fees to the events, commissions from portal reservations, advertisements, project contribution fees) funding. Another major product that can both improve visitor satisfaction and generate income is considered as citypass, which is widely used by DMOs globally. Bundling attractions, entrance fees, transportation and offering a discount in a single card allows tourists to conveniently visit the places and at a discounted rate. Concessions and

leases are also major sources of revenue; the DMO might for example be given the right to manage a certain cultural or national heritage site under some regulations. The convention centres at some destinations are also managed by the DMOs. Introducing a tax or a fee on overnight stay to be collected by hotels to fund DMO activities were also mentioned as a source of income by various experts. Yet, it is imperative to stress that DMO is not a *for profit* organization, it should aim to facilitate increased sales and improved sustainability of the region rather than concentrating on improving its own revenues.

### **Destination Marketing Strategies**

Destination marketing strategies deal mainly with increasing both quality and quantity of demand, marketing research, communications, and branding. Destination marketing strategies also need alignment among stakeholders to reach optimum level of efficiency. Thus the corridor DMO should be able to lead the marketing activities. Individual marketing efforts of stakeholders create less of an effect on potential visitors than a collaborative marketing action lead by the DMO, a shared promotional campaign would also cost less because it will be larger in scale and the costs would be shared with stakeholders. Thus the success of the destination marketing depends on cooperation among stakeholders, and creating a holistic strategic marketing plan through DMO becomes imperative.

#### *Improvement of resident demand*

Because the WTC destinations are at the introduction stage of their development, domestic winter tourists and residents emerge as the primary target. A balance between local and foreign demand is perceived more desirable by experts as well. Dwyer and Kim (2003) also discuss foreign demand is easier to attract when the domestic market is well established. Hence development of winter tourism destinations is considered to be dependent on creating a ski tradition among locals. In Turkey, skiers only make up 1% of the population, this percentage is much larger in developed countries (e.g. 10% in Europe) (Vanat, 2016). Hence there is a need and room for improvement. In order to sustain the future of local demand and improve local awareness to winter tourism; training of residents in winter sports is mentioned as an important strategy. Confirming the importance of local demand R11 surmised: "Creating a resident ski culture is very important not only for local demand but also for the experience of international tourists... Without creating a local interest attracting international demand is also not possible... For example, to ensure local ski interest for the future we organize ski courses for students in primary schools."

#### *Improvement of distribution channels*

Because winter tourists have different needs than the general market, specialized intermediaries such as tour operators are important channel members in winter tourism particularly for destinations trying to attract international skiers. Confirming importance of tour operators R1 stated that "54% of the winter tourism market is served by tour operators". Marketing communications targeted to these intermediaries, sales calls, attendance to professional winter sports and tourism fairs, fam-trips and workshops are stated as important strategies to attract international markets particularly at the introduction stage of destination development. WTC is relatively new in international tourism market and geographically remote, hence it is likely that the tour operator packages might be perceived as less risky and more convenient by winter

travellers. Hence facilitating travel trade and subsidizing tour operator charter airlines are suggested.

### *Cooperation strategies*

The WTC destinations with similar products might be considered as competitors. Yet, they are also complimentary considering the potential synergy that would be created through cooperation on a central destination marketing. For example, a joint ski pass, valid in three provinces would benefit all of the destinations. A central web page promoting all three destinations, sharing of marketing costs, a WTC loyalty card, joint advertising and promotion would also create more effective results for both WTC and three individual provinces. Because the tourist product is an integrated whole, stakeholders within the destination are also dependent on each other for success of the overall product. Collaborating on procurement might also create economies of scale. The central DMO might for example negotiate with OTAs on behalf of the whole region and ensure a more favourable commission rate.

### *Loyalty and recommendation strategies*

Creating loyal customers is a challenge for destinations because tourists' main impulse is change and to experience something novel. However different than general tourist market, winter tourists tend to be loyal to destinations where they had a positive experience. Clydesdale (2007) discuss that 65% of winter tourists might be considered loyal to their favourite destinations. Thus, collecting, storing, analysing and using visitor data for direct mail and follow up activities are important not only to facilitate return bookings but also to collect valuable feedback about the product. The process of creating loyal customers does not end when they leave the destination and should be reinforced during post-visit as well (Balakrishnan, 2009). Thus improving the visitor experience and loyalty strategies (e.g. central loyalty cards and CRM systems) are considered crucial for WTC.

### *E-marketing strategies*

The impact of electronic commerce in tourism is evident. Recent studies for example show that 82% of winter tourists in Turkey use internet during their destination decision making process (Evren, 2016: 80). Hence a central destination web portal is necessary in order to supply information, offer packages and serve as a booking portal for the travellers. Particularly social media is important in promoting winter tourism as most winter tourists have a web of contacts of other winter tourists and are very active in social media. Thus the impact of C2C interaction is larger for winter tourists than other segments. Therefore creation and maintenance of an existing and potential customer base is crucial. Direct marketing activities, newsletters, email promotions would also be considered under e-marketing strategies. Mobile location based applications would improve the image of the destination and tourist experience as well. These applications might show real-time info about attractions, products and services (e.g. waiting times), weather and snow information, provide booking and navigation at WTC. Search engine optimization and Google ads were also perceived as important electronic marketing tools by the stakeholders.

### *Branding strategies*

Creating an image and place branding is an effective tool in differentiating destinations (Garrod & Fyall, 2016). Branding is at the heart of destination marketing strategy and relate to various

functions under promotion such as destination identity, image and positioning. The brand identity is how the destination is perceived by potential visitors in terms of values, prestige and lifestyle, and how the characteristics of the destination differentiate it from competition. Based on the environmental analysis, a coherent image and branding for the destination should be established. Besides the master mother brand, destination sub brands should also be developed for different regions. Currently the marketing communication activities are too fragmented and lack the necessary coherence to support the WTC as a strong brand. Respondents also mentioned creating a strong brand identity, personality, slogan and logo that would be shared and used by all stakeholders is important for marketing. The brand might also use authentic elements in provincial destinations such as landmarks, natural and cultural resources, geographical characteristics, authentic products, traditions, people and food (Baker & Cameron, 2008). Whichever brand is created it should be integrated to products, services and marketing communications to support and improve the destination brand equity in the market. Consistency in this sense has a crucial importance.

### *Collaborative strategies and strategic alliances*

These strategies include partnership arrangements between different actors to create a win-win for all (Evans et al., 2012). Offering benefits to customers of large corporations such as frequent flyer program members of airlines (e.g. Turkish Airlines) might create benefits for both the destination and collaborating partner organizations. Social programs and publicly subsidized projects also create major opportunities for collaboration on development of destination infrastructure and capacity building initiatives. These strategic alliances might also be established through cooperating with competing destinations. Setting up information offices in Bansko, Bulgaria, during the season might for example create an awareness for WTC among Bulgarian skiers and international skiers visiting Bansko. Bansko would also benefit from a reciprocal collaborative promotional activity in WTC. Strategic alliances are also possible by sponsoring events, movies, TV series and documentaries particularly when they use WTC as the stage.

### *Competitive strategies*

Developing competitive strategies first requires identification of competitors and a thorough benchmark analysis. Each WTC province needs to differentiate itself from its competitors based on unique selling propositions (USPs). These competitive advantages should be strong enough to overcome the disadvantage of distance of WTC to generating regions. The WTC products might be differentiated based on their attributes (e.g. longest slopes) or benefits (e.g. relaxation) or competition (e.g. family friendly). The positioning of the destination should be designed in a way that it is attractive, unique, complementary and strong compared to other competing destinations. Ski quality, family friendliness, culture and heritage (especially of the Silk Road), diversity of activities, wellness, relaxation and value for money for example were emphasized by stakeholders to create a consistent image of the WTC destinations. But brands should also be more than physical attributes of a destination; they should be communicated in a way that establishes an image, personality or emotional connection with the visitor (Hosany et al., 2006).

## **Discussion and Conclusions**

Identification of holistic destination strategies will enable a better management of its development. Turkey without a central destination management experience has some problems

with implementation of tourism plans and policies. WTC is also a product of these central plans that miss a holistic implementation. Due to a narrow perspective merely focusing on the physical product and lack of coordination among different stakeholders at the micro level, a large amount of resources are wasted. Some investments in the winter tourism corridor, without a comprehensive feasibility, are even left to decay or operate with large losses. This study explores suitable destination strategies for a proposed winter tourism destination (i.e. WTC) based on input from experts and existing destination stakeholders. After 21 interviews with winter tourism experts and three workshops in three WTC provinces, these strategies were classified under destination development, destination management and destination marketing strategies. Although the strategies proposed in this study are WTC specific, because they are built upon best practices in various destinations they can also be adopted to other winter tourism destinations at the beginning of their development. Based on these strategies each destination would be able to create action plan customized to the specific destination.

One of the main problems is that public authorities have undertaken serious amount of ski infrastructure investments without actually calculating its economic feasibility. A major part of these investments are in vain and others are able to operate only with the subsidies. There is a great deal of excess supply in WTC. *Build it and they will come* is not a rational vision for any region. Physical investment is not sufficient to create a destination. These investments created; winter sports centres at best rather than winter tourism destinations. Thus various holistic destination strategies are suggested and adopted to WTC as a case destination.

Tourist activity is affected by different public and private actors in a destination. The coordination of these individual efforts, produced by different actors at different times and locations, effective use of shared resources and creating a shared vision and synergy is under the responsibility of DMO. Hence destination governance and institutionalization strategies are primary for destination development. Technical product strategies include improvement of ski related products and their integration. Strategies that relate to creation of tourism culture refer to activities that aim internal marketing of tourism development among the locals for increased support from the community. Strategies that aim to create a balance between supply and demand would prevent excess supply and minimize pressure on ROI. Because WTC is geographically located remotely from most international generating regions, it needs specific activities to improve its accessibility such as airline incentives for new routes to WTC. Lack of qualified human resources and entrepreneurship might be minimized through HR and capacity building strategies such as training and certificate programs offered to locals. To improve private entrepreneurship in tourism, destination development strategies to facilitate investments suggest that private sector would be encouraged through investment support, subsidies, land allocations and so on.

While destination development is in progress DMO should also consider the management of tourism activity within the region. Destination management strategies are those strategies aiming to maximize the satisfaction of stakeholders, communities and tourists in the destination, and to improve product quality while ensuring the sustainability of tourism development. Under destination management strategies minimizing seasonality and diversification of tourism products relate to development of alternative tourism types, besides the winter tourism, which would attract demand in summer season as well. WTC has various potential resources such as cultural heritage and health tourism. These might also be used for diversification strategies. Sustainability strategies on the other hand aim to improve benefits from tourism while maintaining environmental, social and economic integrity of the destination. Actions related to

tourist satisfaction and service quality are suggested under improvement of tourist experience strategies. Organizing regional and international races and festivals were considered under event management strategies. Finally destination management includes the funding resources that aim to raise finances necessary to implement destination strategies and activities of DMO.

The third category of destination strategies are related to marketing. These strategies deal with improving both quality and quantity of demand and marketing communications. After destination development and management strategies are in place, an effective marketing communication is required to make maximum use of the previous actions. The local demand and creation of ski culture and awareness in the destination are explored under improvement of resident demand. Local demand in WTC requires long-term investment, training and cooperation particularly with educational institutions. Intermediaries such as specialized tour operators play an important role in winter tourism distribution; strategies targeted to attract these middlemen are discussed under distribution channel strategies. Currently the marketing communication activities are too fragmented and lack the necessary coherence to support WTC as a strong brand. Possible collaborative marketing activities among stakeholders that would create economies of scale were discussed under cooperation strategies. Volume of loyal visitors is also recognized as an important element of winter destinations' success. Actions targeted to creating loyalty and increasing WOM were discussed under loyalty and recommendation strategies. Another strategy targeted to increasing recommendation is improving internet presence and social media. As an important medium for information search and booking, the role of e-commerce are explored under e-marketing strategies. Development of destination image, positioning, identification of USPs and logos to be used for destination promotion were analysed under the branding strategies. Collaborative strategies refer to creating strategic alliances with external organizations and competing destinations to improve marketing effectiveness. Finally competitive strategies consider targeting suitable segments based on competitive benchmarking.

It should be emphasized that there is no one unique set of strategies that apply to all destinations. Yet, for any given destination a number of strategies might be relevant and certain strategies might be highlighted as more suitable and further discussed by policy makers and integrated to destination planning at different stages of development. The more destination planners and tourism professionals know about alternative strategies the better informed are their decisions. This study provides a comprehensive set of destination strategies by using WTC as the stage. As a planned to be destination, WTC offers a unique setting to analyse and implement holistic strategies from its outset. However, no single list would identify all strategies applicable to all destinations at all times. There is a need to study different destinations focusing on different types of tourism at different life cycle stages. The strategies offered in this study is focused on winter destinations and intended to offer a pool of available generic import for DMOs and destination policy makers. Further research is suggested on validity of these strategies on different spatial environments. The relative importance of these strategies might also be explored. For example for new destinations destination development strategies might be more significant whereas for established destinations marketing strategies might be more relevant.

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## Appendix: List of experts interviewed

RESPONDENT	DESTINATION	COUNTRY
R1	CORTINA	ITALY
R2	CORTINA	ITALY
R3	CORTINA	ITALY
R4	MADESIMO	ITALY
R5	MADESIMO	ITALY
R6	COURMAYEUR	ITALY
R7	COURMAYEUR	ITALY
R8	VAL DI SOLE	ITALY
R9	ISCHGL	AUSTRIA
R10	KITZBUEHEL	AUSTRIA
R11	OTZTAL	AUSTRIA
R12	SCHLADMING	AUSTRIA
R13	TIROL	AUSTRIA
R14	ZILLERTAL	AUSTRIA
R15	ERCIYES	TURKEY
R16	KARTALKAYA	TURKEY
R17	ULUDAG	TURKEY
R18	ULUDAG	TURKEY
R19	CHAMONIX	FRANCE
R20	VAL D'ISERE	FRANCE
R21	BANSKO	BULGARIA

# **Skiing unlimited? Acceptance of resort extension by skiers in Tyrol/Austria**

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## **Abstract**

Recent developments in European alpine ski resorts point towards the merge of small- and medium-sized ski resorts into larger entities. Despite a likely increase in the efficiency of management and marketing activities, the important question remains if the merged resorts, as mostly assumed, are essentially more attractive to the skiers themselves. The results of a representative online questionnaire with an embedded choice experiment conducted in Germany and Austria indicate that the size of the ski resort is only one factor among several the skiers consider. For winter tourists, the cost, snow safety, and the accessibility of the ski slopes from their accommodation are of high importance. Price is also a decisive factor for daily visitors. For this group, the possibilities of public incentives and an outstanding scenic beauty are more important than the ski resort size. The results further show that vacationers and daily visitor segments have different preferences. Therefore, ski resort management and related marketing strategies should not be limited to the size, but to the best possible adaptation to the desired target group.

**Keywords:** Ski resort merger, Choice model, Acceptance, Motives for ski resort selection

## **Introduction**

Many ski-resorts across the European Alps hope to increase their international recognition and attractiveness through the development of new and longer slopes and/or by merging with other resorts. This argument of size is particularly important and visible in the marketing of famous ski resorts. Examples like the Zermatt-Matterhorn-Ski-Paradise in Switzerland, the “Helm-Rotwand” in Sexten Italy, the Ski-world “Wilder Kaiser”, or the “Skicircus Saalbach -Hinterglemm - Leogang - Fieberbrunn” in Austria elucidate this trend. The most important motives for merging and cooperating with other ski resorts include enhanced opportunities for joint advertising, synergies in management, and overall improved financial stability (Zegg 2015). For other authors, climate change adaptation seems to be a striking argument in favor of increasing resort sizes, for example, when snow-safe and less snow-safe ski regions are merged (Steiger & Abegg 2013). Despite the various potential benefits for the resorts, these expansions are also very likely to impact the sensitive alpine environment and create permanent disturbances through new infrastructure. These issues and impacts are also vividly discussed during the investigation process for a potential merger of ski resorts in the Stubai Valley with the ski area Axamer-Lizum. This ski resort development is thought to be taking place between the urge to improve the offers for skiers, the need to adhere to environmental legislation, the potential threat to valuable natural spaces, and ski resort marketing, which creates the potential for severe conflict. Therefore, the question as to

whether and when this ski resort merge is worthwhile - from the skier and the management perspective - needs to be investigated in extensive detail to connect the actual needs and requirements of skiers with public concerns and management strategies.

Therefore, this article will, by means of a Tyrolean case study, identify the main motivations for skiers to select a certain ski region, investigate the particular trade-offs skiers make when deciding between multiple ski areas, and subsequently issue concrete statements concerning skiers' acceptance of the envisaged development. In addition, as the winter tourism in the Alps is characterized by a significant guest heterogeneity, which causes diverse preferences and expectations (Manova 2013), this paper will further investigate the needs and acceptance of multiple skier segments.

The main goal of this study is

- to obtain scientifically robust results from the exploration of different target groups,
- to simulate the possible effects of a ski resort merger in Tyrol on the booking behaviour of German and Austrian tourists, and
- to describe the overall attractiveness of the resorts before and after a possible merge.

## **Methodology**

Against this background, a representative sample of German and Austrian winter tourists (skiers who primarily ski during skiing vacations) and daily visitors (skiers who mostly undertake day trips to ski resorts) was surveyed through an online questionnaire, which particularly investigated their perceptions and preferred attributes when choosing a ski resort. The respondents were recruited from four panels in Germany and Austria. The prerequisite for participating in the survey was that the participants think of themselves as skiers or snowboarders and that are interested in a skiing vacation or day trip in Tyrol. In order to incorporate local opinions, the number of regional day visitors was increased through the separate invitation of season ticket holders. The questionnaire consisted of 24 (daily visitors and seasonal ticket owners) or 27 (winter tourists) multiple-choice, dichotomous, rating scale, ordinal scale, socio-demographic, and open-ended questions.

As recent studies indicate that important aspects such as snow safety, downhill run, time of arrival, public access, comfort, natural environment (quiescence), price, and quality of experience should not be analysed separately, this study goes beyond previous analysis approaches and additionally applied a choice experiment (Louviere et al. 2000). This stated preference method is rooted in random utility theory (McFadden 1974) and is coherent with Lancaster's characteristics theory of value (Lancaster 1996). Choice experiments assume that complex decisions (i.e. selection of preferred ski resort) are based upon consideration of several economic, environmental and social factors/attributes at a time (Ben-Akiva & Lerman 1985). This assumption indicates that, rather than taking just purely focusing on size or snow availability, participants choose the one scenario (i.e. the ski resort), which provides them with the maximum overall utility - the highest sum of all positive and negative utilities from all attributes of the scenario. When choosing between the provided scenarios, respondents have to set priorities intuitively by weighing different attributes against each other, ultimately leading to the selection of the scenario with the highest weighted attributes.

In addition to the arguments which make the choice experiment highly attractive in a contextual sense, this analysis technique bears multiple methodological advantages. Although the

respondent faces a greater cognitive burden as regard to a simple choice (for example, yes / no / perhaps), the choice experiments allow for a deeper understanding of the trade-offs between different attributes (Adamowicz et al. 1998a, b) and produce reliable results across research areas. Van Beukering et al. (2004) point out that interviews, which are based on a choice experiment, significantly reduce the strategic response behaviour (van Beukering et al. 2004), making it impossible for the participants to tweak their answers towards a socially acceptable or expected answer. In addition, van Beukering et al. (2004) and Adamowicz et al. (1998a, 1998b) show, that the technique can also be applied to evaluate non-market benefits and hypothetical futures or options described in an intuitive and meaningful way and to measure non-use values such as the beauty of the landscape. Pröbstl-Haider and Haider (2013) further found, that choice experiments can also accommodate variables describing risk or uncertainty associated with certain situations, or similar other features.

As a multitude of the challenges mentioned above apply for the merger of ski resorts, this study provided an excellent opportunity for the application of two distinct choice experiments with regard to tourism development options and "Destination Management" (Pröbstl-Haider 2016, Pröbstl-Haider & Haider 2013). The winter tourists were asked six times to select the preferred out of two ski resorts (Figure 1), while daily visitors had to allocate ten day trips to three ski resorts six times in a row (Figure 2). For each new choice set, the attributes remained the same, however their individual levels were altered to provide distinctively new sets each of the six times.

*Imagine you could choose one out of these two Tyrolean ski resorts for your skiing vacation. Please choose the one ski resort ("A" or "B"), which is more appealing to you. If neither of the two resorts suit you, please choose a "different ski resort".*

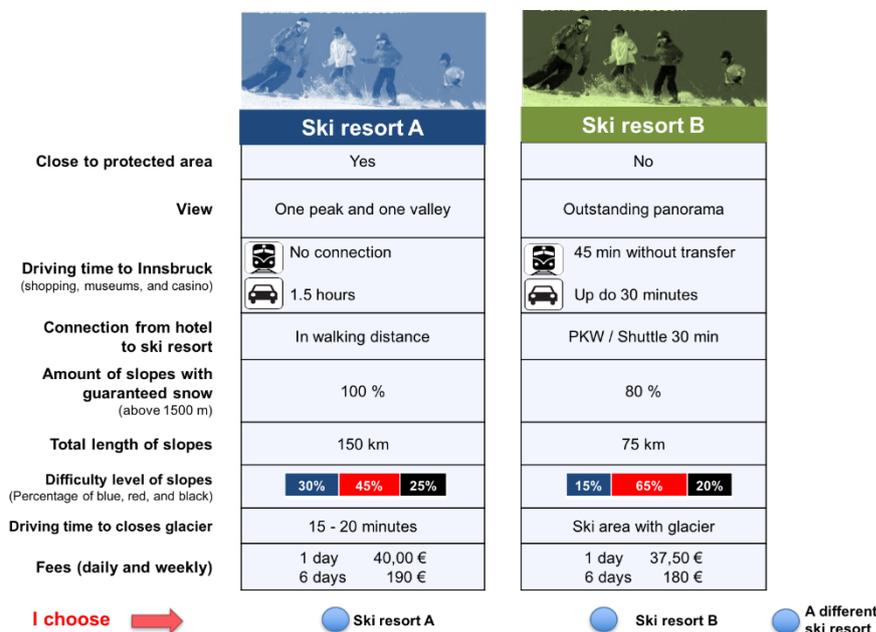


Figure 1. Winter tourist choice experiment.

*Imagine that the following three ski resorts are available for the 10 day trips that take place regularly during a ski season. How many of these 10 day trips would be allocated to ski resort "A", "B" or "C", or how often would you go "to other ski resorts"?*

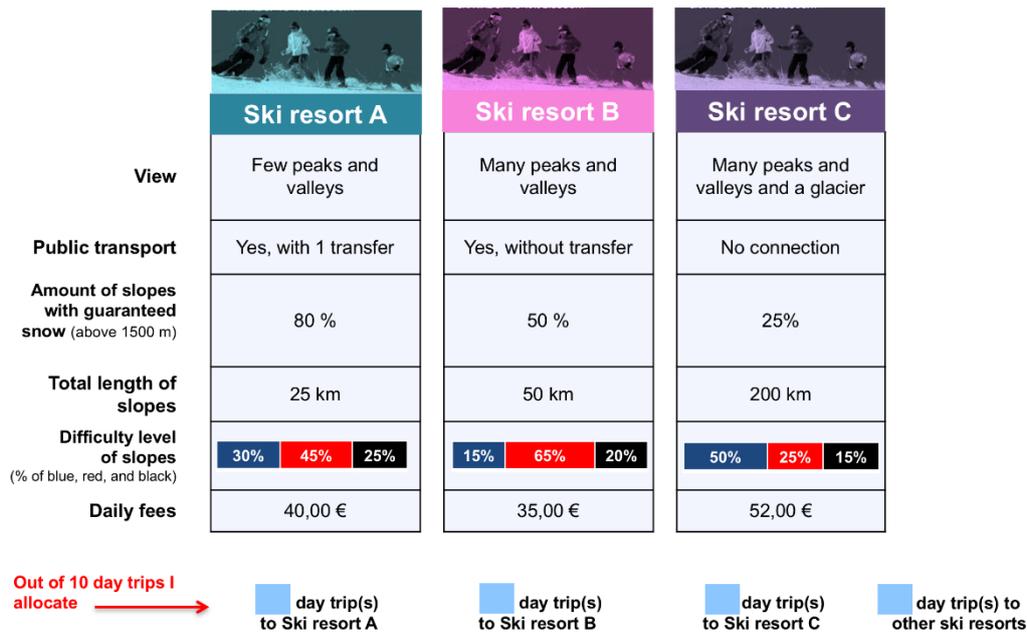


Figure 2. Daily visitors and season ticket owner choice experiment.

Ski tourists' destination choice is a longstanding field of research and has previously been researched extensively through explorative factor or cluster analyses (e.g. Konu et al. 2011; Miragaia & Martins, 2014). However, the application of choice experiments to account for the multivariate nature of the decision problem is very rare. Unbehaun et al. (2008) are one of the few examples successfully applying this methodological approach. The authors investigated climate change impacts on winter sport tourists' activity and destination choice to provide general information to destination management. This study goes beyond the theoretical application and tests the practical application of choice experiments on a pressing issue. Through the application of the choice experiment, the study will be able to provide the necessary fundamental information to derive influence factors of ski resort selection, to strengthen target-group-specific forecasts and to simulate development scenarios. The special feature of the study is that the criteria relevant for ski development, such as snow safety, downhill run, public accessibility, difficulty levels and quality of experience, are not inquired separately, but in a combined choice set.

Statistical analysis methods applied in Excel, SPSS, and Latent Gold were used to identify the respective preferences. These are expressed in so-called partial use values (part worth utilities), which indicate the preference of each level of each attribute. The lower the respective values are, the less is their felt utility and vice versa.

## Results

Overall, the 2161 respondents participated in the survey (1186 (53.9%) from Germany and 975 (45.1%) from Austria). The sample was divided into 60.1% winter tourists, 28.3% daily visitors, and 11.6% skiers with a seasonal ticket. Respondents were further split into 49.0% female and 51.0% male respondents. The average age was 42.1 years, while the participants' age ranged from 15 to 85 years.

In order to evaluate motivations for their winter sport activity, participants were asked to state the importance of different aspects of the activity on a scale from 1 (unimportant) to 4 (very important). For all respondents, nature experience and health improvements are the main motives for skiing in the Alps. The most important aspects are "to enjoy the fresh air", "enjoy nature", and to "enjoy the winter landscape". The least important aspects contained "meeting new people", "experiencing action and adventure" and "to improve the own (skiing) techniques". The assessment differs significantly between the guest segments. Daily visitors are more focused on the activity itself, while the winter tourist is also interested in the region and the mountain experience (being in the mountains). Further differences include the importance of regional aspects and the importance of getting to know new people. While winter tourists and day users are increasingly interested in these aspects, they are the least important reasons for season ticket holders. For this segment, the sportive aspects, such as sport itself and purely being active in fresh air, are considered as more important than all social aspects.

Participants were further asked to indicate the most important and influencing aspects when choosing a ski resort. For all respondents, a good price-performance ration, a special natural experience and view, and a large proportion of snow-safe and artificially covered ski runs are of high importance. Aspects that hardly influence the decision include the airport proximity, the availability of half-pipes and fun parks, and existing offers for children. The comparison between winter tourists, daily visitors, and seasonal ticket owners shows that on average, winter tourists evaluate all aspects as more important for their decision than the other groups. Season ticket holders pay little attention to the price-performance ratio, which is most likely due to the nature of their ticket, as it is not tied to the daily rates of the ski resorts. Season ticket holders also clearly pay more attention to the downhill aspects of the ski area (many slopes, different slopes, difficult slopes, long runs, etc.). Compared to the other groups, the difficulty of slopes, powder and freeriding opportunities, and proximity to the city stand out.

In order to divide the participants into smaller, thematically connected segments which need to be addressed by different management strategies due to their preferences for ski resorts, a principal component analysis with Varimax rotation was applied to the influencing aspects for a ski area choice.

Investigating the group of **daily visitors** (including skiers with a seasonal ticket) in more detail revealed four distinct segments:

- (1) The *beginners* (27.7%) are interested in many different winter sport activities aside from skiing and snowboarding such as cross country-skiing or snow-shoeing. This segment has little time for winter sport activities in general. When selecting a ski resort, they focus on the price level, the natural setting, and the accessibility. About 38% are completely against an expansion of a ski-resort into a protected area.
- (2) The *savory skiers* (36.8%) are very much committed to their sport. They love to combine the nature experience with spending time with family and friends. They look for perfect conditions on the slopes. This segment argues in favor of a compromise and believes that the expansion of the ski resort can easily be compensated (53%).
- (3) The *skilled skiers* (12.9%) love their sport and ski or snowboard as often as possible. Nature experience and social motives are of little relevance. This segment also argues in favor of an expansion of the ski resort but demands an adequate compensation (53%).

- (4) The *young and wild skiers* (22.7%) make up another segment which is very committed to their favorite sport. The skiers and snowboarders combine social motives, the improvement of their driving skills, and action when skiing. The interest in nature and landscape is rather low. Therefore 26% would allow the expansion of the ski resort into a protected area without any compensation measures.

The four segments reacted significantly different in the choice experiment and tended to prefer different skiing experiences. While the beginners aim for a smaller resort with less difficult slopes, like the ski resort Schlick or Muttereralm, the young and wild and the skilled skiers are less drawn to either resort. The ski resort Axamer Lizum represents an acceptable alternative for all segments and is particularly interesting for the savory skiers. If the three resorts were to merge, a significant larger resort with longer slopes would be formed. Based on current assumption that ski resort size matters the most, it could be expected that the merged resorts would attract a significant higher number of skiers due to this increase. However, an increasing total length of the slopes did not turn out to be a significant influence on skiers' decisions. An additional decrease in the daily fee impacts the savory skiers and the beginners and would lead to an increase in their numbers. A cost of 46 € for the daily fee can be seen as maximum acceptance limit. If the costs exceed this value, skiers would rather select another ski resort than ski at the merged resorts. Overall, it was found that the new, merged resort is not as attractive for the daily visitor. Through the comparison with other ski resorts in the region, it can be seen that daily visitors would rather prefer different resorts, which would fit their needs better.

Within the group of **winter tourists** (vacationers), five different segments could be identified:

- (1) The *average sport tourists* (29.7%) are very committed to their sport and attracted by additional infrastructure such as a halfpipe, a fun park or free-riding opportunities. Infrastructure in ski resorts is important and therefore the acceptance for an extension is rather high.
- (2) The *nature oriented winter tourist* (21.7%) is mainly attracted by the landscape and the winter experience. They are not only interested in skiing, but participate in other activities such as cross country skiing, snow shoeing, and ski touring. This segment votes strongly against any further expansion of ski resorts.
- (3) The *demanding family* (19.2%) is interested in resorts which are characterized by an attractive offer for families and children. This segment also prefers an attractive landscape and nature experience. The families travel with children older than six years and belong to a higher income class. They are sensitive towards further impacts and the expansion of ski resorts.
- (4) The *price-sensitive sport tourist* (19.2%) focuses on downhill skiing and snowboarding only and is characterized by excellent skills. Nature experience is less relevant. This segment seeks a high diversity of ski slopes, an attractive mix of difficulties, and good snow conditions. If an expansion of a ski resort is compensated, it is acceptable for most of these respondents.
- (5) The *price-sensitive family* (9.2%) is characterized by a large number of beginners. This segment focuses on learning the desired activities (downhill skiing and snowboarding) and therefore seeks suitable slopes and is less impacted by landscape and nature attributes. This is also reflected in their evaluation of an expansion. This groups tends to agree to any new development (37% in favor of development).

Table 1 gives an overview of the attractiveness of the merged and two of the current resorts for winter tourists' vacation planning in the Stubai-valley in Tyrol. The effects of the merger differ for the various segments and can particularly be observed in the drop-out rate (the percentage of participants who would rather choose a different resort than the one suggested above). In general, drop-out rates decreased significantly after the merger for the resorts Schlick and Muttereralm. The drop-out rates for the resort Axamer Lizum (not depicted in Table 1) were slightly lower than for the merged resort, which potentially arises from a high attractiveness of the resort itself, however its capacities are not suitable for a significant increase in winter tourists. Therefore, in terms of future development, the resort is highly likely to attract more winter tourists, however it is not likely to be the primary choice for price-performance oriented sport tourists and nature oriented vacationers. The resort will be very attractive for the price-sensitive and the demanding family. Even the comparison with other, highly successful players in the region indicates that the merged resort will be able to successfully compete in the "shark basin". Hence, the merger can be economically beneficial, however it will not be likely to equally attract all winter tourist segments.

Table 1. Comparison of ski resorts Schlick and Muttereralm to the potential future merged resort.

COMPARISON OF SKI RESORTS						
	<b>Ski resort SCHLICK</b>		<b>Ski resort MUTTERERALM</b>		<b>MERGED ski resort</b>	
Close to protected area	Yes		No		Yes	
Scenery	Few peaks and valleys		Few peaks and valleys		Many peaks and valleys	
Travel time to Innsbruck	45 minutes without changes		45 minutes without changes		45 minutes without changes	
	20 minutes		25 minutes		20 minutes	
Connection hotel to slopes	15 minutes by car or shuttle		5 minutes by car or shuttle		In walking distance (10 minutes)	
Percentage above 1500m (snow guaranteed)	60%		20%		70%	
Total length of slopes	23 km		14 km		78 km	
Blue slopes	50%		49%		27%	
Red slopes	45%		46%		68%	
Black slopes	5%		5%		5%	
Proximity to glacier skiing areas	30 Minuten		50 Minuten		30 Minuten	
Price of day pass	€ 33.50		€ 32.00		€ 42.00	
Price of weekly pass	€ 157		€ 150		€ 197	
	<b>Acceptance Schlick</b>	<b>Drop-out rate</b>	<b>Acceptance Muttereralm</b>	<b>Drop-out rate</b>	<b>Acceptance MERGER</b>	<b>Drop-out rate</b>
All	89.7%	10.3%	88.4%	11.6%	95.2%	4.8%
Average sport tourist	91.7%	8.3%	90.3%	9.7%	96.1%	3.9%
Nature oriented winter tourist	88.2%	11.8%	90.8%	9.2%	94.3%	5.7%
Demanding family	90.2%	9.8%	89.5%	10.5%	95.7%	4.3%
Price-sensitive sport tourist	79.9%	20.1%	69.5%	30.5%	93.3%	6.7%
Price-sensitive family	97.7%	2.3%	96.9%	3.1%	98.0%	2.0%

## Conclusions and summary

Overall, skiers are sensitive towards the additional consumption of landscape for the development of new slopes and connections to other resorts. The preference for and acceptance of an expansion of a ski resort are influenced by multiple factors such as distance to the tourism destination, commitment to the sport, and the desired experience.

The study further shows that size is only one aspect of several, which are mostly more important for skiers' resort choice. It can be concluded that size is currently falsely treated as the most decisive influencing criterion. Current merger discussions should therefore go beyond the pure

focus on increasing the resort size and rather keep the best possible adaptation of the resort to the respective target groups' needs in mind. For tourists, the cost, the snow safety, and the accessibility of the ski slopes from the accommodation are significantly more important than the length of the slopes. Daily visitors also revealed other factors which have a greater impact on their decision than the size.

The survey further confirms that the customer is fairly cost-sensitive. The merged ski resort has a special relevance for price sensitive tourists. Demanding target groups with a higher income are less attracted, which has consequences on the pricing. Prices over € 47.50 tend to be rejected. The merge increases the overall competitiveness of the resorts significantly, which could be projected in the comparison with existing resorts in the region.

The daily visitors and winter tourists have different preferences. While winter tourists are also in favour of the new resort, the daily visitors are less attracted by its new features. The old and the new resort mainly attract the beginners of the daily visitors. Therefore, the merge leads to economic benefits from a winter tourist perspective only.

The methodologic approach, in particular the choice experiment, proved to be suitable to enhance the resorts' planning, the required economic prognoses and the decision making in a transparent and neutral manner. In contrast to traditional estimations, it is possible to analyse the relevance for different target groups and tourist segments in detail.

The choice experiment gives insights into the trade-offs between different attributes (e.g. "price" versus "size") but also allows to include additional factors such as the „landscape view“ or the „ski-in ski-out option“, which haven't been considered in the past.

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# Roles of internal stakeholders in development of a destination brand identity - case Levi ski resort

## EXTENDED ABSTRACT

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### Abstract

The purpose of this study is to find out what kind of roles the internal stakeholders of a tourist destination receive when the brand identity of the destination is being developed. The study aims to answer the following three questions: 1) *how different internal stakeholders have participated in the development of the Levi brand*, 2) *what kind of role the destination marketing organisation (DMO), Levin Matkailu Ltd, has had in the development of the brand identity*, and 3) *how the Levi brand identity and image have influenced each other*.

In this study, the brand identity of the tourist destination consists of the issues that the managers of the brand want the brand to represent. The brand identity of a destination is a dynamic entity that consists of several elements inherent to the tourist destination in continuous interaction with all of the tourist destination's stakeholders, such as tourists, politicians, local residents and employees (Saraniemi, 2009). In this study, the term "internal stakeholders" refers to entrepreneurs active at the tourist destination, administrative decision-makers, the DMO and local residents. The local viewpoint is represented by local actors who were born in Kittilä.

(The body text is excluded upon the authors' request.)

# Shaping the future of winter tourism in rural Austria. Experiences from an applied research project.

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## Abstract

In the academic discussion it is meanwhile common sense that tourism with its dependence on natural resources is highly vulnerable to climatic changes (Scott et al. 2012). Paradoxically, tourism is also considered as one of the sectors the least prepared for climate change (Scott 2011). At a first glance this is surprising, as publications especially dealing climate change impacts on winter tourism, have increased continuously in the last 30 years (for a comprehensive compilation see Scott et al. 2012). On the one hand, this might simply reflect a low awareness of decision makers in tourism. But, on the other hand, the cause could as well be a low willingness or ability of academics to work transdisciplinary, or simply spoken, to translate scientific results to the stakeholders and to tailor complicated, complex and detailed results to the interests and needs of decision makers.

In the light of the need of transdisciplinary research to promote and support climate change adaptation and mitigation, the objective of this paper is to present an applied and transdisciplinary research project conducted in a mountain region in Eastern Austria. Rather than following the 'standard' structure of a research paper with a specific research question, we want to show the pieces that contributed to a) better understand the current situation and needs in the research region, b) generate information that is of use for local decision-makers and c) we also want to discuss the role of scientists and the challenges that arise from transdisciplinary research projects.

## 1. Introduction

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transdisciplinary research project conducted in a mountain region in Eastern Austria. Rather than following the 'standard' structure of a research paper with a specific research question, we want to show the pieces that contributed to a) better understand the current situation and needs in the research region, b) generate information that is of use for local decision-makers and c) we also want to discuss the role of scientists and the challenges that arise from transdisciplinary research projects.

## **2. The setting**

The destination "Südliches Mostviertel" is situated in the Province of Lower Austria, Austria. It is a sparsely populated, mountainous country with a lot of forests. The highest peak (Ötscher) goes up to 1892 meters above sea level; the four ski areas are located between 800 and 1800 meters above sea level. Although not far away from Vienna, accessibility is relatively restricted, given the winding country roads, the limited number of public buses, and the nice but slow train service. Regional economic activities are limited to agriculture and forestry, a little manufacturing in the northern part of the area, and tourism.

The regional tourism industry, however, has been struggling for years. There has been a decline in both summer and winter season. In summer, the attractive scenery is not sufficient any more to attract enough visitors. In winter, the relatively small and low-lying ski areas cannot compete with their much larger and more powerful counterparts in Western Austria (in particular the provinces of Salzburg and Tyrol). In addition, the regional ski areas repeatedly had troubles with insufficient snow conditions.

Overnight stays, for example, have been in decline since the 1970s, interrupted by a short recovery in the early 1990s and a stagnation from the late 1990s to the late 2000s (Fig. 1). Summer tourism in the research area is somewhat following the Austrian trend, but the difference to the overall Austrian trend is that winter tourism was not able to compensate for the losses in the summer season. Winter tourism has stagnated between the early 1990s to the early 2000s and has declined by 30% compared to the mean of the peak years 2002-04 (Fig. 1). The accommodation sector is outdated, with a lot of very small, family-owned businesses offering a couple of rather simple rooms.

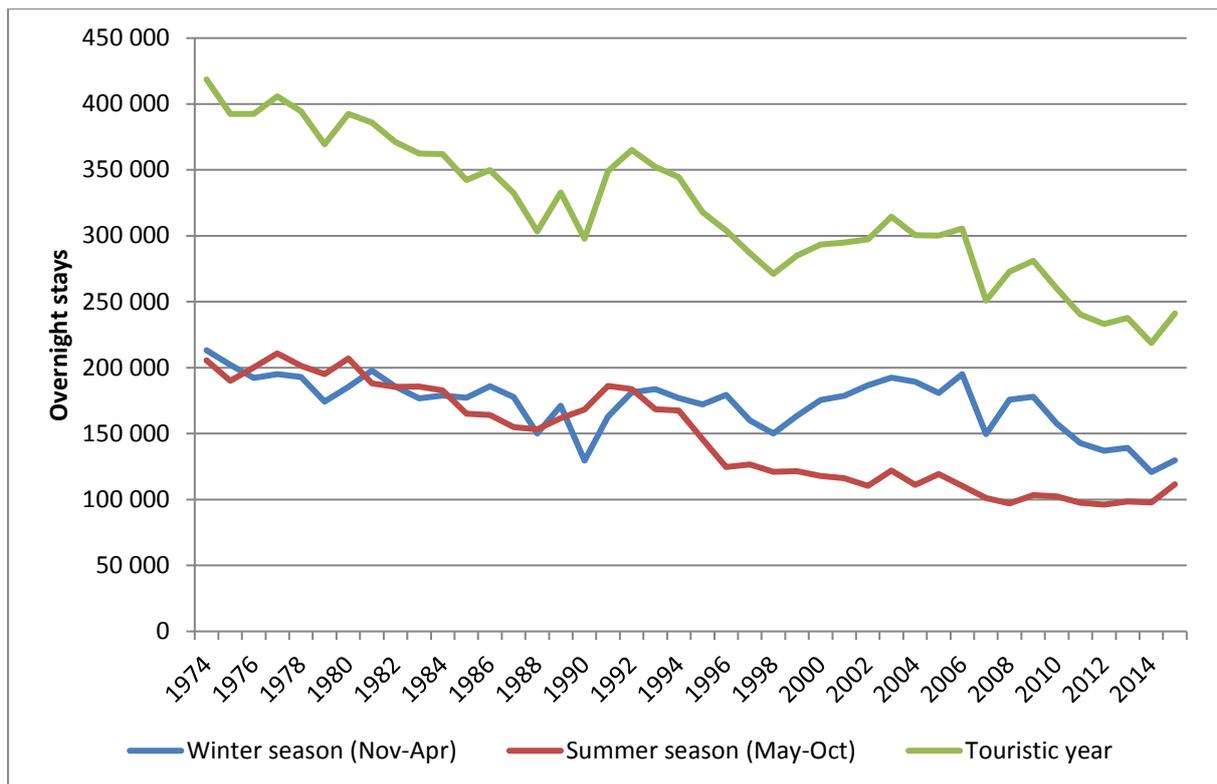


Fig. 1. Overnight stays in the destination "Südliches Mostviertel". Source: Statistics Austria.

The challenged regional tourism industry, however, is getting help from the provincial government. Governmental action include:

- A new tourism strategy called "Bergerlebnis in Niederösterreich" (literally: mountain experience in Lower Austria) with an active destination and product development (Redl & Stern 2015)
- A concentration of activities on four locations/municipalities called "Bergerlebniszentren" (literally: mountain experience centers): Annaberg, Mitterbach am Erlaufsee, Göstling an der Ybbs and Lackenhof am Ötscher (municipality of Gaming).
- A massive financial engagement. This includes, for example, the renovation of existing and the construction of new accommodation establishments. The two ski area operators in Annaberg and Mitterbach were completely taken over, in Lackenhof and Hochkar (Göstling), the government holds stakes of 40% and 49%, respectively.

Aim of the governmental action is to increase the competitiveness of the regional tourism industry. A successful tourism industry – the political reasoning goes – will help to fight demographic change (i.e. aging of population and out-migration of younger people) and "boost" or at least stabilize the entire regional economy. In other words: tourism is seen as tool for regional development.

In late 2014, the authors were approached by the Niederösterreichische Bergbahn-Beteiligungsgesellschaft m.b.H. (literally: the cable car holding company of Lower Austria). This company, a governmental body, is responsible for the implementation of the new tourism

strategy. Part of the strategy is also to formulate a climate change adaptation plan, and it was in this context we were asked to conduct a detailed assessment of the future snow-reliability (including snowmaking) of the regional ski areas.

### 3. Methods

Given the assignment, we applied a ski season simulation model (SkiSim). SkiSim is a degree-day snow model where snowfall, snowmelt and snowmaking are simulated for weather stations located in the vicinity to ski resorts. Snow is produced whenever temperatures are sufficiently cold, until snow depth is sufficient to guarantee ski operation until the planned end of the ski season. Temperature and precipitation are extrapolated to 100m elevation bands to cover the entire altitudinal range of the ski slopes. For this project, version 3 of the model was used, also including aspect and individual snowmaking capacity of each ski resort. Individual snowmaking capacity comprised of the volume of stored water (snowmaking pond), pump capacity to distribute the water to the snow guns, refill rate of the snowmaking pond, and ski slope area covered with snowmaking. Further information on the modeling procedure can be found in Steiger (2010), Steiger & Abegg (2013) and Steiger & Stötter (2013). Model results were validated with reported season lengths and water usage for snowmaking for multiple years, depending on data availability of each ski resort (between 2 and 15 years).

Regional climate model data were used to assess the development until the 2050s. 13 models with a resolution of 15x15 km were available, based on the EURO-CORDEX models. Here, we applied the ensemble mean and two emission scenarios which can be described as 'climate protection' (RCP 4.5) and 'business-as-usual' (RCP 8.5).

In the course of the project, two stakeholder workshops were organized, with 14, respectively 16 participants. The groups were made up of decision makers and entrepreneurs in tourism and of public authorities (e.g. ski area managers, ski school owner, hoteliers, representatives of the tourism organization, mayors). The first workshop took place in November 2015 a) to give the stakeholders some general information on climate change and (ski) tourism; b) to learn more about the stakeholders' perception of climate change impacts on regional (ski) tourism; and c) to get detailed input data (e.g. individual snowmaking capacity and management) from the regional ski area operators. In the second workshop (December 2016), the results of the snow-reliability modeling were presented and discussed.

On top of that, and with no direct relation to the assignment, we organized a field trip with master students (August 2015). Aim of the field trip was to get a deeper understanding of the regional tourism industry by being both tourists experiencing the local offer and researchers doing empirical fieldwork. The focus of the fieldwork was on a) the destination's competitiveness and b) the inhabitants' perception of the destination. For the destination's competitiveness we relied on the well-known work of Crouch & Ritchie (1999) and Crouch (2011). Following Enright & Newton (2004), 26 regional tourism stakeholders were asked to rate a series of 28 competitiveness attributes – first in terms of the attributes' importance for the competitiveness of the regional tourism industry (not important at all / very important), and second in comparison to the main competitors of the destination (performance in attribute x is much worse/much better than in competing destination y). The methodology behind – the Importance-Performance Analysis (IPA) – was introduced by Martilla & James (1977) and has been widely applied in tourism research (for examples and a critical appraisal see Azzopardi & Nash 2013, Deng 2007, Enright &

Newton 2004 and Oh 2001). In addition, a survey was conducted among local inhabitants. The people were asked to rate statements (agree /not agree) on their home town, including economy and demography, and on the current and future importance of tourism for the region. In total, 166 valid questionnaires could be used for further analysis.

#### 4. Selected results

##### 4.1 SkiSim and climate change

The ensemble mean of 13 regionalized climate models compared to the reference period 1981-2010 shows a temperature increase in the winter half year (Nov-Apr) of 0.99-1.14°C in the 2030s (2021-2050), depending on the RCP scenario, 1.28-1.73°C in the 2040s (2031-2060) and 1.46-2.21°C in the 2050s (2041-2070). Precipitation is projected to increase by 6-10% in the 2030s, 7-9% in the 2040s and 7% in the 2050s.

The average season length is projected to decline in all ski areas, but the degree of impact differs significantly between the ski areas (Tab. 1) due to the different climatic conditions (altitude) and/or capacity of the snowmaking system. While season losses at ski area 1 and 2 are rather moderate between 12-33 days in the business-as-usual 2050s scenario, potential losses at the other two ski areas are between 46-57 days.

Table 2. Average season length (days).

Emission pathways		RCP 4.5			RCP 8.5		
Periods	1981-2010	2030s	2040s	2050s	2030s	2040s	2050s
Ski area 1	145	135	126	121	129	121	112
Ski area 2	126	121	117	116	119	117	114
Ski area 3	110	100	92	84	98	81	64
Ski area 4	109	96	88	74	96	78	52

The Christmas holidays are of particular interest for ski area operators. If the offer of ski slopes is limited during these two weeks or if the ski area is even closed, a positive financial statement is almost impossible to achieve. Thus we also analyzed the share of years, where the ski area is projected to be open throughout the Christmas holidays (14 days). As illustrated in Tab. 2, ski areas 4 is already today not snow reliable during the Christmas holidays and ski area 3 is not snow reliable anymore in the 2030s. Snow reliability of the remaining ski areas depends on the definition of 'reliability'. In past publications (e.g. Scott et al. 2008, Steiger & Abegg 2013, Steiger & Stötter 2013), a 70% threshold was used. But we were informed by ski area managers that a 70% probability of ski operation during Christmas is not sufficient to ensure the financial viability of a ski area in this region, rather 80-90%.

Table 3. Probability of ski operation during the Christmas holidays (%).

Emission pathways		RCP 4.5			RCP 8.5		
Periods	1981-2010	2030s	2040s	2050s	2030s	2040s	2050s
Ski area 1	97	97	87	80	80	73	63
Ski area 2	100	97	87	87	93	87	80
Ski area 3	87	43	40	17	53	23	13
Ski area 4	40	23	20	10	33	27	3

Model results also showed that snowmaking capacity has a significant impact on season length and probability of operation during important season periods. As snowmaking capacity today differs remarkably between the ski areas, one future option is to invest into a higher capacity snowmaking system. To give some estimates on the related increase of operating costs, we calculated the required amount of snow produced to maintain a 100-day season, regardless of climatic limitations, thus taking into account further technological improvements of snowmaking.

As illustrated in Tab. 3, all ski areas except ski area 1 face significant increases in snow production. The reason for constant snow production at ski area 1 is that it is located at much higher altitude than the other ski areas. Bearing in mind that – according to the ski area managers in the workshops – none of the analyzed ski areas is profitable considering amortizations and necessary investment, and some are not even able to cover operational costs, the suitability of investments into snowmaking must be highly questioned.

Table 4. Increase of snow production required to guarantee a 100-day season (%).

Emission pathways	RCP 4.5			RCP 8.5		
	2030s	2040s	2050s	2030s	2040s	2050s
Ski area 1	0	0	0	1	1	2
Ski area 2	57	70	80	63	107	135
Ski area 3	59	84	66	60	100	134
Ski area 4	7	15	24	11	36	62

#### 4.2 IPA

The IPA delivers a series of comprehensible results; for example, the high importance value for “image”, or the high performance value for “untouched nature” (Dinter et al. 2016). Similarly, the availability of a “well-educated, regional workforce in tourism” is perceived to be very important, however, performance is relatively low given the brain-drain related to the demographic changes, in particular the out-migration of young people. Other aspects, at least at first glance, are less comprehensible. For example snow-reliability: this is an attribute receiving high importance and performance values at the same time. The high importance value can be explained by the overall importance of snow-based tourism activities for the regional tourism industry. The high performance value, however, seems to be strange given all the troubles the ski areas experienced with insufficient snow conditions. The point is, that performance is rated relative to the main competitors. A closer look at the competitors reveals that the regional stakeholders do not

compare themselves with the larger and better suited ski areas in Western Austria but with ski areas in neighboring regions. In other words: the own, limited snow-reliability is compared with the limited (or even: more limited) snow-reliability of neighboring ski areas. This leads to another interesting aspect: the difficulty to name competitors. Many stakeholders called their destination unique and unrivaled, and were challenged to name competitors. This is rather surprising for a destination in decline, and given the fact that tourism is one of most globalized industries in the world. It could be expected that there is a series of fierce competitors, in summer tourism basically the whole world (including, for example, the beach destinations in the Mediterranean) and in winter tourism particularly the well-known ski resorts in Western Austria, but this doesn't seem to be the case – at least from the stakeholders' point of view. The importance values of "strong domestic market" and "proximity to large population centers" were another surprise: Although being key to current (and probably even more so for future) demand, these two attributes got the lowest importance ratings overall. Given the dependence on public money, the high importance and performance ratings of "financial support by the provincial government" were only logical. What is striking, though, is that the regional tourism stakeholders seem to have developed a respective attitude. That is, most of them simply expect the government to financially support them – an impression that was further substantiated by numerous talks during the workshops.

#### *4.3 Survey*

The effect of public subsidies for this region in recent years and decades, especially for tourism, is mirrored in the residents' perception. Respondents expect (91 % agreement) that tourism is subsidized by the provincial government, whereas only 24 % agree that non-profitable enterprises should exit the market.

While the vast majority (93 %) agrees to the statement that their home town stands for winter tourism, considerably less respondents (50 %) believe that winter tourism will grow in the next 10 years. On the other hand, 77 % believe that their home town stands for summer tourism, but 85 % think that summer tourism will grow in the next 10 years. Considering that summer tourism has stagnated for the last 10 years, this belief could be interpreted rather as 'wishful thinking' which can – so far – not be supported by tourism statistics (Fig. 1). What can clearly be seen is that the recent development in winter tourism has left some marks.

The majority of respondents (87 %) agree to the statement that the share of older people is ever increasing and that the emigration of young residents is problematic (85 %). One obvious cause for that demographic change is that the regional economy cannot provide sufficient jobs, as 39 % agree that they do not see a professional future, although 87 % agree that they want to stay in their home town.

### **5. Discussion**

Although experienced in the field of climate change and alpine tourism, the authors were not familiar with the destination. Without site- and, even more important, context-specific knowledge, it is demanding to make a serious analysis. Consequently, the respective information must be organized which takes time.

The project was set up as a trans-disciplinary process. This means, among others, stakeholder involvement. Again, it is a challenging and time-consuming task to find a common language and to develop mutual trust. In this case, it definitely helped to be “outsiders”. Meaning, coming from a different part of the country, we were not part of the regional/provincial “establishment”.

Climate change is widely accepted among regional tourism stakeholders. This is in sharp contrast to experiences we have made in other parts of the country. We can only speculate about the reasons. One reason might be that the area was repeatedly faced with disastrous snow conditions and this might have led to a sense of urgency to finally “do something about”.

The SkiSim results can be interpreted as follows: We only need more snowmaking and then we are fine. This is, however, a tricky statement. On the one hand, the technical potential of modern snowmaking facilities is widely documented. A good example is ski area 2 which is the lowest ski area in the region but also the one with the most powerful snowmaking facilities. Looking only at the technical potential, on the other hand, does not take into account other aspects such as water availability. Most important, the ski areas simply lack the financial means to pay for additional snowmaking infrastructure and the corresponding operating costs.

From the very beginning, we were wondering about the political agenda behind the assignment: Is it about securing the existing ski industry or about downscaling and finding alternatives? The people from the cable car holding of Lower Austria kept a low profile, and only in the final stage of the project we learned that the provincial government is thinking about an “exit strategy”. Meaning, the amount of public money flowing into tourism will substantially decrease.

As a consequence, part of an existing ski area was closed and transport facilities were dismantled. This was a political decision largely based on our research. The interesting thing is: The same government that closed part of the ski area built a new hotel at the base station of the remaining ski area. Already existing, privately owned hotels close to the now dismantled ski area are cut off. Instead of having direct access to the slopes, their guests must now drive to the parking lot of the remaining ski area.

The case study gives an idea of the challenges that are related to applied research in the field of climate change and winter tourism. The researcher’s operating range in such projects is situated within a triangle of science, the government/public authorities and the tourism industry. Therefore, crucial questions include:

- 1) how do we organize the exchange with the different actors (i.e. trans-disciplinarity)
- 2) how do we define our role in the process (e.g. in terms of responsible science)
- 3) how do we keep our scientific integrity (e.g. not being exploited by political and/or industry actors)

This calls for an on-going critical reflection of our role in this process – an interesting and demanding task. Stepping out of the cozy environment of our research institutions and jumping into the conflicting and complex reality of tourism.

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# The transformative capacity of Norwegian ski resorts in the face of climate change

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## Abstract

This paper presents work in progress on assessing vulnerability and adaptation to climate change on ski destinations in Norway. Skiing is the closest you get to the national sport in Norway, and skiing can be conducted in all parts of the country. However, climate change is leading to less stable winters, creating a need for adaptation or even transformation. Despite an increasing body of literature on the impacts of climate change on ski tourism from all over the world, very little is known about the impacts and adaptation or transformation options for Norwegian ski resorts. The larger resorts are concentrated in the eastern part of the country, with an additional three large resorts in the western and one in northern region of Norway. The large resorts in eastern and the one in the northern region will in the near and medium term future most probably have good opportunities for artificial snow production. The climate projections are more worrying for the ski resorts in Western Norway, as these already enjoy a less stable winter climate due to its proximity to the sea.

Employing projections for future snow and snow making conditions, this paper impacts on skiing conditions in Norwegian ski resorts. It will be followed by an assessment of the adaptive and transformative capacity of the resorts, currently an under investigated feature in the literature about skiing and climate change.

**Keywords:** Climate change impacts, Transformative capacity, Snow making, Western Norway

## Introduction

Skiing is the most climate change exposed part of the tourism industry, and current and projected climate change is already leading to a decline on operational skiing areas (Abegg, Agrawala, Crick, & De Montfalcon, 2007; Dawson & Scott, 2013). All over the world, ski resorts are experiencing more challenging climatic conditions for operations. The obvious adaptive measure, artificial snow making, do to some extent mitigate lack of snow, but the commonly used technology for snow making requires sufficient low temperatures – thus making this adaptation measure vulnerable for climate change. Lack of snow is making it harder for ski resorts to attract customers. The unusual warm winter in North America during the late 1990s and early 2000s led to a decline in visitors by 10 % in Ontario (Scott et al. 2014). With projected climate change, the future for many ski resorts is dire. According to an assessment by OECD, by 2050 the number of ski areas with sufficient conditions for skiing could be reduced by 30% with a 2 degree warming scenario, and by 60 % with a four degree warming scenario (Agrawala 2007). This assessment did not consider snowmaking, which according to studies in Canada and Austria would lead to a

significant extent offset loss of natural snow (Scott et al. 2008). In Austria, a 2 degree warming compared to the reference period is projected to shorten the season of 53% of the resorts under the 100 day season level, as well as only 33% will be able to offer skiing during Christmas (Steiger and Abegg 2013). And order to stay open, most ski resorts would have to double or triple snow production (ibid). Out of 19 winter Olympic game hosts, only 10-11 are expected to have suitable winter conditions to be able to organize the event in the 2050s (Scott et al. 2014). Most assessment of climate change impact on alpine skiing now considers conditions for snow production. However, when it comes to off-piste skiing, cross country touring and alpine touring, it is necessary do separate assessments of projections for natural snow conditions and conditions for snow production.

Despite an increasing body of literature on the impacts of climate change on ski tourism from all over the world, very little is known about the impacts and adaptation options for Norwegian ski resorts. This is surprising, because skiing is probably the closest you get to a national sport in Norway, and skiing can and has always been conducted in all parts of the country. A limited study was conducted in 2005, concluding that most Norwegian alpine ski resorts had installed facilities for snow production – but not at all due to reflections relating to expected effects of climate change. In fact, most of the informants at that time appeared to be skeptical towards the phenomenon of climate change (Aall and Høyer, 2005). A limited survey from Norway found that summer skiers were inclined to substitute skiing with other activities if snow conditions were deteriorating – with a minority stating willingness to travel for long distances (by air) to ski destinations with good snow conditions (Demiroglou in press). Research of a more extensive character on climate change vulnerability and the adaptation and transformation options for winter tourism destinations in Norway is yet absent.

The bulk of vulnerability assessments of ski tourism take a top-down approach employing downscaling of climate change impacts on the length of the snow season and number of days with potential for snow production. But increasingly, studies are also considering how climate change might impact tourism demands, and how producers and clients alike might adapt to deteriorating snow conditions (Demirouglou et al in press). As Scott and colleagues notes – among the stakeholders in the tourism sector it is the tourist that has the highest adaptive capacity, and can change destination, timing and activity if the conditions are not good for the desired activity at the desired destination (Scott et al. 2012).

What has been found in previous research is that snow reliability is one of several factors on travel motivation, and a study in the Alps found that respondents were preferring high altitude destinations because of perceived better snow reliability (Unbehau et al 2008). A survey from Switzerland found that 83% views climate change as a threat (Behringer et al., 2000). The consumers state that they adapt by skiing less often or travel to a destination with more reliable snow conditions (e.g Rutty et al. 2015). To substitute skiing with other activities came out as a good number two (Rutty et al. 2015). A Finnish study looking at cross country skiing found that adaptive responses depended on the motivation for the skier to go skiing. The ones that were motivated out of social reasons would replace skiing with other activities (Landauer 2009). A more recent study comparing Finland and Austria found that Austrian cross country skiers would go longer for finding skiing options in a case of snow scarcity in the original destination than Finnish cross country skiers (Landauer et al 2013).

Most studies rely on modeling of climate impact and on opportunities for snow making, ignoring other adaptive actions that can be carried out by the ski centers and its customers (Rutty et al 2014). Using an analogue approach, by measuring actual behavioral change during winters with little snow, Steiger (Steiger 2011) found that the reduction in ski lift transports was 11%, while 68% of the respondents in a survey intended to ski elsewhere in case of poor snow conditions, suggesting that skiing behavior is more resilient than indicated other studies. The business model of the ski resorts is found to be a significant determinant of adaptive capacity, as ski resorts owned by conglomerates would typically have greater access to financial capital (Scott and McBoyle 2007).

So far, adaptation has been framed as first and foremost an economic issue, either we talk about the customers or the ski resorts, while other aspects of adaptation has been neglected (Kaján and Saarinen 2013). The ability and motivation to cope with challenges is found to be an important source of adaptive capacity to changes in coupled socio-ecological systems (Dannevig et al. 2015).

### **A framework for assessing transformative capacity**

The general literature on adaptation to climate change has branched out in many sub fields, the main fields being vulnerability studies, resilience studies, adaptive capacity and risk reduction and natural hazards. The literature on impacts and adaptation in skiing has both taken a top down approach based on climate model projections (Agrawala 2007), while some have started to incorporate the adaptation in market and among ski resorts (Steiger 2011, Demirouglo in press, Rutty et al unpublished). However, the literature suffers from a lack of theoretical frameworks for the analysis of the social, economic, cultural and political implications of lack of snow. This is significant, because the ski resorts and skiers ability to withstand and deal with lack of snow is also deciding the vulnerability of skiing tourism as a total to climate change.

Adaptive capacity has become a well-tested and much applied concept in the global environmental change literature. It reflects an individual, industry's or community's ability to cope with, or adjust to, changing conditions (Smit and Wandel 2006). Adaptive capacity is a particularly significant property in systems marked by uncertainty (Engle 2011). Since the IPCC introduced assessments of adaptive capacity in terms of determinants (Smit and Pilifosova 2001), this has become the predominant approach to adaptive capacity research.

It is also a relevant concept to apply to a ski resort, but there are still few studies that have employed a framework for assessing adaptive capacity to climate change to skiing. Scott and McBoyle (2007) hypothesises these determinants of adaptive capacities of ski resorts:

“potential to expand into higher elevation terrain where exposure to climate change is lower and snowmaking capabilities enhanced; capital to develop efficient and extensive snowmaking systems; capacity to expand water supply for increased snowmaking; diversify resort operations (multiple winter activities and four-season operation); being part of a larger company or regionally diversified ski conglomerate that could provide financial or human-resource support during poor business conditions; location in jurisdictions with less land use restrictions (e.g., outside of national parks or in states/ provinces where skiing makes a large contribution to the economy) and have positive relationships with host communities, both of which may reduce constraints to adaptation”. (Scott and McBoyle 2007, 1427)

There is a continuum from adaptation to incremental changes to transformation. *Transformational* change takes place when the way a system operates is fundamentally changed (Marshall et al. 2012). In the case of skiing we will argue that a complete lack of natural snow in more than half of the season will require transformation. As Westley and colleagues notes, to cope with systems changes require strategic agency (Westley et al. 2013). Thus, the capacity for transformation could be understood as the ability for innovation and entrepreneurship among the ski resorts. This could involve of the following critical factors:

- Facilitating and developing innovation (are the destination developing new products and attractions? Are these successful?)
- Mobilize for change (how have the destination dealt with previous challenges related to snow conditions or the market situation?)
- Recognize or create window of opportunity (are the destination exploiting changing conditions to create new market opportunities?)
- Financial capital (able to attract investments)
- Human capital (knowledge,

To assess the adaptive capacity in ski centers located in Western Norway, we have identified the following sources based on literature review and iterations with the empirical material used in this study:

- Cooperation & networks
- Financial resources
- Examples of innovation and transformation
- Market (or attractiveness)
- Physical situation/natural capital
- Human resources
- Infrastructure

## **Methods**

### *Snow projections*

Our study has utilized projections for future snow conditions, including conditions for snow making with different technologies. The projections have been developed using the SkiSim model (see Steiger and Mayer 2008; Steiger and Abegg 2013). The model employs time series data from weather stations near the ski resorts, and calculates average climatic conditions for the period, creating a baseline, as well as future projections derived from a stochastic weather generator (LARS-WG5, Semenov & Barrow 1997). By applying climate change signals to the meteorological stations, daily time series of future climatic conditions are produced while the characteristics of the individual stations are retained (Scott 2014). The SkiSim model output is length of season in days, as well as probability of a 100 days season with and without snowmaking and amount of snow required for the 100-days season for the selected ski centers. The projections use the 100 day-rule as a benchmark for the number of days a ski resort need to be open to have a viable economy. Furthermore, it projects the likelihood of being open during Christmas, as the week around Christmas is found to account for 25% of the turnover for ski resorts in the Alps (Steiger and Abegg 2013). Stakeholders from ski centers in Norway express similar conditions, with Christmas, winter holidays and Easter being the most important periods of the ski season.

We have conducted case studies in a number of ski destinations (see table 1). Document analysis has been used to access existing data on season length, and visitor numbers, as well as numbers on length of ski slopes, length of lifts, and height for base and summit. These data have been fed into the SkiSim model, allowing extrapolation from the altitude of the meteorological station to the given ski center. In addition to this, a survey was sent out to all Norwegian ski resorts, asking for information of season length, and snow making operations including use of chemicals, production capacity, source of energy, costs related to snow making, and decision making on when to start/stop snow production.

Data needed for the modelling in SkiSim is provided by the Norwegian Meteorological Institute. Their climate database contains data from past and still operating meteorological stations all over Norway. Reference period for the projections is early 1980s, to 2010 or later. Meteorological stations for this study/project were chosen based on a set of criteria, including distance to ski center, meters above sea level, and completeness and length of data record. In addition to this, some adjustments were made based on knowledge on local weather conditions provided by the ski centers. Necessary historic climate data needed for the SkiSim simulation were snow depth, daily maximum and minimum temperature and precipitation for a 30year period, representing average climate conditions over the given period (Scott 2014). The data were used for modelling of the baseline period as well as projections for 2030, 2050 ad 2080, for two IPCC representative concentration pathways (RCP) emission scenarios, 4.5 and 8.5.

Some key assumptions were made on snow production for the ski centers. Snow making season were set to start November 1<sup>st</sup> and finish at the end of March, with a temperature threshold at -5 degrees Celsius, meaning that snow production starts at -5 degrees or colder. Although there are great variations in required temperatures for effective and emergency snow making at different ski centers, the reported average required temperature for effective snow making was 9,5 degrees Celsius, and 3,5 for emergency snow making. A few reported that they could produce over 0 degrees, and that wet-bulb temperature is of greater importance than air temperature. The wet-bulb temperature, determined by both air temperature and humidity, allows some ski centers to produce snow at over 0 degrees today. Furthermore, snow making capacity was set to 10 cm in 24 hours.

The assumptions made have implications for the output of the SkiSim model. On the one hand, the assumptions accounted for here, include that all centers have state of the art snow production facilities, which give too optimistic results for some ski centers. On the other hand, the temperature threshold at -5 degrees could, as mentioned, be too pessimistic as several start their snow production at warmer temperatures. Interviews with ski centers have contributed to more insight into decision making when it comes to snow production.

### *Stakeholder involvement*

Group interviews were conducted in all case study destinations, with the objective of getting a basis for analyzing the transformative capacity and the potential increase in tourists choosing Norwegian ski centers over less stable destinations. Relevant stakeholders were representatives from the ski centers and destination developers. The participants were confronted with preliminary results from the SkiSim model and given the opportunity to comment on the projections as well as giving feedback based on their experiences. Further, self-reported ski

season length from the ski centers were compared to the baseline modelled by SkiSim, allowing for corrections of the baseline where necessary.

The interviews were also used to discuss consequences of seasons with little or poor snow and adaptation to these. This included conversations on already existing noticeable changes in climatic conditions and how this affects the running of the ski center and any further development of the facilities. Discussions on the destination's or ski center's adaptive capacity and capacity for innovations allowed for the stakeholders to reflect on previous experiences when facing challenges, particularly in economic terms.

In February 2017, a workshop was arranged to gather representatives from the industry, local authorities, destination marketing organizations and the research community to discuss possible strategies for the winter tourism sector in the county/western Norway<sup>3</sup>. Key in the dialogue with the invited stakeholders is the understanding of knowledge as being co-produced involving both scientific method in the modelling of projections and analysis of interviews, and the reflections made on these results. This co-production was particularly important in the seminar, where updated projections were presented, as well as a presentation on reflections made during the interviews we had conducted earlier in the season. A particular goal for the workshop was to develop adaptation strategies based on the knowledge derived from the project, and the local and industry specific knowledge stakeholders have.

#### *The case areas*

The study includes ski areas in Sogn og Fjordane, Hordaland and Buskerud counties in Norway. These four counties have 12, 13 and 30 ski lift areas respectively. The majority of these are small, operated on a volunteer basis for local communities. But there are also larger resorts, and resorts in development, which attracts non-local skiers.

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<sup>3</sup> Cf <http://www.vestforsk.no/aktuelt/seminar-korleis-kan-vintersportdestinasjonar-forebu-seg-paa-klimaendringane>

Table 1. Ski resort case studies.

Name of ski area	County	Number of lifts	Masl bottom station	Critical altitude	Number of payed ski days season 2015-2016
Breimsbygda	Sogn og Fjordane	2	625	625	(number missing)
Harpefossen	Sogn og Fjordane	6	242	500	15 474
Stryn winter ski	Sogn og Fjordane	4	325	325	(number missing)
Jølster	Sogn og Fjordane	4	250	600	(number missing)
Sogn	Sogn og Fjordane	4	325	325	7 500
Sogndal	Sogn og Fjordane	4	500	500	(number missing)
Myrkdalen	Hordaland	8	475	550	187 229
Hemsedal	Buskerud	20	640	1150	595 355

The largest ski resort in this selection is Hemsedal and Myrkdalen, with a turnover in the season 2015-2016 of 125 mill NOK and 32 mill NOK respectively only in ski pass sales. Myrkdalen has grown rapidly since the opening in 2002, both in turnover and in visitors. A considerable upgrade involving a new chairlift in 2013/2014 doubled the capacity of the ski center.

Winter tourism is increasing in both Sogn og Fjordane and in Hordaland, particularly the last years. However, it is still a fraction compared to the summer season in terms of overnight stays. Last season, Voss had 107 000 overnight stays, from October to April, foreigners constituted just 14 000 of these. The summer season (May to September), by comparison saw a total of 173 000 stays, and of those foreigners constituted 99 000. The ski resorts are increasingly attracting skiers from other parts of Norway and abroad, but the ski resorts in Sogn og Fjordane are primarily catering to regional and local markets.

### Climate change impacts on selected ski resorts

Norway is projected to see a 2,6-degree temperature increase in winter temperatures from the 1971-2000 by 2050, given the business as usual emission scenario (RCP 8.5). Northern Norway is seeing the largest increase, up to 4 degrees in the interior of Finnmark county, while the central part of Western Norway sees an increase of 2,3 degrees (Hanssen-Bauer et al. 2015). Precipitation increases too in all seasons, and for the Western Norway, it has already increased by 16 % since 1900 (relative to the 1971-2000 period). For the central part of Western Norway, precipitation is projected to continue to increase by 4%, but the uncertainty is huge.

The SkiSim results show a substantial increase in required technical snow for the ski centers to be open in the future, with variations depending on altitude and local weather conditions. In the reference period, average season length without snow making is 129 for the eight ski centers, and

all centers but Harpefossen fulfill the 100-day rule in this period. These simulations are made at the base station, with altitudes ranging from 250 meters above sea level (masl) at Jølster to 640 at Hemsedal. With technical snow, all ten ski centers fulfill the 100-day rule in the reference period at base station, and the average season length for all eight centers is 151 days.

The projections for 2030 show an average season length without snow making for the eight ski centers at 103 and 95 for RCP 4.5 and RCP 8.5 respectively. With snow making, the average season for the 2030-scenario are 137 and 129. Base station projections show huge variations depending on altitude. Harpefossen, Jølster and Stryn, all with base station located between 240 and 235 masl, can according to the projections expect a reduction in skiable days by 79%, 50% and 63% by 2030 when applying the RCP 8.5 scenario. With technical snow reductions by 2030 for the same three centers are 48%, 24% and 21%.

The numbers for the remaining five ski centers are more optimistic. Sogndal, Sogn, Breimsbygda and Myrkdalen fulfill the 100-day rule also in 2030 with the high-emission scenario, while Hemsedal drops to 84 days.

Although the projections suggest that Sogn and Sogndal, located approximately 10 kilometers from each other, will enjoy stable winters well into the middle of the century, the 2080s projections demonstrate the importance of technical snow also in these areas, as Sogn can expect the ski season to last for 72 days without snow making, and 110 days with snow making when applying the 8.5 RCP-scenario. The numbers for Sogndal are more optimistic, 127 and 135 without and with snowmaking. When looking at probability of ski operations on at least 100 days with snow making, the probability for Sogn drops from 100% in the 2050s to 87% in the 2080s, while Sogndal stays on 100% through 2030s, 2050s and 2080 8.5 RCP scenario. The difference between the two ski centers is explained by base station altitude, with Sogn ski center located at 326 masl and Sogndal at 500 masl. Stryn is the only ski center that has a 0% probability of a 100 days season in the 2080s.

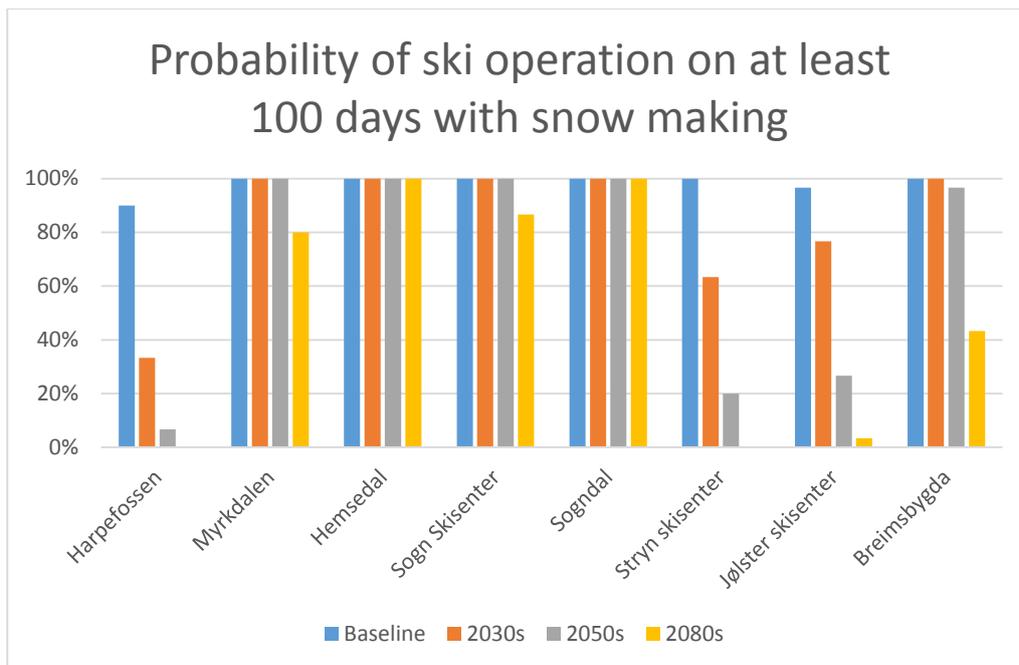


Figure 1. Probability of ski operation on at least 100 days with snow making in the selected ski centers.

Assuming the Christmas season still will be important for Norwegian ski centers in the future, and relevant to the discussion on the potential increase in tourists coming to Norway to ski because of less stable conditions elsewhere, projections for December 20th to January 4th were created. The modelled baselines show that three of the ski centers have less than 16 skiable days under current conditions, all of which drop to four or less skiable days in the 2080 rcp 8.5 scenario. Hemsedal is the only destination able to maintain skiable conditions throughout the projected time frame and for both emission scenarios.

The most affected destinations are those with low-altitude locations and/or has strong coastal influence on the weather conditions and/or are long distance from glaciers. These are in the northern parts of Sogn og Fjordane.

## Adaptive capacity

### Physical situation

Although all but one ski center covered in this project are situated in Western Norway, their physical situation differs greatly. Altitude at base station ranges from 220 meters above sea level (masl) at Jølster ski center, to 640 in Hemsedal. The two ski centers also represent the lowest and the highest (toppunkt) at 780 and 1450 meters above sea level respectively. The centers also differ in terms of how strongly they are affected by the coastal climate, with Hemsedal located further inland than the other centers. However, local climatic conditions lead to highly diverse impacts for the ski centers. Myrkdalen, Sogn and Sogndal all experience special local weather conditions, with more snow than surrounding areas.

As explained in the method section, projections were made for base station and, if existing, a middle station. To be defined as a middle station, upper lifts must have either chair lift or road access. This way, the ski center can transport guests to higher altitudes even with poor snow conditions at the base of the center. All ski centers but Breimsbygda have lifts starting at higher elevations than the base station, but only Harpefossen, Hemsedal, Myrkdalen and Jølster have either road or chair lift access to these lifts. At/in Stryn, Sogndal and Sogn, ski lifts take you to the higher lifts, requiring snow at the base station.

Harpefossen, a ski center that have struggled with unstable winters for many years, expanded its facilities with a new lift starting at 500 masl level in 2010. The projections for this critical point at 500 masl show the significance of altitude, with Harpefossen's baseline showing 126 days at the base station, and 150 at middle at 500 masl. This gap increases substantially when looking at future scenarios. For the high-emission scenario, there is a 67 days' difference between base station at 250 masl and the middle station at 500 masl already in 2030 for Harpefossen. In 2080, projections for Harpefossen show a decline to 4 days at base station when using the high-emission scenario, while middle station projections show a season of 36 days.

### *Financial resources*

Myrkdalen and Hemsedal are, with 187 229 and 595 355 paid ski days in the 2015/2016 season respectively, are among the large ski centers in Norway and considerably larger than the ski centers located in Sogn og Fjordane. The two also stand out in their organization structure, as they run hotels, restaurants and cafés in addition to their main product – skiing. Further, Hemsedal stands out as it is the only ski center in this study that is owned and operated by a non-Norwegian group, Swedish SkiStar. The group owns ski centers in Sweden, Norway and one in Austria, and has a 31% market share in Norway and 42% in Scandinavia.

As Hemsedal ski center has a different organization structure compared to the other centers in this study, their financial resources, cooperation and networks differ strongly from the smaller centers. For example, as most visits to hotels that are connected to the ski center are booked in advance, Hemsedal have yet to see significant changes in visitor statistics after seasons with poorer snow conditions. A representative from the ski center does however express concern with the long-term effects of less stable conditions, referring to the importance of recruitment to the ski sport among children and youngsters. Hemsedal share this concern with several of the representatives from other ski centers interviewed for this study. Fear of not being able to attract guests in the future due to poor recruitment is stated an important motivation for implementing measures to ensure more stable conditions in future seasons.

Being part of a bigger group of ski destinations, decisions on investments and future developments are not made locally, and Skistar's Norwegian ski centers are in this respect competing over the same funds as the ski centers in Sweden. With 42% snow production coverage, Hemsedal has the potential of increasing its snow production to cover a larger part of existing slopes, but this requires funding from SkiStar.

Myrkdalen is the largest ski center in Western Norway, and has experienced a rapid growth since opening in 2002. A new hotel with ski in-ski out facilities opened in 2012, a feature considered most important for Danish ski-tourists visiting Norway according to destination organisation Visit Sognefjord.

### *Examples of innovation/ transformation (new products, new markets)*

Several of the ski centers in this study are either planning or have already started offering other products in addition to skiing. These activities include roller skiing, fishing and biking.

Other measures are aiming at extending the ski season, attracting customers after the main season. All ski centers face the same challenge in attracting customers after the Easter holiday, as people see the winter season as over, even when there are great conditions for skiing. In addition to this, some of the representatives from the ski center are finding that the ski season has “moved”, starting and ending later than earlier. Some ski centers explained that their season was shortened not necessarily because of less snow, but that December is increasingly difficult in terms of snow conditions, whereas April and sometimes May were more stable, but that they lack the customer base needed for having an economically sustainable season.

Sogndal ski center is planning on extending the season by launching summer ski as a new product, separating it from the regular season with 2-3 weeks. While offering the ski product in a new “wrapping” may lead to an increase in visitors after Easter, representatives from the ski center suggest looking to other markets to expand their customer base for this late season. Visitors from the UK and other places in Europe may look to Norway when snow conditions in the rest of Europe are poor. This will require a different marketing strategy, as the ski center is primarily targeting the local and regional market, with an increased focus on the market in Oslo and Bergen.

At Sogn ski center, a new bike path was built in late 2016, ready to be used in 2017. The path is not connected to the ski center’s lifts and is open to everyone. Local destination marketing organization Visit Sognefjord explains that building a new bike path in the region is part of developing Inner Sogn as a destination.

There is, in general, optimism amongst representatives from the ski centers on future snow production technology. The ability to produce snow at warmer temperatures is emphasised, and most ski centers can expand their snow production coverage. Current coverage ranges from 15% in Harpefossen to 90% in Jølster,

The two main concerns brought up in discussions on expanding the snow production facilities at the ski centers, were access to water resources and the cost of snow production.

Breimsbygda does not have any snow production today due to poor access to water. Located at 600 meters above sea level, the ski center will have to build a reservoir if planning on getting snow production facilities. This is a big financial investment for a relatively small center with primarily local and regional customers.

When confronted with the required increase in technical snow in the future, the ski centers that are already producing snow expressed concerns regarding to the operation costs, having to produce increasingly more technical snow to uphold an ever-decreasing season.

Finding the time to produce the required amount can be a challenge as well.

## Conclusion

Preliminary results show that ski centers located in Western Norway are exposed to climatic changes, with regional and local variations leading to some being more exposed than others. The SkiSim projections show a great increase in required technical snow for the future, and a need for strategies to tackle the changing conditions. The assessment of climate change vulnerability will include capacity for adaptation and innovation.

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Demiroglou in press

# Environmental impacts of winter sport resorts: Where do we go from now?

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## Abstract

While ski resorts are stable in number but subject to intensification and extension to higher altitudes in most of Europe there is a worldwide trend in the development of new ski resorts, especially in Asia thereby perennialising already familiar environmental problems. Principle environmental issues are the overuse and pollution of natural resources, sometimes irreversible in nature. Few interdisciplinary publications on the environmental impacts of winter sport resorts as a whole exist since a reductionist view of the environment and extend of a ski resort often prevails next to disciplinary specialisation. Although environmental impacts go far beyond the ski runs themselves, many other important features such as water reservoirs and pipelines for snowmaking, lifts, roads and parking lots and factors such as water quantity and quality as well as natural hazards and climate change are neglected. Environmental concerns have become so severe, even impairing human health, that there is a serious tug-of-war between politically and economically-motivated ski resort expansion plans and citizen movements trying to stop expansion and pleading for alternatives. Relations within a complex palette of stakeholders, perception of nature and environmental impacts and the role of media will be discussed within this extremely intricate and vulnerable setting. The highly politicised role of Environmental Impact Assessments (EIA) and environmental labels is analysed against this background and alternative solutions proposed.

**Keywords:** Climate change, Water scarcity, Stakeholders, Lobbying, Politics, Labels

## 1. Introduction

Nowadays ski resorts are widespread in Europe but stable in number in both high and low mountain areas where topography and infrastructure is favourable. However, worldwide there is a trend for rapidly building new ski areas and ski resorts led by China, Russia and Turkey. In Europe new ski resorts have been recently developed in Portugal, Croatia, Montenegro, Bosnia and Herzegovina, Macedonia, Armenia, Belarus, Lithuania, and Estonia. In Africa there are resorts in Morocco, Algeria, South Africa, and Lesotho, but the strongest trends are in Asia and the Middle East, where Turkey is developing more than nine resorts, Georgia and Iran are developing six, plus Lebanon, Israel, India, Pakistan, Kazakhstan, Tajikistan, Kyrgyzstan, Uzbekistan but also Greenland and Bolivia (de Jong 2009). To some extent this trend is accelerated world-wide in order to develop new ski sites for Winter Olympics and Winter Sports Universiade. In Europe brand new developments still exist, e.g. a ski run fully covered by artificial snow created with EU regional structural funds on the Island of Bornholm, Denmark under the category of Sustainable Diversification of Agricultural Activities in a region devoid of skiing due to lack of snow and topography (de Jong 2014c).

Environmental aspects of winter resorts are an under-researched area. The famous textbook “Winter Sport Tourism” by Hudson and Hudson (2015) only devotes two and a half pages to environmental aspects and two pages to climate change (out of 256 pages). Principle environmental problems associated with winter resorts include the overuse and pollution of natural resources, sometimes irreversible. Whereas there are continual plans for expanding and extending ski runs and resorts by some, there are petitions and movements to stop and search for alternatives by others.

Simultaneously, ski lift operators are threatened by factors such as consolidation, climate change, water scarcity, ageing of population, rising costs of snowmaking, mass tourism, growing resistance against use of snow making and new trends in winter sport activities such as snowshoeing and ski mountaineering etc. In a recent study concerning climate change impacts on snow cover duration, Klein et al (2016) showed that on average, the snow season starts 12 days later and ends 26 days earlier than in 1970 in the Swiss Alps. Similarly, a recent article indicates that there will be less snow and a shorter ski season in the Alps since they could lose as much as 70% of their snow cover by the end of the century (Marty et al 2017). This can be corroborated by evidence such as photos, webcams and lift opening statistics from the last decades showing that the beginning of the ski season is being postponed by at least 2 weeks more and more frequently or is being terminated prematurely, even for high altitude ski resorts such as Verbier, Switzerland, or La Plagne and Val Thorens, France (Fig.1).

In response to climate change, technical adaptation such as artificial snow production is increasing exponentially over space and time. It is produced as a surrogate for natural snow, whether naturally present or not. Investments in this product are costly and in the long term they are highly insecure because they are ultimately limited by sub-zero temperatures, water and electricity availability, large water storage facilities and increasing maintenance costs. Since the turn of the millennium, low-lying ski areas (around 1200 m) have been switching from snow- to rain-dominated regimes. Paradoxically, the length of the ski season has been developed inversely to this trend, regardless of altitude. Ski resorts are prepared to operate during a fixed period, independent of natural snow and tourists (de Jong 2014c).



a)



b)

*Fig. 1 a) Ski opening delayed by two weeks in Verbier and b) La Plagne in November 2011*

Few interdisciplinary publications on the environmental impacts of winter sport resorts as a whole exist since there is often a reductionist view of the environment and extend of a ski resort. Literature tends to be dissected into individual disciplines (for example ecology, botany, soil science, zoology and politics), individual sectors of winter resorts (for example real estate, insurance, transport and energy) and individual geographical entities of winter resorts (for example ski runs or more commonly part of a ski run). Although Zu Schlochtern et al (2014) attempt a wide approach combining winter climate with the ecosystem, their analysis is restricted to soil and vegetation on ski slopes only. Disciplines such as hydrology (Gössling et al 2012), hydrogeology, sociology and economy (Falk 2015) are generally neglected as is a catchment-wide approach encompassing the entire geographical expanse of a ski resort including ski runs, lifts and lift stations, floodlights, surface and sub-surface artificial snow infrastructure, water pipelines, water reservoirs for snowmaking, streams, wetlands, parking spaces, diesel storage tanks for snow groomers, roads and urbanised surfaces. Environmental impacts of water and energy supply chains and anthropogenically-induced hazards are new aspects that are rarely considered.

The environment is often reduced to symbolic amounts of “clean energy” (for example three solar panels on the roof of a lift station) and “clean transport” (free shuttles) without taking into account the full environmental spectrum ranging from water bodies, including streams, lakes and wetlands and groundwater and glaciers, permafrost, soils, geology, geomorphology (including rock faces and moraines) to vegetation, air nor the protection of the environment as a landscape as a whole. Even pollution and renewable energy are treated in a partial manner without considering the whole spectrum of CO<sub>2</sub> emissions related to a ski resort. These should include diesel and petrol-related as well as other CO<sub>2</sub> emissions from snow groomers (approx. 200 L / snow groom / night), skidoos, lift operation, flood lights for nocturnal skiing, pumping of water for snowmaking, running of snow canons and snow lances, maintenance transport (including lorries) within the ski resort during the winter and summer season, cranes to cover glaciers with sheets to prevent rapid melting and maintenance work on ski runs and lifts mainly during the summer season. Due to the steepness and inaccessibility of terrain, increased transport emissions from helicopters, hydraulic excavators, bulldozers and four-by-fours are not uncommon.

Environmental Impact Assessments are frequently highly specialised according to the field of specialisation of the expert focusing mostly on ecological issues and nearly invariably omitting climate change and hydrological issues. Although variable from country to country, all investment plans are evaluated via an environmental impact analysis by institutions. The problem is that these evaluations are highly politicised and the experts carefully selected to be streamlined with

the needs of the ski industry. Any “disturbing” environmental elements are omitted or played down, much to the concern of scientists and stakeholders that are highly familiar with the situation. Some environmental impact assessments are virtually copy-pasted from pre-existing ones, mentioning issues that have nothing to do with the geographical region (Wurmburg ski area Harz).

The summary of the evolution of a ski resort (Fig. 2) shows how over time the carrying capacity is attained (de Jong 2014c).

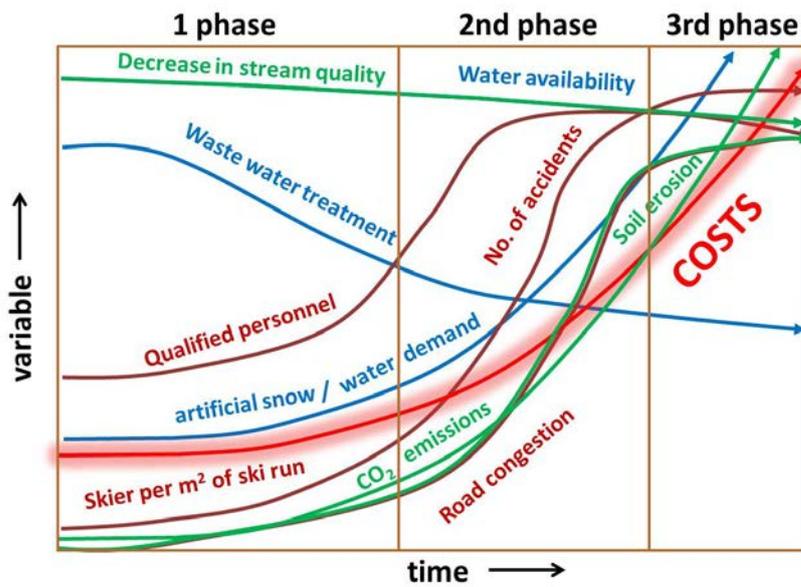


Fig. 2. Environmental carrying capacity of a ski resort (from de Jong 2014).

The aims of this paper are to define and summarize the environmental impacts of ski resorts, to evaluate the role of stakeholders in environmental protection versus destruction, their perception of the environment and climate change, the role of media and future recommendations for responsible tourism. The main contribution of the study is to provide an interdisciplinary review of the environmental impacts of ski resorts, how stakeholders perceive them and what actions they undertake.

The research methods applied include literature review, environmental data analysis (hydrological, meteorological, soil, geomorphological, landscape), systematic field work and field observations, field trips with citizens and interest groups e.g. from fishery, drinking water, alpine clubs, small-scale tourism, lift company representatives, politicians and scientists, press reviews, anecdotal evidence, personal experience with a wide palette of stakeholders in particular from local politics and lift company representatives via parliamentary hearings, internet blogs, written and oral correspondence, public debates and the development of position and strategic papers for environmental and political groups.

## **2. Environmental Impacts**

### *2.1 Impacts of Ski Runs*

Most literature is dedicated to the impacts of ski runs but even these are restricted to flora and very little fauna, hydrology, geomorphology and natural hazards. It is well known that ski runs change the type and density of vegetation, even more so when covered by artificial snow due to the difference in chemical water properties, concentration in minerals and salts, weight, density and water content (de Jong, 2013, Rixen et al 2003). The regular compaction of snow and soil by ski groomers strongly modifies the structural and hydraulic properties of snow and soils. This renders soils highly to totally impermeable, depriving the soil of oxygen and organic matter and encouraging surface runoff, deep gully erosion and in some cases even landslides (de Jong et al 2014a and b). In addition, burst pipelines transporting water to snow canons have caused disastrous landslides on ski runs, e.g. Cianross, Dolomiti in 2006 destroying the new lift (de Jong et al 2014 b).

Ski runs are constantly “remodelled” and “modernised” to satisfy the needs of mass skiing (comfort, security, and transit capacity) i.e. widened, smoothed and standardized by removing rocks, irregular ground and vegetation. In some cases, slopes are artificially steepened by adding soil in order to increase skier speed or to avoid excessive melt of expensive artificial snow. In large resorts with long, high altitude ski runs, ski runs are re-worked each summer due to excessive soils loss by erosion.

Another frequently ignored factor is light pollution for nocturnal skiing. Many ski resorts are visible from a long distance and have highly exaggerated lux intensities. The brightness causes light pollution and disrupts dark night skies typical of mountains.

### *2.2 Impacts of Roads and Parking Lots*

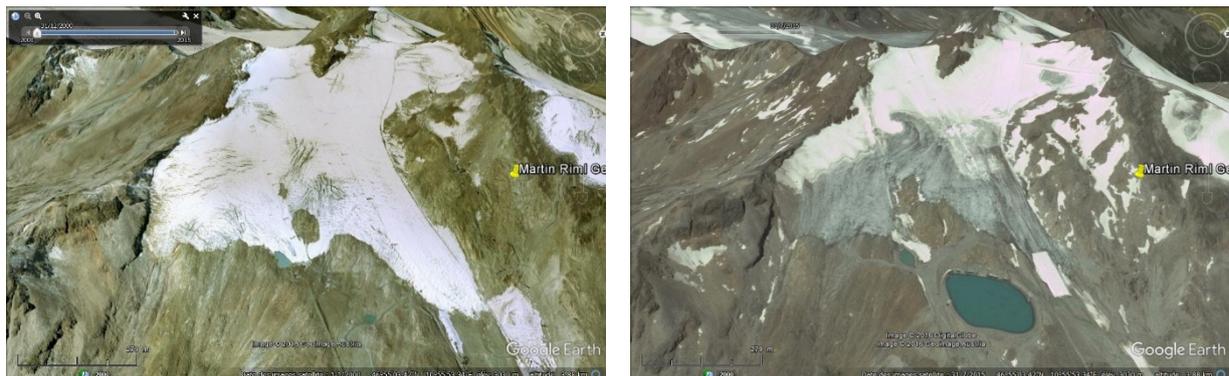
Up to date, there is no scientific work carried on the impacts of roads and parking lots on the ecosystem. The number of maintenance roads to the reservoirs is increasing with the number of water reservoirs constructed. Roads just like ski runs concentrate surface flow. Wemple (2007) found that for roads and ski runs in Vermont, surface flow increased by more than 10% in the catchment.

### **2.3 Water Reservoirs for Snowmaking**

Water reservoirs for snowmaking are built in order to store water for snowmaking and should theoretically solve problems of water scarcity and overpumping from torrents. Despite their widespread occurrence and continual expansion and extension it is surprising that there are virtually no scientific studies on the impacts of snowmaking reservoirs (de Jong 2013a, Evette et al 2011, Lagriffoul et al 2010, Vanham et al 2009) apart from pre-construction environmental expertise. To date several thousands of water reservoirs exist in the upper catchments of the Alps, with 5-6 for larger resorts and many new ones being built at lower as well as higher altitudes because of the increase in snowmaking to counteract climate change. This expertise concentrates on safety issues such as potential reservoir dam bursting or reservoir damage by landslides or avalanches but rarely addresses environmental issues.

Hydrological, hydrogeological and landscape issues are generally excluded. The major hydrological issue concerning water reservoirs is that they do not solve water problems during the winter when stream discharge is low. In theory, reservoirs should be filled with water during high discharge during the summer. However, in practice, equivalent or even higher quantities of stream flow are abstracted during the winter compared to pre-reservoir abstraction, thereby not alleviating stream flow in winter (de Jong 2015). Low winter discharge related to climate change is increasingly insufficient for refilling and the quest for repeated refilling during the winter even leads to tapping of drinking water reservoirs.

Since many reservoirs are inserted in depressions, a major hydrological issue is the loss of wetlands or lakes and drying up of torrents and meadows below reservoirs due to stream capturing and groundwater lowering. The loss of wetlands releases up to several thousands of tons of CO<sub>2</sub> release and permanently destroys the CO<sub>2</sub> storage capacity. In this respect it is surprising that the Ramsar ([www.ramsar.org](http://www.ramsar.org)) has never proactively counteracted these developments. The second largest water reservoir in the Alps in Les Arcs 2000, Savoie, France, “L’Adret les Tuffes” destroyed a large wetland but there are many more examples concerning smaller reservoirs (Ringler 2017). Reservoirs regularly become amphibian traps (Wimmer 2014) in addition to traps for larger mammals. In some cases wetlands have been strongly damaged and trophically changed by sediments flushed in from leaking reservoirs as was the case for the La Cabanasse peatbog in the ski area of Angles, Rhône Alpes, France in 2003 or the peatbog Filzmoos in the col between Wurzeralm and Warscheneck, Austria (Ringler 2017).



*Fig. 3. Comparison of a) The Tiefenbachferner Glacier, Austria in 2000 and b) with the Sölden snowmaking water reservoir, one of the highest in the Alps (2900 m) in 2015, Google Earth.*

A major hydrogeological issue is the blasting of rocks, as was the case for the construction of the largest reservoir in the Alps (450 000 m<sup>3</sup>), the “Panorma Lake” in Sölden in 2010 in front of the Tiefenbachferner Glacier, where 270.000m<sup>3</sup> of rocks were removed to construct a basin 370.000 m<sup>3</sup> in size (Fig. 3). It is ironical to think that a glacier should require snowmaking for skiing but the reservoir was mainly built to ensure the start of the FIS competition at the Rettenbachferner in late October. Other reasons are that because of the rapid retreat of the glacier, a prosthesis of artificial snow has to be maintained between the lift station and the glacier and the crevasses in the glacier also have to be covered. In the meantime, the glacier has retreated so rapidly that its lower end has become disconnected from the reservoir location and is being partially covered by sheets (lower right part of glacier, Fig. 3b) to prevent more rapid melting. In other cases, such as La Plagne, France, moraine landscapes were dissected to install the reservoirs (de Jong 2013). Sealed reservoirs over such large surfaces in mountains not only impair surface and groundwater

exchange but also prohibit rainwater capturing for supplying springs while presenting huge evaporation losses. Reservoirs implanted in permafrost are a security issue as well as having major impacts on groundwater flow. The Sölden reservoir was lowered 20 m into permafrost.

In terms of landscape deterioration, the construction of high reservoir dam crests has major scenic impacts by obliterating the skyline (Fig. 4 a) and b)). 65 % of the reservoirs are dammed 5 – 10 m above ground and 15 % tower more than 10 m above ground (Ringler 2017).



Sudelfeld, Walleralm, 16.6.2012



Foto Franz Speer 13.09.2006



27.11.2014 (c) Sammlung Gesellschaft für ökologische Forschung / Axel Doering



*Fig. 4 a) Obliteration of skyline by dam crest water reservoir b) Before (16<sup>th</sup> June 2012) and after (27<sup>th</sup> November 2014) construction, Sudelfeld, Bavaria. Photo: Gesellschaft für Ökologische Forschung. Landscape value loss by construction of reservoir a) before (13.09.2006) and after construction (summer 2013). Photo: Franz Speer.*

Apart from this, by sealing valleys, snowmaking reservoirs cause a loss of recreational space and thus value for summer tourism (Fig. 4 b) and c) and pose a danger for skiers by drowning in winter. Nevertheless, snowmaking reservoirs are invariably marketed as “multiple-purpose for fishing, swimming and rowing or even for the production of hydro-electricity”. Despite this never being true and most reservoirs even being surrounded by high fences and no-swimming signs, the argument is eagerly repeated for every new construction world-wide.

## 2.4 Water problems

Water problems in ski resorts are threefold, concerning both water quantity and water quality as well as the state of water bodies. Instead of adapting to the prevailing hydrological conditions and economising water during droughts or low flow that are expected to increase with climate

change, a vicious cycle of increasing water abstraction for filling snowmaking water reservoirs or directly supplying snow guns from streams and lakes is induced. *“Water availability during other months but winter is sufficient to fill these reservoirs”* (Vanham et al 2009). Lake Davos, Switzerland has experienced problems with 28 m of lowering of water level in winter for snowmaking (Stöckli 2012). Illegal water pumping in Austria and Switzerland has been noted over the past years because the authorised water quantities were insufficient under ski area extension and more frequent snowmaking cycles (de Jong 2015) but the question is whether this is just the tip of the iceberg under a warming climate?

In a recent report from the Engadin, Switzerland, it is reported that *“The presently tapped water resources are in many cases insufficient to keep up with the currently planned extension of snowmaking. Already today there are conflicts with drinking water when it is necessary to produce snow from drinking water during the peak season (Pontresina, Scuol). Almost everywhere the natural capacity of springs and torrents is already exhausted. Water has become a limiting factor for ski run snow production. In order to provide additional water, lift companies have decided to build more high alpine water reservoirs, tap unused torrents, begin snowmaking earlier in the seasonal, convert high altitude springs from drinking water to snowmaking and purchase water from hydroelectric plants.”* (Lanz 2016)

Scott (2006) also found that for Thunderbay and Orillia in Canada *“Planning to increase a reservoir size, upgrade pumping infrastructure or renegotiate a permit for water withdrawal would not only have to take into consideration average water requirements, but also the maximum potential water requirement in a ‘worst case’ scenario to ensure adequate supply for snowmaking each year.”* In his study he shows that water demand can increase by 100% in a worst case year. Water demand in Kitzbühel, Austria (with more than 750 snow canons) has increased by approximately 30% annually between 2004 and 2010 (Bergbahnen Kitzbühel, 2012) and continues to do so, reaching a projected four-fold increase of more than 2 million m<sup>3</sup> in less than 10 years.

Currently a new snowmaking reservoir is being constructed in the ski area of Untersmatt, Black Forest, Germany to *“solve water problems”* because of insufficient water availability during the winter months. However, the main issue here is that when the reservoir is emptied during the winter for snowmaking it will have to be refilled for the next snowmaking cycle and this water will cause a similar kind of water scarcity. Water reservoirs usually exacerbate water problems in winter instead of solving them because water is increasingly used from drinking water networks to meet the needs for multiple re-filling in winter (de Jong 2015). Many conflicts between water for snowmaking and drinking water or reserved flow in streams already exist throughout the Alps and European low mountains (Fig. 5 and de Jong 2013). In the Wurmberg, Harz Mountains, defined limits of water supply for the newly extended snowmaking infrastructure were already insufficient after only one year of operation and new permission was obtained by the lift company from the water agencies to double the amount of water extraction thereby disrespecting the previously defined minimal flow (de Jong et al in print).

In terms of water quality, problems are becoming even more severe due to vicious cycles of auto-contamination when polluted water from ski runs, artificial snow and ski resorts is pumped uphill and distributed via artificial snow over the mountain slopes and enters drinking water peripheries. Water samples taken before, during and after the ski season in 2014 in Les Menuires, Savoy, France by the author attained values of more than 6000 coli bacteria per 100 ml as well as very high levels of ammonium during the peak ski season in 2015. This can result in gastro disease

amongst the tourists and local inhabitants. At present, citizens in a ski resort in Austria are suffering respiratory and skin diseases connected to snow additives.



*Fig. 5. Fish killed during low flows in the River Loisach, Bavaria because of water overuse for artificial snowmaking in the ski resort of Ehrwald. Photo: Doering, Gesellschaft für ökologische Forschung.*

Ski resort developments in Europe do not abide to EU directives such as the EU Water Directive and the Soils Directive because they are not considered in EIAs. Neither are post-ski development impacts monitored from this angle. This is due to the fact that controls are expensive, personnel intensive, logistically difficult and politically undesirable. Although the EU water directive states that water bodies are not allowed to deteriorate, mountain torrents are canalised, displaced, placed into tunnels etc with respect to development of ski runs, water reservoirs, roads, housing, parking lots and lakes and wetlands destroyed. New regulations are even created to promote more water use, for example according to a new Austrian regulation, ski operators only have to pay 50% of the household water price for snow making since it would otherwise "*be too expensive for them to make snow*". In fact, this is against EU law simply because the ski industry is an industry and therefore not entitled to reductions. Concerning pre-development EIAs it is not a question of whether a new water reservoir or ski run or ski connection is to be built but where and how fast, no matter how detailed the scientific analysis and how strong citizen opposition with petitions etc.

### **3. The Role of Stakeholders**

#### *3.1 Climate Change*

Climate change has caused a twice higher than average temperature increase for the European Alps compared to the lowland areas and climate change scenarios predict a continuation of this trend. In medium mountains such as the Harz, a threefold temperature increase has been observed over nearly 100 past years. The implications for policymakers, destination market organisations, ski lift companies and local government are considerable, since this impacts not only credibility and uncertainty via shifts in the opening and closing of the ski season but also

costs (through more snowmaking) and the landscape (through more ski run remodelling and construction of reservoirs).

There is substantial literature on the awareness of possible effects of climate change among ski lift companies. Although most companies remain over-confident some have changed their attitudes in recent years according to Tragwöger (2014), Abegg et al (2008), Wolfsegger et al (2008), Luthe (2009), Saarinen and Tervo (2010) and Brouder and Ludmark (2011). However, both the author's recent experience with lift company representatives and majors of ski areas and their recent newspaper interviews in Germany and France show that there is still widespread denial of climate change by ski lift operators and resort developers related to the winter ski season in order to justify development plans and investments. For example in a newspaper interview in La Croix in 2016, Laurent Reynaud, the director of French Ski Resorts says that *"We are not operating over the same time scale. Investments necessary for producing artificial snow are amortised within 10-15 years, whilst the effects of climate change in mountains will not be perceived before the middle of the century"*. In several interviews given a few years earlier, he even stated climate change would not become a reality before the end of the century. It is therefore not surprising that environmental impact assessments omit climate change as an issue.

Taking this discussion to Germany, the major of Schierke, a promoter of ski development in the Harz Mountains proclaimed in 2013 that the Harz Mountains were the *"St. Moritz of the North"* whilst the Ministry of Regional Development and Transport of Saxony-Anhalt had already stated on 2010 that the Harz was the *"Tuscany of the North"*. Whilst the strategy of the country of Saxony-Anhalt on Adaptation to Climate Change by the Saxony-Anhalt Ministry of Agriculture and Environment outlined in 2010 that *"Snow-independent tourism should be developed. Snowmaking will not be supported"*, Saxony-Ministry of Economics was persuaded that *"Investments in Winter Sports with Snowmaking are the future"*. When publically confronted by the contradiction the Ministry of Agriculture and Environment opted for deleting the sentence and rephrasing their strategy.

In order to defend their newly built snowmaking infrastructure against the statement that temperatures of at least  $-5^{\circ}\text{C}$  are necessary in the Harz for snowmaking (de Jong et al 2012), the Wurmberg Lift Company (2013) wrote *"The Harz people may be a special race but natural laws are valid even in the country of witches and myths. Water freezes at  $0^{\circ}\text{C}$  – even in the Harz."* However, in 2013, responding to the impossibility of creating artificial snow over many weeks during the warm winter season 2012/13 it was stated that *"As soon as temperatures drop below  $-3^{\circ}\text{C}$ , we can make snow"*. (Dirk Nüsse, Director Wurmberg Lift Company, Press release, 18.10.2013). Into the third season after inauguration of the new infrastructure, this was rephrased to *"We cannot turn the temperature regulator (weather). And that is exactly why the beginning of the winter sport season failed. We are ready with the finger on the green button but only below  $-4^{\circ}\text{C}$ "* (Nüsser, Dec. 2015).

As for the Harz, scientific reports (de Jong 2013b) warning about upcoming problems of snowmaking were not heeded by the promoters of the Sudelfeld (Bavarian Alps) (de Jong 2013b) ski area. However, the scientific world is becoming more divided as there are a growing number of scientists that are financed for expertise or sponsored by the ski industry to produce statements denying snow decline or temperature increase (<http://www.zeit.de/2016/11/wintersport-tourismus-luxus>) or problems of pre-season snowmaking (<http://www.seilbahnen.de/mit-beschneiung-schneesicher>).

The latest press videos on winter sports and artificial snow differ substantially in content. Thus in 2015 Le Monde reproduced a video on “Comment fabrique-t-on la neige de culture” (how is artificial snow produced) that is purely technical, with neither any discussion on climate change limits to production nor environmental impacts. In contrast, the BBC produced a video prior to the Winter Olympic Games in Sochi in February 2014 in collaboration with scientists illuminating both climatic change and hydrological problems.

### 3.2 The Cycle of Stakeholders and the Environment

There has been an interesting evolution in the role of stakeholders in ski development and resource protection (Fig. 6). In the 1980s and 1990s with the intensification of impacts from ski resorts and mass winter tourism, critical articles and reports on environmental impacts of ski runs, urbanization, roads and a quite radical need for resource protection and regulation of further ski development were published in an array of journals, in particular in by Sport Scientists, Sports Sociologists (Fry, 1995, Weiss et al 1998), Ecologists, Geographers and Environmental Associations, for example the *The little Black Book of White Gold (Snow)* (FRAPNA 1984). In this era tourists were mostly ambivalent towards environmental problems. Many recommendations were issued limiting for example the extent of artificial snow production or extension of new ski runs. Following this in the 2000s, environmental guidelines became more pronounced with some soft accompanying regulations proposed by environmental associations. The voice of tourists started increasing, with a polarisation between mass tourists that expected to ski under all conditions with maximum comfort i.e. on artificial snow in the absence of natural snow and on well-prepared ski runs with little interest for the environment and nature loving tourists, especially in smaller ski resorts, that insisted on natural snow and would even give up skiing altogether to avoid further environmental deterioration. Some tourists have adopted a mid-way position, with a certain degree of environmental awareness constrained to their behaviour but without effect on ski run erosion, artificial snowmaking or water quality (Hudson and Ritchie, 2001).

Up to the year 2009, critical publications by scientists and associations on longer term future environmental impacts of resorts, ski runs and artificial snow multiplied. Since then, with few exceptions, scientists have published streamlined articles for the ski industry, ski associations and investors stating that skiing has negligible or even positive environmental impacts “*The cultured agricultural surface that visitors can discover in the form of species rich mountain meadows in the summer on ski runs prove how efficient and important the above mentioned methods are. This is also shown by the most recent research on ski run vegetation carried out by the team of Prof. Ulrike Pröbstl*” (Schwab 2016) and Arbeitsgruppe für Landnutzungsplanung (2011). This change can be explained by the increasing conflicts of interest between industry and science and also the increased pressure the ski industry is experiencing to defend its existence under climate change. Today, most tourists remain highly ignorant of any kind of environmental problems since the ski lobby is strong enough to censor any kind of negative publicity and the voice of scientists is as yet too weak.

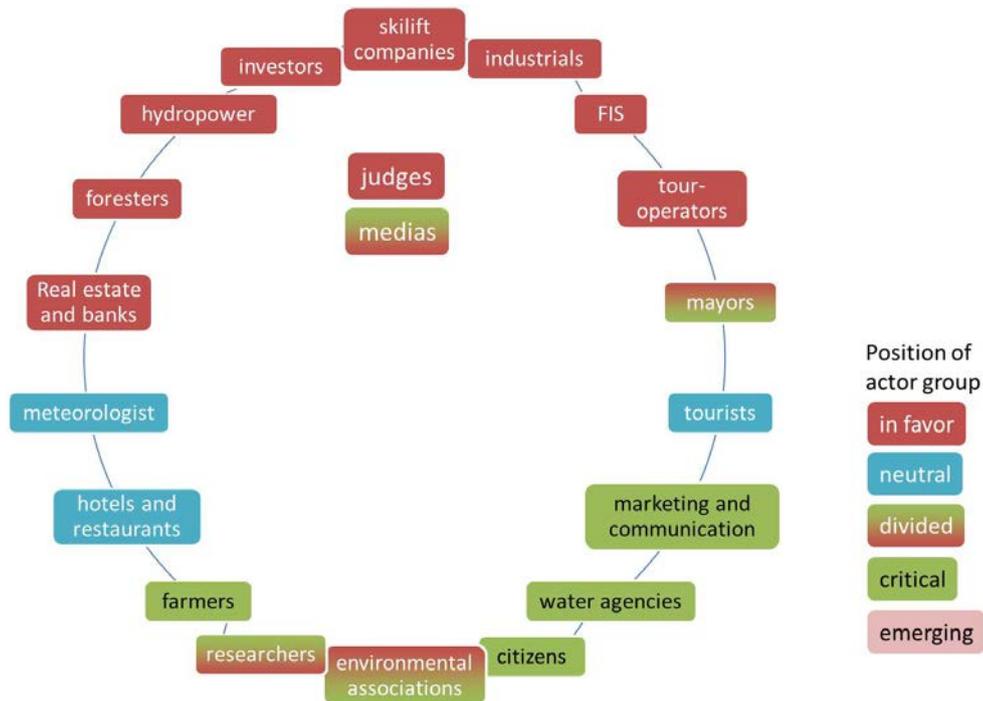


Fig. 6. Cycle of stakeholders involved in ski resort development today.

Activities of environmentalists (Mountain Wilderness, Verein zum Schutz der Bergwelt, Alpenverein, BUND, FRAPNA, CIPRA, WWF, green parties, citizen associations, League Valaisien pour la protection de la nature etc) are strong but rarely successful against the large economic lobby maintained by the ski lift operators. Conflicts between environmentalists and ski resort developers are at time fierce, especially when trying to extend ski areas into protected regions. However in the end, even if a region has resisted for 30 years and more, the ski operators win. such as was the case for the Piz Val Gronda (Schönwetter et al 2009).

In the US there are initiatives such as the “sustainable slopes charter “, <http://www.nsaa.org/environment/sustainable-slopes>. One of its goals is the reduction in water consumption used for snow making and energy savings for ski lifts and vehicles. In Austria, some positive attempts have been carried out, for example limiting the number of skiers to 14,000 per day in Lech Zürs to avoid road congestion.

There is also a growing resistance to the use of extensive snowmaking among skiers in snow poor winter season. A questionnaire by Zeitonline in 2015 showed that a majority of Germans are against the use of snowmaking (. <http://www.zeit.de/reisen/2015-01/skigebiete-kunstschnee-yougov-umfrage>).

In parallel, public actions and court cases initiated against ski infrastructural development have been increasing by environmental associations, some politicians and scientists due to fears of water scarcity, destruction of wetlands, climate change limits to artificial snow making and high debts. Although tourists should be involved at this point, this is generally not possible because of their geographical spread in Europe and worldwide and mostly only local tourists (such as day tourists) are involved. However, courts tend to decide in favour of new ski development. This is

mostly due to a lack in comprehension of the environmental issues at stake or unqualified experts. Most decisions for ski infrastructural developments are issued so rapidly stakeholders do not have time to react. Once they introduce an appeal against the development, the courts usually decide that the appeal is not suspensive so that a) the construction may be continued during the trial and b) once finished the new installations can be maintained. Local stakeholders frequently complain that their voice is not heard by the decision-makers.

In the ski resort of Hauteville, Upper Savoy, a petition with more than 6000 signatures against the ski development in 2016 was ignored by decision making authorities <http://hautevillevalromey.wixsite.com/collectif-citoyen>. Although the artificial snowmaking infrastructure was in place by December 2016, no snow could be produced until January 2017 because of the prevailing warm weather conditions. As more and more water has been pumped from the local pond to supply the snow canons and compensate for frequent snowmaking trials, the pond has gradually dried up (pers com Foray). No prior hydrologic study had been carried out to understand the situation.

Another well-documented example is the infrastructural development of the Sudelfeld ski area with a new water reservoir and snowmaking infrastructure. In 2013 two scientific expertise commended jointly by the German Alpine Club (DAV), the Federation for the Protection of the Mountain World (VzdB) and the Federation for the Protection of Nature in Germany (BUND) came to the conclusion that it is not recommendable to develop ski and further snowmaking in the Sudelfeld. Despite this, permission was issued by the regional governor for ski development. In 2014, the construction of snowmaking infrastructure began. In the same year a court case was introduced by the DAV against this decision at the Administrative Court of Munich based on the two scientific reports and long-term observational information assembled by the environmental associations. However, since the court case was not suspensive, it was later abandoned by the DAV. As predicted in the scientific reports, the opening of the ski season had to be postponed for nearly 4 weeks due to excessively high temperatures despite the new snowmaking infrastructure in place.

The next project of this kind is the Grand Revard in Upper Savoy. Already today the snow canons in place are not functioning properly because of the mild winter temperatures. However, a new snowmaking water reservoir is to be built and water will most probably be pumped from the small torrent Cha. Since this is a kart area, groundwater pollution and drinking water contamination is a hazard. Already in 2015 the Cha was contaminated by *Escherichia coli* bacteria.

In the Alps, environmental protection is mainly pushed by citizen associations rather than environmental associations who rely on subsidies from local governments. One such example is the citizen movement "Protect the Dobratch" in Carinthia, Austria. It was decided that no artificial snow infrastructure should be developed in order to assure the good quality of Dobratch Spring Water, that all lifts should be dismantled and instead a Natural Park be developed. The citizen movement was opposed by regional politicians. Both summer and winter tourism is successfully maintained and the park has received several environmental awards based on its concept of many niches and its strong integration within the local communes. However, even today, lobbying by regional politicians is carried out solely for technically-developed alpine ski tourism.

A recurrent problem with pushing environmentally respectful mountain tourism development is the narrow-minded view of investments by local governments and even the EU. In Bavaria, there

have been initiatives by local stakeholder groups to develop “Bergsteiger Dörfer” (hiking villages) but the local government was opposed to financing it because they only believe in financing “hard infrastructure” that has “a path to success”. Soft solutions are met with scepticism and therefore not developed. This is due to promises made on the ground of political mandates, the general perception that new developments are more convening than upgrading existing ones and the habit of investing according to the same concept.

### 3.3 Perception of nature and environmental impacts

In order to evoke the impression that winter sports and artificial snow are harmless for nature or even sustainable ski lift companies representatives have invented or changed names related to the ski industry over the years. The jargon ranges from misleading to incorrect in the different languages across the Alps and Low Mountain ranges in Europe. In Germany and Austria, deep, cement-sealed water-holding reservoirs are defined as “*Bergsee*” (Mountain Lake), “*See*” (Lake), “*Naturbergsee*” (Natural Mountain Lake), “*Panorama Lake*” (artificial reservoir in Sölden Austria) or “*Speicherteich*” (storage pond), or “*Schneespeicherteichen*” (Snow storage pond) giving the impression of a shallow landscape pond. In France, the more realistic “*retenue collinaire*” (slope reservoir) is increasingly being called “*lac*” (lake) or “*lac de montagne* (mountain lake). “*Neige artificielle*” (artificial snow) has transgressed into “*neige de culture*” (cultural snow). Personnel working with snow are “*nivoculteur*” (snow cultivators), “*canons de neige*” (snow canons) have become “*enneigeurs*” (snow makers). In Austria and Switzerland “*Kunstschnee*” (artificial snow) has been changed into “*technischer Schnee* (technical snow) or “*Maschinenschnee*” (machine snow) and snow preparation is called “*snowfarming*”. In addition, self-defined standards are common amongst the lift company representatives, for example that “*the construction of the reservoir heals the environment*”, for Les Arcs. Although none of these terminologies have been defined by scientists, scientists are eager to adopt them e.g. Mehrfachnutzung von Seen und Teichen: Chancen und Grenzen at the eco. Natur Congress in Basel, Switzerland. <http://www.eco.ch/workshops17/>, Pröbstl 2011 or Kraml (2010).

In order to appear eco-friendly, ski resorts have been eager to obtain green labels for surprisingly simple, symbol actions totally disconnected from the vast environmental problems resulting from ski development. However, greening of ski resorts does not necessarily bring financial advantage as recently discussed for French ski resorts (Goncalves et al 2016). These labels range from the “Flocon Vert” (Green Snowflake), <http://www.flocon-vert.org/> to Alpine Pearls and ISO 14001 environmental certifications. Unfortunately even the most advanced label such as Alpine Pearls is constrained to energy norms and attributes the label even when ski runs are covered by a full array of snow canons and the communes have encountered serious water problems. The evaluation committee of the Flocon Vert refused to integrate the criteria of percentage artificial versus natural snow in its label even though it is an intrinsic part of the definition of a “green snowflake”. The ski resort “Les Rousses” in the Jura, France (<http://www.flocon-vert.org/stations-laureates/les-rousses-fr/>) obtained the Flocon Vert in 2013 for validating all its 31 environmental criteria but principally for implementing wood-fired heating, for already having been certified as an ISO 14001 ski resort that rewards the fact that the village Les Rousses (and not the ski station) has undertaken several steps towards conservation such as waste sorting, awareness raising posters in hemp on the ski lifts, monitoring of energy consumption, distribution of pocket ash trays and cleaning of ski runs and parking lots at the end of the ski season. It is ironic that the resort could obtain this label when it was simultaneously disrespecting major

environmental standards by asphaltting its Nordic ski runs in preparation for artificial snow and excavating a large new snow-making water reservoir (Fig. 7).



*Fig. 7. Ski runs covered by asphalt in preparation for Nordic Biathlon venue in Les Rousses, Jura, France in 2012. In the background the construction of a large, deep snowmaking water reservoir is visible. The ski resort obtained the Green Label “Flocon Vert” for validating “all its 31 environmental criteria” in 2013.*

The lobby of the ski industry has become so predominant in avoiding transparency in environmental criteria that tourists are not even able to choose their own ski resort according to criteria such as natural snow, absence of ski run grooming and ski run remodelling. For example, it is virtually impossible to find a ski resort that has only natural snow (apart from resorts such as the Planneralp, Austria thanks to their intelligent marketing and communication strategy).

Due to the limits of snowmaking at lower altitudes, there is in general a tendency to extend to higher but also more vulnerable altitudes (e.g. Chamrousse, France despite the water problems). There are many ongoing attempts to merge ski areas even in very sensitive and very high altitudes such as Sölden, Pitztal, Austria. Either special permission is obtained to construct across protected areas or areas that should come under protection are excluded. The extension of the ski resort of Ischgl across the Piz Val Gronda, Austria in 2014 is probably the most well-known and debated example of how a ski run extension was authorised to link the ski area across one of the four most ecologically-unique granitic areas in the Alps (Schönwetter, 2009). Despite major protests in the form of public meeting, publications by environmental groups and letters to the county commissioner by scientists such as Dr. Schrott Ehrendorfer <http://kraftwerk-virgental.at/upload/Brief-Ehrendorfer-Schrott-an-LR-Pupp.pdf>, a specialist for the creation of red lists of protected species for the IUCN from the University of Wien, the extension was authorised. However, after having warned Austria for disrespecting its commitments towards Natura 2000 in 2013, <http://www.umweltdachverband.at/assets/Umweltdachverband/Themen/Naturschutz/Nat>

[ura-2000/130530-Mahnschreiben-EU-KOM-Natura2000-ohne-Anhang-B2.pdf](https://www.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016J0001), the EU introduced a court case against Austria in July 2016 because it had failed to identify the Piz Val Gronda as a Natura 2000 zone. Although this type of action cannot reverse the damage done, it may prevent future extensions.

### 3.4 The Role of Media

The media can be divided into two camps: those reporting in a balanced or critical manner, bringing frequently updated issues including environmental problems and their impacts on local stakeholders (citizens as well as tourists) and those reporting in the sense of the local politicians or lift companies, excluding or embellishing any kind of environmental issue. It is interesting to note that greenwashing media also mask out climate change even though it is intrinsically interrelated with environmental degradation. The type of environmental reporting is independent of newspaper size or its intellectual claim.

For example, in 2016 Le Monde cites Gilles Chabert, President of the National Union of French Ski Instructors on artificial snow production in the French Alps "*Il n'a pas aujourd'hui aucune incidence écologique quand on fabrique la neige....*" (Nowadays the production of artificial snow has no ecological impacts whatsoever ...) without any counterarguments by scientists or environmental observers. In contrast, an article by the New York Times on ski resorts in Chongli and the future venues for Chinese Winter Olympics, Yanqing Songshan National Forest Park, gives a voice to several scientists and stakeholders such as farmers (Johnson 2015).

Some media are timidly beginning to report on water scarcity problems associated with supplying water for snow making and filling snowmaking reservoirs in ski resorts in winter. For example there have been reports in Ruhstein and Untersmatt, Black Forest, Germany on "*Zu wenig Wasser für Beschneigung*" (Too little water for snowmaking) (Körner 2016) or in the Vosges, France "*La question de la ressource eau en cas de sécheresse*" (The question of water management in case of droughts) (DNA February 2017), "*Sécheresse : en Haute-Savoie, les canons à neige vont-ils être interdits?*" (Drought in Upper Savoy – will snow canons be forbidden?) (France3 Alpes 2017), a pending water restriction because of too low flows in Upper Savoie, French Alps, (Dauphiné Libéré 2017) or in the Vorarlberg, Austrian Alps, where even drinking water networks are being tapped to fill snowmaking reservoirs "*Wasserknappheit: Vorarlberger Schneekanonen geht das Wasser aus*" (Water scarcity: Voralberger snow canons are running out of water) (Roth 2017), "*Mürren geht das Wasser aus*" (Murren is running out of water) with water reservoirs filled only one-third in the Berner Oberland, Switzerland (Blum 2016) and in Schwarzsee and La Berra, Freiburg, Switzerland, water scarcity was so acute that no artificial snow could be produced and the lifts were shut for several weeks in January (Aebischer 2017). In this case the level of the Schwarzsee, from which water is abstracted, had dropped too low.

## 4. Conclusions

This analysis has shown that environmental issues related to ski resorts are not properly defined or evaluated and that many problems could have been avoided by prohibiting ski resort extension or intensification. Since this study is strongly based on field measurements and observations, anecdotal experience, debates, parliamentary hearings, field trips and strategy papers it would be desirable to develop more systematic evidence and monitoring data in the future.

## 5. Perspectives

Not only should the environment in ski resorts be viewed as an entity but also as a dynamic element responsive to climate, land-use as well as decision-making change.

All future ski developments should be evaluated by a panel of interdisciplinary scientists and local citizens independent of the ski industry. Existing ski resorts should be monitored in detail by scientists and an inventory of environmental problems should be created rather than distributing green labels. Continual monitoring of water quantity and quality should be obligatory across all ski resorts, from the reservoirs to the ski runs, torrents and below the sewage treatment plants. Tourists should be fully informed about the environmental impacts of alpine mass skiing and should be supported in their choice for ski resorts without artificial snow, snow grooms and ski run remodelling.

In future, a European Tourism Directive should be set up to avoid repeating the same mistakes and creating disastrous new developments (de Jong 2014). This directive should strictly control the conformity of all ski resort extensions with EU directives and introduce a system of penalties in case of non-respect.

Environmental friendly winter sport activities developed should be spatially and temporarily as independent as possible and simultaneously provide benefit to tourists in the absence of snow. Snow-bound activities such as snow shoeing, cross-country skiing and ski mountaineering should be enhanced and activities awakening curiosity, such as moonlight or torch snow-shoe hiking by night reinforced.

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# International tourism demand to Finnish Lapland in the early winter season

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## Abstract

This paper investigates the determinants of international overnight stays by visitor country to Finnish Lapland in the early winter season. The data is based on the five major winter destinations for the period 1995-2014. International overnight stays in December increased rapidly with growth rates of 9 percent on average. Dynamic panel data models show that snow conditions measured as the percentage of days with 30 cm or more in December has a significant impact on overnight stays of visitors coming from the neighbouring countries (Norway, Russia and Sweden). In contrast, snow conditions do not play a role for visitors from distant countries (UK, Western Europe, Japan). Furthermore, we find that high exchange rate elasticities exceeding one in absolute terms. Given the impact of prices, real GDP and snow conditions international tourism demand of visitors from Netherlands, France, Germany, Russia and the United Kingdom increased between 6 and 14 percent year on average, whereas overnight stays from Japan and Scandinavian countries have not changed much.

**Keywords:** International tourism demand, Snow conditions, Panel data models

## 1. Introduction

Foreign tourism demand in Lapland in the winter season strongly increased in the last 20 years. This stands in contrast to the European Alps where winter tourism flows are stagnating (France) or only slightly growing (Austria). The increase in overnight stays and arrivals cannot only be observed for the major ski resorts Levi and Ylläs but also for the capital city of Lapland (Rovaniemi). The increase in international tourism demand is mainly due to an increase in visitors from UK, Central European countries and from Russia (until 2014). With about 610,000 foreign overnight stays in the winter season (data refers to 2012/2013 November to April) the level of tourism inflows into the major five tourist destinations in Lapland is still relatively low. Thus, there is much room for expansion.

Global warming is a major concern not only for the snow based winter tourism in the Alps but also for winter tourism in Finland (Tervo-Kankare 2011; Tervo-Kankare, Hall and Saarinen 2013; Haanpää, Juhola and Landauer, 2015). The last 50 years in Finland shows a decrease in the number of days with acceptable snow conditions for downhill or cross-country skiing (defined as days with at least 30 centimetres of snow). Climate change scenarios for the Arctic Circle region predict that increase in winter time temperature is almost twice as high as summer time warming (Arctic Climate Impact Assessment 2004; Jylhä et al., 2008 cited in Tervo-Kankare 2011). In particular, the boundary of the appropriate winter snow coverage will shift to the North or to higher elevations. The first frost will arrive 3 to 4 weeks later and winter temperature will increase by at least 3 degrees (Jylhä et al. 2009). Lack of snow in the early season is particularly problematic for

visitors in the Christmas vacation period which account for a high share of visitors (Hall, 2014). In fact, in November 2007, 2011 and 2015 the FIS world cup in Levi was cancelled because of extraordinary mild temperatures which were too warm to make snow.

This paper investigates the relationship between guest nights in accommodation establishments by visitor country and snow conditions. The data is based on five popular winter destinations in Lapland for the early season (December) 1995-2014. We particularly focus on the December period because in Lapland there is generally no lack of snow in the high season February and March where snow coverage of 30 cm or more is guaranteed. Another reason for choosing the early season is that December accounts for the largest share of total overnight stays of all winter months (with 32 percent). Another aim of the study is to investigate which visitor countries are most sensitive to lack of snow in the early winter season. Knowledge about the determinants of winter tourism demand by visitor country is important for tourism planners and for marketing campaigns.

The main contribution of the paper is that we provide a first investigation of the impact of snow conditions on the number of guest nights by visitor countries in the Arctic circle area. Finnish Lapland is an interesting region to study the determinants of winter tourism demand. It is one of the few winter destinations in the world which shows a strong increase in the international overnight stays with growth rates of 9 percent over the sample period.

To analyse the major factors behind changes in international overnight stays, we use descriptive statistics, bivariate correlations and dynamic panel data methods. The study is based on a data set of overnight stay for five destinations in Lapland in December for the period of 1995–2014. Separate estimates are provided by visitor country (i.e. Russia, Sweden, Germany, Britain, France, Norway, Netherlands and Japan).

Several studies have investigated the role of weather and climate factors on snow based winter tourism demand. For instance, Falk (2010) and Töglhofer et al. (2011) analyse the relationship between the number of overnight stays in the winter season and snow conditions using data for Austrian villages. Both studies find a positive relationship between snow conditions and overnight stays. However, the magnitude of the relationship is rather low. Similar results can be found for skier visits for a selected group of French ski areas in high elevations (Falk, 2015). Using data for two ski areas in New England, Hamilton et al. (2007) find that attendance of the ski resorts is more affected by snow conditions in the main city nearby than in the ski areas themselves. Previous studies for Lapland use skier visits as the outcome variable (Falk & Vieru, 2016). Overall, these studies focus on ski resorts with a focus on downhill skiing. However, destinations in Lapland typically address visitors which are interested in variety of snow based winter sport activities including cross-country skiing, snowmobiling, reindeer and Husky safaris, Northern lights and snow shoeing. In comparing different snow based winter sport activities Loomis and Crespi (1999) find that the sensitivity of visitors to weather conditions is most pronounced for cross-country skiing activities. Similar results can be expected for reindeer and husky safaris and snow shoeing activities which also depend on accurate snow conditions. Few studies distinguish winter tourism demand by source country. An exception is Falk (2013) who distinguish between domestic and foreign tourism demand. The results show snow conditions are less relevant for foreign tourists than for domestic tourists.

To sum up, while there are several studies investigating the relationship between skier visits or overnight stays and snow conditions for downhill skiing in the European Alps, United States or Australia, few studies have explicitly investigated the relationship between inbound tourism demand in peripheral areas like the arctic circle area that offer a bundle of snow based winter sport activities rather than downhill skiing only.

The paper is structured as follows: Section 2 presents an introduction into the study area, while section 3 contains the theoretical background and empirical model. In Section 4 we describe the data, while Section 5 contains our main empirical results. Section 6 concludes.

## **2. Study area**

The study area consists of five popular winter sport destinations in Lapland: Levi (Kittilä), Saariselkä (Inari), Olos (Muonio), Rovaniemi and Ylläs (Kolari) (see Figure 1). The sample consists of two classical downhill ski resorts, Levi and Ylläs with each about 30 ski lifts and a maximum of 40 km of slopes. These ski areas offer slopes with small vertical drop making skiing not overly demanding. Besides downhill skiing cross-country skiing is the most popular winter sport activity. Rovaniemi is regarded as the 'home of Santa Claus'. Here, the Christmas period is the key tourism season of the year with the highest revenues generating (Tervo-Kankare, Hall and Saarinen, 2013). December is popular among tourists because of Santa Claus package tours. Based on visitor survey for Rovaniemi, Tervo et al. (2013) suggest that Santa Claus is the most important factor for travel choice. Other very important factors include presence of snow and image of 'real winter,' Shopping, Sami culture and travel costs are considered less important. In Rovaniemi the December alone account for almost 30 percent of total international overnight stays in the winter season (data refers to 2013 source Statistics Finland). Saariselkä has few ski lifts but offer an extensive network of cross-country ski tracks. Levi is well known because it hosts the world ski championships in November. These winter sport destinations experience a strong growth in skier visits and international overnight stays from the mid 1990s onwards. In contrast, the majority of winter sport destinations are in the consolidation or stagnation phase, like North America or the European Alps (Vanat 2014).

In the winter season, downhill skiing, snowboarding and cross-country skiing are the main attractions in Finnish Lapland. Other activities include snowmobiling, winter trekking, snowshoeing, skating, ice-fishing and Dog sledding, reindeer- and husky safaris (Tervo, 2008). This shows that visitors to Finnish Lapland in the winter season are interested in a mix of snow based activities rather than focussing on downhill skiing only (Tjørve, Lien and Flognfeldt 2015).



*Figure 1. Popular winter destinations in Northern Finland.*

*Notes: Rovaniemi, Salla, Pyhä, Ylläs, Levi, and Saariselkä are located in Lapland. Ruka in Northern Ostrobothnia. Kittilä, Rovaniemi, Ivalo and Kuusamo have airport.*

### 3. Theoretical background and empirical model

Sufficient natural snow is considered as a necessity for most snow based winter sport activities. It is well known that timing of snowfall is important for a successful start of the winter season and tourism demand. Lack of snow in the early season may lead to a delay in the opening of ski resorts (Haanpää, Juhola & Landauer, 2015). For Finland, the first snow usually arrives in November with a high probability in Lapland. However, the magnitude of relationship between winter tourism demand and snow conditions might be low. According to a survey downhill skiing and ice activities are least dependent on natural snow fall (Tervo, 2008). The reason is that two downhill skiing resorts are perfectly equipped with snow making facilities and average December temperatures of minus 3°C or less are usually guaranteed (Tervo, 2008). Cross-country skiing, snow-shoeing, snowmobiling and dog sledding require a minimum snow depth between 10 and 25 centimetres. Note that the number of snow days with snow depth larger than a given threshold for a given winter month is often regarded as superior to the mean snow depth (Marty, 2008). We choose the minimum snow depth of 30 cm which provides comfortable conditions for any of the snow based winter sport activities. Scott et al. (2015) suggest that a minimum snow depth of 30 cm is sufficient for ski competitions in smooth terrain.

Reliable snow conditions are particular important based activities in the early winter season while in the high season lack of snow never occurs due to high latitude. However, remote destinations such as Finnish Lapland are also highly affected by external demand fluctuations such as the economic and financial crises. Tourism is generally believed to be among the first industry to suffer from global crises (Bonham, Edmonds, & Mak, 2006).

The theory on tourism demand predicts that the number of visitors depend positively on real income and negatively on prices. Income of the visitor countries, relative prices, exchange rates, temperatures and snow depth are found to have significant impacts on winter tourism demand. The tourism demand model is augmented by snow conditions. Cortés-Jiménez and Blake (2011) suggest that the determinants of tourism demand differ widely by nationality.

We focus on the December period. The reason is that December is the most important month in the winter season accounting for 32 percent of all foreign overnight stays of which British tourists account for half of foreign overnight stays. Note that the November month account only for 7 percent of total international overnight stays in the winter season.

The resulting winter tourism demand model for a given winter month by visitor country can be specified as follows:

$$\ln ONS_{ijt} = \alpha_i + \alpha_{1,j} \ln P_t / P_{ij}^* + \alpha_{2,j} \ln EX_{jt} + \alpha_{3,j} \ln Y_{jt} + \alpha_4 \ln SNOW_t + \alpha_7 t_t + \gamma_t + \varepsilon_{it}$$

where  $i=1 \dots 5$  denotes municipalities in Lapland,  $j$  visitor country and  $t=1995:1-2015:4$  the time period.  $\ln$  denotes the natural logarithm.  $ONS$  denotes the number of foreign overnight stays.  $P$  denotes the consumer prices index,  $Y$  is a proxy of real income of the visitor countries,  $t$  is the yearly time trend.  $SNOW$  denotes the percentage of snows days with a threshold of 30 cm. Since overnight stays, GDP and prices are transformed into logarithms, the coefficients can be interpreted as elasticities, except for the coefficient on the share of days with a minimum snow depth of 30 cm which is the semi-elasticity. The time elasticity is defined as follows:

$$\varepsilon_{SV,t} = \partial \ln ONS_{it} / t$$

The time elasticity gives the percentage change in overnight stays over time given the impact of real income, prices and snow depth. The static tourism demand model can be estimated by the fixed effects estimator. However static panel data models likely suffer from serial correlation and are likely to be biased because of the neglecting dynamic relationships. Therefore, we use dynamic panel data models. Since for a given visitor country the number of time periods ( $T$ ) is about 20 and thus higher than the number of municipalities we use panel time series estimators. In particular we employ the so-called pooled mean group (PMG) estimator introduced by Pesaran et al., (1999). The PMG estimator keeps the long-run coefficients similar across cross-section units but allows the short-run coefficients to vary. Assuming common long-run slopes, the pooled mean group estimator is much more efficient than the mean group estimator. The error correction model can be estimated by maximum likelihood under the non-linear restrictions. The choice of lag order of the ARDL is restricted by one year given that yearly data for December are used. The error-correction models are estimated separately for five visitor groups. (i) UK, (ii) Japan, (iii) Norway and Sweden, (iv) Russia and (v) France Germany and Netherlands.

#### 4. Data and descriptive statistics

The data is drawn from different sources. Regional Council of Lapland<sup>4</sup> has collected and stored monthly overnights statistics in ski resorts by visitor country produced by Statistics Finland. We use data for five popular winter sport destinations in Lapland namely Levi (Kittilä), Saariselkä (Inari), Olos (Muonio), Rovaniemi and Ylläs (Kolari). The reason using these destinations is the size of the destination measured by the amount of registered accommodation and availability of long time series of data. Unregistered overnights are not included. In the area there are large amount of second home estates owned by natural people or associations, foundations and firms that can rent their facilities for visitors but, unfortunately, there is no direct method to compute or collect amount of overnights in these estates. We use monthly information on overnight stays for the major eight visitor countries (Russia, Sweden, Germany, Britain, France, Norway, Netherlands, Japan). The data covers seasons from 1995/1996 to 2014/2015. Daily temperatures and snow debt figures are provided by Finnish Meteorological Institute.<sup>5</sup> Weather observation data are collected from the weather station nearest to the location of the ski resort. In particular, we use weather data for following stations: Inari Saariselkä, MATKAILUKESKUS, Muonio ALAMUONIO/LEVITUNTURI and Rovaniemi Lentoasema. All weather variables were available at a daily frequency. Daily temperature and snow data are aggregated at the monthly level. We use two indicators: One is average snow depth and the other is the percentage of days with snow depth of 30 cm or more.

Monthly consumer prices index for the visitor countries is drawn from OECD STATS database. Annual GDP in constant prices (unchained) is drawn from the World Bank database. Alternatively we use the retail sales volume for December drawn from the OECD STATS database. The estimations use data for 4 or 5 winter destinations for 6 groups of visitor countries: (i) UK, (ii) Japan, (iii) Russia, (iv) Norway and Sweden and (v) France, Germany and Netherlands for December for the period 1995–2014.

Figure 2 shows that the evolution of snow conditions and international overnight stays for Russian and Swedish tourists in the two ski resorts. There seems to be a positive relationship between snow conditions and overnight stays in the selected ski resorts. Table 1 shows bivariate correlations. However, bivariate relationships have to be interpreted with caution since overnight stays are influenced by several factors.

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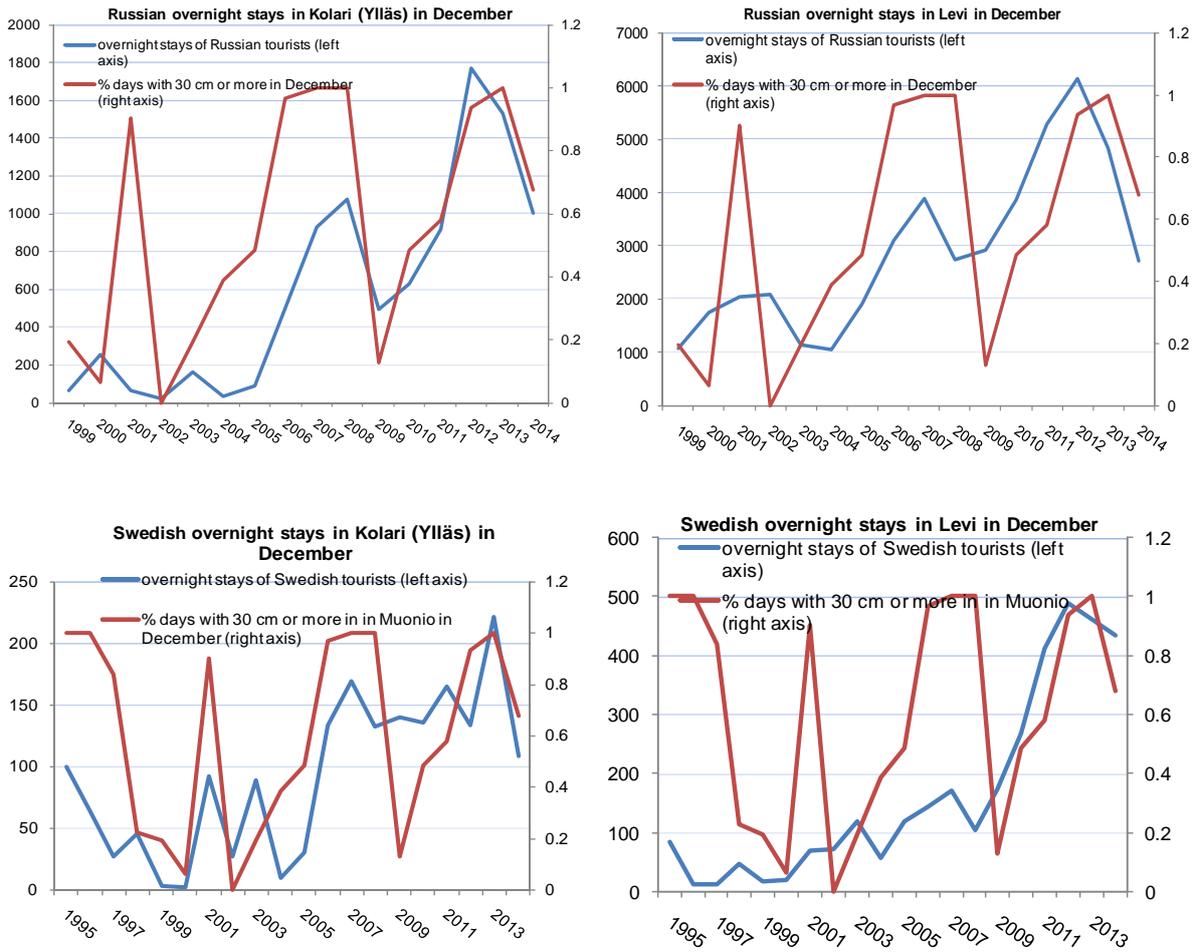


Figure 2. Evolution of international overnight stays and snow conditions (selected visitor countries). Source: STAT Finland.

*Table 1. Correlation between overnight stays and the explanatory variables (in changes).*

		UK	JP	RU	NO+SE	DE, FR, NL
share of days with 30 cm or more	r	0.14	-0.20	0.23	0.11	0.04
	p-value	0.21	0.10	0.07	0.21	0.49
ln GDP constant prices	r	0.22	-0.04	0.27	0.01	-0.10
	p-value	0.04	0.77	0.03	0.94	0.12
ln currency of visitor country per 1 Euro	r	-0.13	-0.07	-0.33	0.11	
	p-value	0.25	0.56	0.01	0.20	
share of days with 30 cm or more	spearman	0.03	-0.24	0.29	0.07	-0.01
	p-value	0.78	0.05	0.02	0.45	0.93
ln GDP constant prices	spearman	0.44	-0.05	0.31	0.01	-0.11
	p-value	0.00	0.67	0.01	0.89	0.07
ln currency of visitor country per 1 Euro	spearman	-0.03	-0.08	-0.45	0.07	
	p-value	0.77	0.54	0.00	0.43	

## 5. Empirical results

Table 2 shows the results for the dynamic panel data model by visitor country. The table shows the long-run coefficients and the error-correction coefficient. The percentage of days with snow depth of 30 cm or more is positive and significant for overnight stays of visitors from the neighbouring countries, Russia, Norway and Sweden. The long run coefficients range between 0.70 and 0.77 indicating that an increase in the percentage of days with snow depth of 30 cm or more by 10 percentage points (from the sample average of 57 to 67 percent) leads to increase in overnight stays between 7 and 8 percent. This clearly shows tourism demand from the neighbouring countries is highly sensitive to snow conditions in the early season. In contrast, winter tourism demand from distant countries (UK, other Western European Countries and Japan) does not depend on snow conditions in the early season. However, visitors from the neighbouring countries only represent 10 percent of total international overnight stays in December (data refers to 2014). Therefore, we conclude that December months with poor snow conditions have led to relatively small declines in total international overnight stays in our sample period.

*Table 2. Dynamic panel data estimates of the determinants of overnight stays by visitor country in Lapland in the early season (December).*

	UK overnight stays	
	coeff.	z
share of days with 30 cm or more	-0.22 *	-2.00
ln GDP constant prices	4.41 ***	4.53
ln currency of visitor country per 1 Euro	-2.26 ***	-4.78
year	0.07 ***	2.87
error-correction coefficient	-0.74 ***	-5.88
constant	-85.10 ***	-5.85
Log Likelihood	17	
# of obs	85	
	JP overnight stays	
	coeff.	z
share of days with 30 cm or more	0.41 *	1.80
ln GDP constant prices	1.92	0.44
ln currency of visitor country per 1 Euro	-1.22 **	-2.16
year	0.01	0.19
error-correction coefficient	-0.50 ***	-9.86
constant	-26.28 ***	10.44
Log Likelihood	-20	
# of obs	68	
	RU overnight stays	
	coeff.	z
share of days with 30 cm or more	0.66 **	3.24
ln GDP constant prices	0.16	0.19
ln currency of visitor country per 1 Euro	-3.07 ***	-3.86
year	0.17 ***	3.63
error-correction coefficient	-0.48 ***	-9.51
constant	5.36 ***	6.68
Log Likelihood	-12	---
# of obs	64	
	NO+SE overnight stays	
	coeff.	z
share of days with 30 cm or more	1.10 ***	4.93
ln GDP constant prices	0.19	0.12
ln currency of visitor country per 1 Euro	-2.05 *	-1.90
year	0.02	0.56
error-correction coefficient	-0.42 ***	-2.73
constant	1.13 ***	2.87
Log Likelihood	-52	
# of obs	133	
	NO, RU+SE overnight stays	
	coeff.	z
share of days with 30 cm or more	1.05 ***	5.57
ln GDP constant prices	2.77 ***	3.13
ln currency of visitor country per 1 Euro	-2.38 ***	-3.64
year	-0.02	-0.77
error-correction coefficient	-0.40 ***	-4.19
constant	-27.88 ***	-4.09
Log Likelihood	-75	
# of obs	201	
	DE, FR+ NL overnight stays	
	coeff.	z
share of days with 30 cm or more	0.11	1.23
ln GDP constant prices	1.69	1.38
ln currency of visitor country per 1 Euro	-2.12	-1.22
year	0.06 ***	3.67
error-correction coefficient	-0.64 ***	-6.97
constant	-26.35 ***	-6.99
Log Likelihood	-76	
# of obs	255	

Notes: The dependent variable is the log number of skier visits. \*\*\*, \*\* and \* denote significance at the 1 %, 5 % and 10 % level. t-values are based on robust standard errors.

As expected winter tourism demand in the early season not only depends on snow conditions but also on economic factors. In particular, bilateral exchange rates are highly significant exceeding one in absolute terms in four out of five cases. In particular, Russian and British tourists are most sensitive to change in exchange rates with elasticities between -2.7 and -3.0. An exception is the countries belonging to the Eurozone where relative prices do not play a role. The time trend

measured as years is positive and significant in three out of five cases. This indicates that overnight stays are increasing over time given the impact of the control variables real GDP, exchange rates and snow conditions. The magnitude of the time trend effect is quite large, ranging between 0.07 and 0.14 depending on the visitor country. The coefficient of 0.07 means that the number of overnight stays increase by 7 percent per year on the average. Income elasticities are positive in three out of five cases with large variation across visitor countries. Note that income elasticities are imprecisely estimated. Therefore for two out of three countries we use the retail sales index in constant prices as a proxy for real GDP. However, income is not the key variable of the study.

Several robustness checks are performed to assess the sensitivity of the estimates. First, we use average snow depth for December as an alternative measure for snow conditions. Unreported results show that snow conditions matter for overnight stays for Norwegian, Swedish and Russian tourists. Second, we re-estimate the tourism demand model with the squared term of the snow conditions indicator. However, the squared term is not significant at conventional significance levels.

## **6. Conclusions**

In Finnish Lapland international tourism demand in the winter season strongly increased over in the last two decades. However, climate change is seen as a threat to the start of the winter season. Climate change scenarios suggest that the Arctic Circle region is particularly affected by global warming with less natural snow. Therefore, it is important to study the historical relationship between snow conditions tourism demand in the winter season. This paper provides further evidence on the link between snow conditions in the early winter season (December) and international tourism demand by distinguishing between different types of visitor countries. The distinction between different visitor countries is important because the travel behaviour differ widely across countries.

Using dynamic panel data estimations based on five destinations in Finnish Lapland, we find that Russian, Swedish and Norwegian tourists are sensitive to snow conditions in the early season. However, these visitors only represent 10 percent of total international overnight stays in the five winter destinations in Lapland in the December season. As snow depth does not show a clear trend over the sample period, snow conditions are unable to explain the strong increase of international overnight stays over time. Tourism in Finnish Lapland is likely to be hit harder by changes in economic factors such as exchange rate changes which are particularly relevant for British and Russian tourists. Furthermore, overnight stays of British, other Western European and Russian tourists are strongly growing over time given the impact of exchange rates, prices and real GDP. New and cheaper flight connections have likely contributed to the favourable developments. Different motivation of the tourists may also play a role for the tourism increase. Wealthy British and Western European tourists are often interested in visiting new destinations in unspoiled natural environments.

Overall, the magnitude of the relationship between the snow conditions and foreign tourism demand is quite small. One explanation is related to the measure of winter tourism demand. One can argue that overnight stays represent a broad measure of winter tourism. Skier visits or lift ticket sales might be more appropriate to investigate the relationship between weather factors and snow based winter tourism demand. It can be expected that output of ski lift companies is

much more responsive than the number of overnight stays to variations in snow depth in the early season.

Given the results in the relationship between snow conditions it is natural to ask what the implications of future climate change for winter tourism are. Climate change is expected to bring substantially higher temperatures and decline in the amount of snow and duration of snow and number of days with snowfall. Winters with less snow will lead to a decrease in overnight stays of Russian and Scandinavian tourists.

The modelling approach used in the study could be applied to other destinations in Arctic Circle area. Another avenue of future research is to use the output of ski lift companies. Overnight stays is an imperfect proxy of measuring the demand for snow based winter activities. For downhill skiing ski-lift ticket sales number of visits may be more accurate.

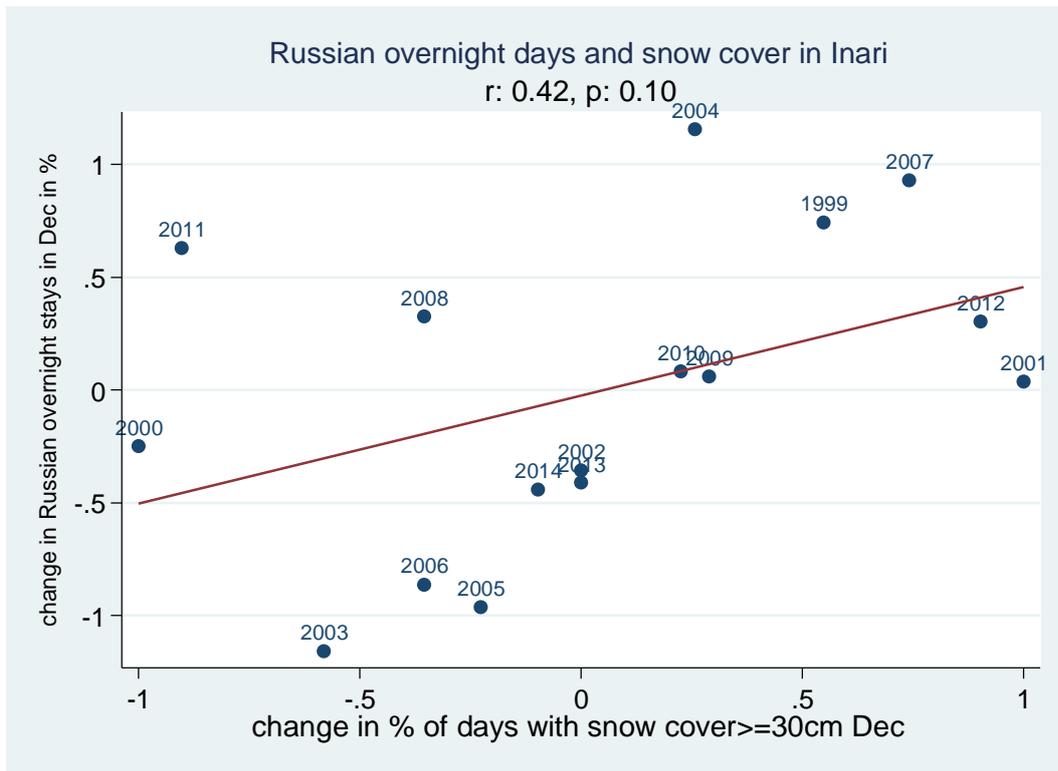
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Figure 3. Correlation between change in overnight stays and snow cover.



# Future tourism related climate of ski resorts in Northern Finland

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## Abstract

Climate change is one of the major concern on the ski tourism industry. The global ski tourism supply displays relative vulnerabilities against the climate change phenomenon that portrays severe shortages in snow cover depths and durations. This paper examines the impacts of climate change on the two major ski resorts in Northern Finland. The study employs a high resolution and dynamical climate model, RegCM4, to project the changes in the snow reliability and other ski tourism related climatic characteristics of these two resorts for the 1971-2010 and the 2021-2050 periods under the RCP 8.5 scenario. The preliminary results demonstrate clear snow reliability for the both cases, despite the deteriorating natural and technical snow conditions, and improved conditions in terms of the frequency of too cold days. Upon validation of the model, it is suggested that these climatic findings be coupled with relevant socioeconomic findings for construction of a more comprehensive agent based model over a wider domain that would represent the whole ski tourism industry in the Nord.

**Keywords:** Climate Change, Climate Modelling, Ski Tourism, Snow Reliability, RegCM, Finland

## Introduction

Climate change is one of the major concerns on the ski tourism industry along with global market stagnation (Vanat, 2016) and increasing hyper-competition (Flagestad, 2015). The global supply of ski tourism, dispersed through some 6,000 ski areas in almost 80 countries, displays relative vulnerabilities against the mostly human-induced climate change phenomenon that portrays severe shortages in snow cover depths and durations – the most essential fuel of ski tourism. While some ski resorts and destinations still perform resiliently with less exposure due to some physical advantages, such as high altitude and latitude, most of the rest are already or will be faced with the negative impacts of climate change with decreasing snow reliability.

This paper examines the impacts of climate change on the two major ski resorts in Northern Finland. The two cases represent the two largest ski resorts of the nation in terms of total slope length and number of ski lifts (Skiresort Service International GmbH, 2016) and are among the top three in terms of ski visits and skipass revenues (Suomen Hiihtokeskusyhdistys ry, 2016). The study employs a high resolution and dynamical climate modelling approach to explore the changes in the snow reliability and other ski tourism related climatic characteristics of these two resorts.

## Literature Review

Since the Industrial Revolution, human-induced greenhouse gas emissions have reached record highs, resulting in an unprecedented global warming trend. This trend has already visible

consequences for physical and human systems with mostly negative impacts on tourism. Among the types of tourism, ski tourism is regarded as the most affected as well as the most studied type (Demiroglu, 2011; Scott et al., 2012; Demiroglu et al., 2013).

Studies that focus on the position of ski tourism supply against climate change mostly make use of the “snow reliability” approach (Witmer, 1986). The rule initially looks into the “natural snow reliability” of the resorts by checking whether they satisfy the minimum viability requirements of at least 100 days of snow cover with at least 30 cm of depth. If this condition holds true for at least 7 out of the 10 winters, a resort is deemed to be “partly snow reliable”. If the score is 10 out of 10, then there is “full natural snow reliability”. When the “sufficient” threshold of 30 cm is raised to 50 and 70 cm, the reliability is qualified as “good” and “excellent”, respectively.

The snow reliability indicators have been enhanced recently, especially with the introduction of snowmaking technologies. Such that; when the above criteria are met by support of artificial production, the resorts are referred to as “technically snow reliable” (Steiger & Mayer, 2008). Besides, more indicators such as being (fully) operational on critical times such as weekends and Christmas-New Year periods have also been utilized in order to make the snow reliability approach more realistic (Scott et al., 2006; Berghammer & Schmude, 2014). Other factors for an “optimal ski day” have been identified as no precipitation, availability of surrounding snow scenery, a (perceived) temperature between  $-5$  and  $+5$  °C, a sunshine duration more than 5 hours per day, and no strong winds (Berghammer & Schmude, 2014). The last item has also been treated as an opening/closure indicator (Demiroglu et al., 2016) as strong winds pose safety concerns for the operations of aerial cable lifts, besides spoiling the touristic climate comfort and sweeping away the upper layers of snow cover. Likewise, “too cold” days have become another concern to the cancellation of skiing activities (Tervo, 2008).

In Finland, studies on climate change and ski tourism are quite handful, (Saarinen & Tervo, 2006; Tervo, 2008; Pouta et al., 2009; Landauer et al., 2009; 2012; 2014; Lépy et al., 2014; Haanpää et al., 2015; Kaján et al. 2015), with particular attention to the nation’s most popular snow sports – cross-country skiing. Early research (Tervo, 2008), however; notes that downhill skiing tourism is also at stake, as Finland is one of the regions to expect the most temperature rises and snow cover duration reductions by the end of the 21<sup>st</sup> century (Jylhä et al., 2004; 2008; Greiving et al., 2011: 9-10). Besides these long term projections, downhill skiing operators are also mostly concerned about short term and inter-annual impacts of climate variability and change (Tervo, 2008; Haanpää et al., 2015). All these findings call for further research on site-specific, near future impact assessments for the socioeconomically most significant ski resorts, such as the two Northern cases studied in this paper.

## **Methodology**

In order to assess the impact of climate change on (technical) snow reliability and extreme winds and frosts of the two major ski resorts, SR1 and SR2, in Finland; we follow a regional climate modelling approach. In this respect, we employ RegCM4 (Pal et al., 2007) in a dynamic, double-nested downscaling of the global circulation model MPI-ESM-MR (Max Planck Institute for Meteorology, 2012) to a 10 km resolution for the 1971–2000 control period and the 2021–2050 future period along the RCP 8.5 scenario, which stabilizes radiative forcing at  $8.5$  W/m<sup>2</sup> in a future world characterised by high energy demand and absence of climate change policies (Riahi et al., 2011), at the reference coordinates of the two ski resorts. The reference coordinates are based

on grid corners and midpoints. Before running the simulations, in order to pinpoint the closest base coordinates of the ski resorts, several test runs were conducted by changing the central coordinates of the domain in the model's configuration file in deference to 10 km-spaced grid size. Coordinates that fall within the closest proximity (0.7-1.6 km) to ski resort base areas were treated for analyses. Ultimately, the model was good enough to resolve the study region, where the topographic outputs had minimal deviations (10-25 masl) from the original altitudes.

The double-nested downscaling of MPI-ESM-MR by RegCM4.4 has provided us with three hourly outputs on snow water equivalent (SWE), near surface temperature (TAS) and near surface relative humidity (HURS), and daily outputs on maximum wind speed (SFCWINDMAX) for the 1971–2000 reference period and the 2021–2050 period along the RCP 8.5 pathway at the reference coordinates of the two ski resorts. The projected outputs on SWE, TAS and HURS have been converted into snow depth and wet bulb temperature values as indicators of natural snow reliability and snowmaking capacity. The SFCWINDMAX outputs have been treated for the assessment of lift closure days. The TAS outputs have been further utilized for identification of the frequency of the too cold days at the bases as well as the summits of the ski resorts, with the help of the environmental lapse rate of  $-0.5\text{ }^{\circ}\text{C}/\text{hm}$ .

The SWE values for each assigned grid are computed considering numerous parameters such as land type, soil information, net surface heating, soil or snow heat capacity, since the land-surface processes have been coupled to the RegCM4 via the Biosphere-Atmosphere Transfer Scheme (Dickinson et al., 1993). Based on a count of the daily snow depth values, converted from SWE outputs through respective monthly snow density values measured at the forest openings (as the most resembling land use type to that of the ski resorts) of Kittilä (Rasmus, 2013), which is 17-30 km away from the ski resorts, we have applied the rule of natural snow reliability for days with minimum snow depths of 30, 50, and 70 cm for sufficient (NSR30), good (NSR50), and excellent (NSR70) conditions; respectively.

Regarding snowmaking capacity, we have utilized the TAS and the HURS outputs in obtaining wet bulb temperatures (WBT) according to the following formula (Stull, 2011):

$$\text{WBT} = \text{TAS} (\arctan (0.151977 (\text{HURS} + 8.313659)^{1/2})) + \arctan (\text{TAS} + \text{HURS}) - \arctan (\text{HURS} - 1.676331) + 0.00391838 (\text{HURS}^{3/2}) (\arctan (0.023101 (\text{HURS}))) - 4.686035$$

An hourly count of WBT values has provided us with snow production conditions for which the maximum WBT threshold (SNOWatHOME LLC, 2016) is set at  $-7\text{ }^{\circ}\text{C}$  for assessment of the total quality snowmaking capacity. Lastly, for every snowmaking hour possible, a net snow depth of 0.17 cm (Steiger & Mayer, 2008) has been added. Bundled together with natural snow depth values, the final calculations have yielded technical snow reliability (TSR) conditions of the ski resorts. Moreover, the reference values by Damm et al. (2014) have helped us understand labour and energy costs and water consumption levels of snowmaking production.

## Results

Converting RegCM outputs on snow water equivalent, temperature and humidity; we have reached results on natural and technical snow reliability and changes in the frequency of too cold days and high winds for the two major ski resorts in Northern Finland.

Looking at the general trends; a decrease of 9.7-10.2 cm in snow depth and increases of 1.72-1.73 °C in temperature and 1.07-1.13% in humidity were projected for the both ski resorts for the period of 2021-2050 with respect to 1971-2000.

Regarding natural snow reliability; historical projections for the 1971-2000 period yielded 30 years climatic averages of 152-158, 132-141, and 113-125 days/year of snow depth above the 30, 50, and 70 cm thresholds; respectively. SR2 displayed a stronger natural snow reliability by satisfying the 100 days rule at all years for sufficient and good conditions and missing only five years regarding the excellence threshold of 70 cm with the strongest decrease at the end of the period in the year 2000. Similar findings were also true for SR1, with nine years not abiding the 100 days rule for the excellent conditions, and the largest losses for this threshold being projected towards the ends of the historical period. Regarding the 2021-2050 period; decreases of down to 135-142 (NSR30), 115-125 (NSR50), and 91-106 (NSR70) days were projected, with the minimum 30 cm snow depth requirement met for all 30 years at both ski resorts. In summary; it could be concluded that both the ski resorts would maintain their natural snow reliability at least until the end of the first half of the 21<sup>st</sup> century, despite the worsening general conditions for ski tourism climate. Regarding the Christmas/New Year rule, the resorts follow a fall of average natural snow depth from 80-94 to 68-82 cm, but still keeping the sufficiency for the whole future period. It should be noted that these results are based on the bottom altitudes of the two cases; therefore, should not imply any superiority against each other, especially when considering that SR1 has more vertical drop than that of SR2 whilst the bottom stations are almost at the same altitudes.

Although both the ski resorts reflect a continuation of their natural snow reliability in terms of the 100 days rule, assessing their technical snow reliability through calculations on the snowmaking capacities provides a point as well, as these resorts tend to have a competitive edge in offering extended seasons from early November to May. Despite the general increase in temperatures and the slight increase in humidity, the wet bulb temperatures would still provide ideal conditions in the future, with the maximum seasonal (November-April) snowmaking capacity maintained at 1,622-1,646 (from 2,228-2,264) hours and the maximum technical snow depth by April 30 at 277-284 (from 391-407) cm but also with the total costs of € 0.46-0.47 (from 0.63-0.64) in labour and € 1.03-1.04 (from 1.32-1.41) in electricity expenses and a water consumption of 1.08-1.1 (from 1.49-1.51) m<sup>3</sup> per m<sup>2</sup> of the ski areas and the likely increase of greenhouse gas emissions. Again, as the referral points for the capacity calculation lie at the resort bases, the reliability and the consequent costs could even get way larger with production at colder temperatures at higher altitudes.

Lastly, changes in the frequencies of too cold days and high winds are assessed. Climate change has a restoring impact here as the number of seasonal closure days, based on a threshold of -20 °C, is down from 7 to 4 days at the bottom stations for the future period, and down to 6-7 from 11-13 days at the summits. Regarding high winds, no significant event and change could be projected, when a threshold of 50+ km/h wind speed is treated as a closure reason in terms of aerial cable lift safety and visitor comfort. While this result conflicts with the ongoing complaints from the field, this is probably due to the fact that stronger winds would be present at higher altitudes, unlike bottom area reference points modelled in this study. Therefore, a closer look via higher resolution or specific modelling tools, such as the WOCSS (Winds on Critical Streamline Surfaces), could bring in more relevant findings.

## Discussion and Conclusion

The preliminary results of the study demonstrate clear snow reliability for the two cases in Northern Finland, despite the projected impacts of climate change until 2050. The model used in the study should be further validated by comparing the historical projections with observations at nearby meteorological stations, e.g. Muonio and Kittilä, or databases such as that of the Climatic Research Unit (CRU).

For now, the study has been limited to two major resorts in Finland, in order to save time and budget by working on a relatively small domain. However, a clearer macro picture could be finalized by a 1 km<sup>2</sup> resolution by the next generation RegCM and by downscaling more general circulation models under various greenhouse gas concentration pathways. A larger domain, i.e. the whole Nord, could be completely assessed in terms of its ski tourism supply. Coupling such snow reliability assessment with socioeconomic findings on demand (Falk & Vieru, 2017) within and to the Nordic ski tourism supply could be utilized for constructing multi agent based models for a holistic understanding of the future for ski tourism in the Nord. Moreover, a wider approach could also be pursued for winter tourism in northern Finland, as non-downhill-skiing activities, still subject to climate change, play a major role in the destination offer as well (Tervo, 2008).

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# Searching for arctic premium and luxurious lifestyle – Interpretations of the Lappish lifestyle brand and transmodern tourists.

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## Abstract

This article focuses on describing and interpreting the change of Lappish experience tourism brand from postmodern experience industry towards transmodern lifestyle industry. By the transmodern lifestyle tourism industry, I am referring to the ecologic, ethical and responsible service production and consumption and brand management.

The key objective of this paper is to depict and predict the brand strategic elements in succinct form postmodernity and transmodernity in Lappish tourism, experience and hospitality industry. Secondly, this article will attempt a sketch of the Lappish postmodern experience tourist and transmodern lifestyle tourist. Thirdly this article will describe the brand strategic and operational landscape of the transmodern lifestyle industry as a part of tourism and hospitality industry in Finnish Lapland.

This brand and concept analysis is descriptive and phenomenological. The empirical material is based on a business and consumer insight and foresight analysis of 20 Lappish Tourism and hospitality companies.

**Keywords:** Transmodernity, Lifestyle industry, Postmodern tourist, Transmodern tourist, New luxury

Theme: Brand management in winter destinations

Focus of Paper: Theoretical/Academic

## Introduction

On the meta-strategic level, Lapland has tried to construct its tourism, hospitality and experience industry's (THE-cluster) competitiveness ideology and the causal topology of economic emergence by brand marketing its competition edges: credible, coolness, creativeness and contracts (look about for c's Visit Finland 2013 and Lappish brand marketing Lapin Liitto 2015). The brand experts have deconstructed and reconstructed the Finnish and Lappish brand values and found more other marketing elements as originality, ecologic and silence for Lappish destination brands.

THE-industry and Visit Finland have understood the importance and image of experience (especially winter and Christmas tourism) and wellness/wellbeing tourism development as a part of Finnish, specially Lappish brand development. In the national and regional tourism strategies have defined many experience, wellness, nature-based, lake and wellbeing tourism but also

lifestyle/luxury tourism objectives for the period 2009-2020. The key goals are conceptual, strategic, operational and marketing oriented:

- 1) the implementation of experience (for example seasonal tourism, nature-based tourism, food travel, wellness tourism) concepts;
- 2) the travelisation, servialisation, productisation and premiumisation of THE-companies
- 3) the internationalisation, networking and joint marketing of THE-companies;
- 4) the identification, developing, marketing and selling of core products and services;
- 5) the product innovations, service innovations and technology innovations in experience tourism;
- 6) the development of service and supply chains;
- 7) an improved quality level;
- 8) the cooperation in distribution and pricing;
- 9) the year-round product and service offering and sales. (More about well-being trends and well-being tourism trends in Finland Björk 2011a; Björk 2011b; Björk & al 2011; Finnish Tourist Board 2008b; Heikkinen & al. 2016; Konu 2010; Konu & al, 2010; Konu & Laukkanen 2010; Lapin Liitto 2015; Saari 2015; Tuohino & Kangas 2009; Visit Finland 2015.)

This article focuses on describing and interpreting the change of Lappish experience tourism brand and concepts from postmodern experience industry towards transmodern lifestyle industry. By the transmodern lifestyle tourism industry, I am referring to the ecologic, ethical and responsible brand management, service production and consumption.

The key objective of this paper is to depict the brand strategic elements in succinct form postmodernity and transmodernity in Lappish tourism industry. Secondly, this article will attempt a sketch of the Lappish postmodern experience tourist and transmodern lifestyle tourist. Thirdly this article will describe the brand strategic and operational landscape of the transmodern lifestyle industry as a part of tourism and hospitality industry in Finnish Lapland.

This brand and concept analysis is descriptive and phenomenological. The empirical material is based on a business and consumer insight analysis of the Lappish THE-companies. The research material is based on a business insight analysis of experience services and products of Lappish THE-economy. I have action researched (including interviews, observations, case studies, document analysis) the service worlds of over 20 big and SME companies and destinations in Lapland. I have also analyzed and categorized the Finnish and foreign lifestyle/wellbeing customers and predicted their customer behavior in Lappish destinations during years 2008-2017. I have also found segments for premium product and service worlds for demanding and wealthy travelers.

### **The key elements of Lappish postmodern experience tourism**

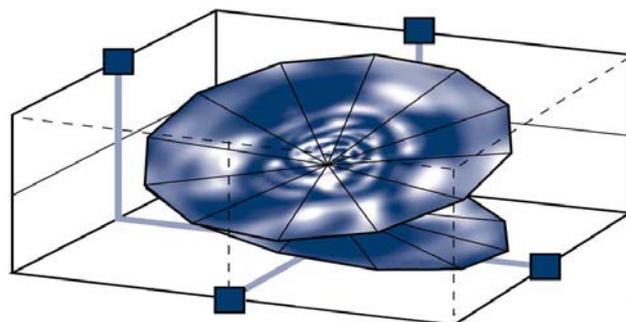
Ever since the 1980's (or, for some researchers, the 1950's), the analysis of the consumption habits of travelers in the THE-industry has become more complex as a result of postmodernism and expanding and globalized service supply and demand. Postmodernism shows in the fragmentation and insecurity of the mass market and in the emphasis on the consumers' multiple needs and desires to consume (Cf. Bauman 1993; Bocock 1993; Heikkinen 2014; Honkanen 2004; Urry 1990; Williams 173-213.) I call this customer/traveler as a chameleon consumer, whose logic

of experience and service consumption have loosened and regulations have been discarded which can be described as chameleon or hybrid consuming (Heikkinen 2015).

By postmodern THE-industry, I am meaning dynamic, un-linear and partly hyper-cycle business environment, the global hotel and restaurant chains, resorts, big shopping, event and experience centres and multi(experience)services. Specially, some Lappish ski resorts (Levi and Ruka) are typical playfields of (post)modern tourists. They are supporting the consumers' searching of experiences, wellness, individuality and other people. Also, the Lappish commercial hospitality industry (including hotels, restaurants, bars) and wellness industry (spas) are living and polyphonic miniature of the whole phenomena of postmodernism and growing consumption of experience services and products. (Boniface 2001; Heikkinen 2015; Heikkinen & al. 2016; Konu & al. 2011; Saari 2015; Sheldon & Bushell (2009; Smith & Puczkó 2009.)

The Lappish experience industry based partly on mass service production and partly on small-scale experience production. There are also some companies who offer hand-tailored luxury services for truly individual service choices. The experience traveler moves fast in the open, contextual, layered, socio-cultural, economic and technical-rational texture playfield (Bewhorger & Luckmann 2000, 29-44; Heikkinen 2002a; Heikkinen & al. 2016; Varto 1995, 61).

The blue circle in the image demonstrates the situational behaviour of the consumer, who wants to survive in everyday life and also seek enjoyment, pleasure and aesthetic experiences from different services and products offered by the THE-industry. (Cf. about Finnish tourism analysis Hall & al. 2008; Heikkinen 2017; 2015). The customer and consumption behaviour depends on the life situation of the customer, on values, cultural taste, buying power, lifestyle and different motives (the spiral structure). The spiral structure also aims to show the age, gender, generation and lifestyle complexity of customer and consumer behaviour. The experience traveler moves freely from top quality villas and safaris and fine dining restaurants to mass experience spa and fast food restaurants during her/his journey, as the situation requires or resources allow (Pattern 1).



*PATTERN 1. The playfield of the experience consumer.*

The figure depicts the postmodern dynamics of tourism markets of winter and Christmas tourism on the Lappish ski destinations. These “white time’s” lifestyle seasons describe the concept and brand mix. They are typical cultural and business multi-layered stories of different travel strategies and whole Finnish travel industry, the hyper-reality of the lifestyle industry and the “Bubbling” on-season/off-season markets. The Lappish tourism companies have a lot of marketing problems to attract the tourists on summertime but the winter is “sold-out”. The accommodation companies are fully booked in Rovaniemi and Levi centres during Christmas time, but the key business figures for hotels and restaurants indicate enormous dropping (30-50%) from wintertime towards spring and summer.

The growth of tourism in Lapland force the companies to offer more mass-produced, mass-developed and designed services and products for sale (for example culture and sport activities, clothing, souvenirs, food products and services). The Lappish new airport, hotel and destination investment plans are representing global, (post-)industrial business phenomena in THE-cluster. The investors are also searching more and more global brands and trademarks and thus limits the choice available to the consumer’s. At international big destinations, services designed by combining several technologic and experience services and events are replacing traditional Lappish cultural activities like historic place visits, museum visits and church visits. (Heikkinen 2017; 2002a.)

The specific tourism and destination strategies and specially the huge, new hotel building plans (for example Rovaniemi, Saariselkä, Ylläs) reflect at told the same time the often bold and unrealistic expectations of growth of tourism and trust on international, particularly the Asian investments on area. The competition from tourists, hotel brands, direct and charter flights, innovations and people describe the speed of transformation of experience society. The Lapland is example of the power of the brand, concept and e-marketing, communications and the abundance of open possibilities: experiences, services, events and products on offer. In this hybrid-markets, all brands and products are side by side and on top of each other in a hypercyclical rotation.

The traveler is a multirole player and hybrid-consumer. The (e)traveler’s first role is to search the Lappish destination and resort and experience these digital arctic adventures, which I call postmodern *clictivism* (finger tap tourism), and second role is to make a buying decision to purchase the Nordic experience journey. The third role is to experience physically and mentally the sense of time and place of Lapland.

Companies in the THE-industry seek, by their commercial services, to fill the time and lives of the travelers. The consumer tries to select from the supply of the service portfolio as much as possible that suit his/her schedule and financial situation best. Some consumers know exactly what they want. Some do not even care. They are happy with any product, as long as it is experimental and it comes fast and is cheap and safety. (Heikkinen 2002a.)

The casual services and products, concepts of event and quality have suffered an inflation of sorts in this digital and physical experience mass market. Small companies and consumers have been made into objects of the mass culture, accepting the situation, being even pleased with it. There are many Lappish companies, tourism municipalities and several travel or tourism communities which have no afford and sense to compete on these open international eTravel fairs. They know that they have exceptional attractive and unique products and services, which has to sell more wisely and for precise segments who are appreciating slow tourism and lifestyle of health and sustainable tourism (commercial term: LOHAS customer segment), because the tourism shows are the most important shared marketing and selling event of the year for them.

There are also more and more postmodern fast tourists, so called heavy users of travel services, claim that they have 'seen it all' and nothing that is on display has an impact on them. Still they are restless; they want to see and experience something completely new.

### **Transmodern tourism**

The fast-cycled consumption of travel, food and experience services has already brought forth counterforces. The demanding traveler tribes, as eco-oriented and nature tourists, are criticizing the global culture of experience, overwhelming material and waste production. The critics towards postmodern tourism is strengthening everywhere in the West. The basis for resisting the power of the market can be ethical, cultural, political, economic or ecological. The conscious travelers are a very heterogeneous but rather well networked group. They are united by *eg* their resistance of globalization, the faceless markets, the profits of the big companies and by the boycotting of environmentally harmful products and services. (Aaltonen 2010; Aaltonen 2007; Aaltonen & Jensen 2012; Heikkinen 2002a; Uriely 1996; Vattimo 1992.)

The critical environmental passivists but also conscious and demanding premium and luxury tourists are aiming at a modest, ordinary consumption and life, in harmony with nature (look premium and luxury tourism in Finland Heikkinen 2015; Latvala 2013; Raivio 1997). The eco-conscious and top-quality oriented traveler tribes are still marginal in Finland, but in Central Europe they are already an important influence in tourism and lifestyle industry.

My action researches (interviews, observations, workshops) have indicated that many Lappish THE-companies have already taken seriously the groups of the wealthy premium and luxury travelers (for example rich young couples, families with children, the elderly senior tourists, business travelers, boards and leaders of global companies) who are searching holistic well-being and experience. The owners of companies have understood that the luxury/premium lifestyle visitors are more profitable than customers who are searching for mass services and cheap experiences.

The transmodern international tourists are appreciating the Lappish originality, small-scale experience and service production and environmental value-based service infrastructure. The Lappish premium service package (including for example flights, logistics, accommodation, food

and catering services, events, adventure services) with arctic environment (*arcticsphere*) is a multi-sensitive concept and lifestyle brand itself. The real arctic product is all inclusive service portfolio planned and operated by many small companies which has been premiumised as a slow tourism and bleisure (business + leisure) tourism. The premium tourists see that Lappish lifestyle fit their active, sportive and adventure-seeking but also their eco-oriented lifestyle.

Of course, the travel companies, particularly SME-companies, can't confirm their eco-competitiveness but they can demonstrate their nature-based service production and eco-modernity. In the near future, on the marketing strategies, THE-companies have to describe their ecologic, ethical and responsible service production very carefully and clearly. They have to change these postmodern commercial brand elements (for example customer promises and words cool, wow) towards transmodern brand factors (for example hospitality, quality, meaningful). The companies have to have very precise ecology/green programs and quality systems which are checked by travel agencies. (Arina 2015; Heikkinen 2015.)

Transmodernism in Lappish lifestyle industry and business environment places have to have a strong emphasis on xenophilia (hospitality) and localism. The destinations have to promote the importance of local cultures and cultural appreciations. The lifestyle tourists are seeking for a worldview on real, sustainable premium and luxury services and products. They are appreciating nature-based, hand-tailored, personized and unique services and products which can experience once in a lifetime. Also, the firms who are selling the activity, adventure and safaris services, they have to indicate that they are not representing the superficiality or "depthlessness of post-industrial experience industry.

The transmodern arctic lifestyle tourist is representing concept *New Luxury*. New luxury means environmentalism, sustainability and ecology which are also vital aspects of the transmodern theory; not only does transmodernism embrace environmental protection, yet it also stresses the importance of neighbourhood life, building communities as well as order and cleanliness. Post-post lifestyle traveler is aiming to improve his/her life and get a life scientific, holistic and sustainable experience.

## **Discussion and conclusion**

The Lappish destinations and brands are representing arctic lifestyle tourism, but many destinations and concepts are in a critical phase. Should they concentrate and develop their services from mass production towards hand-tailored small scale experience production? There are destinations, (winter) sport resorts and hotel units in Lapland, which are already making good progress in brand, service and product development. Lapland's key destinations (Polar circle, Ruka, Levi, Santapark) and (mini)resorts (Kakslauttanen, Santamus, Santa Village, Taivaanvalkeat) have developed from service concepts towards lifestyle brands during 15 years. They are packing the premium and luxury experiences where the first steps towards transmodern ecologic-aesthetic service production has been taken.

There are also more commercial interests among Finnish, Chinese and Russian investors who would like to develop the mass tourism services, specially in Rovaniemi: more direct charter flights and flight connections, bigger airports, larger destinations and hotel centres. Lapland is growing market and fashionable and exiting destination for adventure-seekers and postmodern bleisure tourists. It is representing cool, lifestyle brand for the foreign experience tourists, which are following more and more sport, food and fashion trends and supers sportive and premium

lifestyles. Particularly, the own-taken nature photos and videos published on (social) media and TV-series filmed in Lapland are influencing their final choices to buy the experience journey to lifestyle branded Lappish destination (Rovaniemi, Ruka, Saariselkä and Ylläs).

Marketing strategically, the impending risk, in a national perspective, is that in the future there will be not one "Lappish lifestyle concept" but a heterogeneous set of arctic lifestyle and wellbeing concepts, which will jeopardise all branding attempts. A Lappish lifestyle tourism concept has been on the commercial tourism agenda over hundred years, but the challenges this level of mass branding includes must be acknowledged.

The success of a Finland the next strategic steps must focus on; a) identity, premium and luxury service packaging, and b) synchronized and coherent brand communication. Lifestyle tourism in Lapland will only prosper if a distinctive identity for is created for it. Lifestyle tourism must not be confused with experience tourism, but branded as a unique form of premium and new luxury tourism, which I call eco(logic) luxury. Lifestyle tourism is appealing to traveller's *Me-sphere*, personal body, mind and soul, must be presented as a new transmodern luxury and arctic brand/concept. Finally, segmentation and communication seem to be of utmost importance for success. Internal communications among actor network on a destination are considered, in this early phase of development to be, equally important as external communications directed at carefully selected target groups.

In companies in the Lappish THE-industry, thoroughly modern transmodern thinking manifests itself as so called sustainable or green business. Post-postmodern lifestyle THE-companies want to offer and transmodern tourist want to experience holistic sense of quality and new luxury. The Lappish THE-company which based its brand and business strategy on a sustainable and functional business idea, concept, processes, staff and profit-generation model, will success in long term. The company which is aiming sustainable growth, has to improve customer experience towards excellent service. The sustainability of Lappish companies is built on *eg* a credible brand, a convincing management and the overall quality of the operations (look brand credibility Aaltonen 2001; Heikkinen 2017; 2003a).

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# Climate sensitivity of skier behavior and spatial distribution of skiers in Austria

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## Abstract

Increasing climate vulnerability has put many ski tourism markets under pressure. While impacts of climate vulnerability to the ski industry have been widely analysed, most research has not adequately addressed the interactions between supply- and demand-side responses. This paper examines how climate change and ski resort conditions could affect the skier behaviour and the spatial distribution of skiers at a regional level in Austria. Specifically, we look at interactions of adaptive behaviour of skiers and the simulation and modelling of ski resorts. Therefore, we link a supply-side model based on the results from SkiSim with a dynamic geospatial Agent-Based Model representing the demand side. A survey, which has been conducted in Austrian ski destinations, delivers the required data about travel decisions and behavioural adaptations. By closely examining the interlinkages between the supply and the demand side, we contribute to a more holistic approach in climate change impact assessments.

## 1. Introduction

The climate vulnerability of the ski industry has been examined in many of the main winter tourism markets all over the world (Scott et al. 2012). However one of the major limitations of these studies is that interactions between supply- and demand-side responses have been poorly assessed to determine the integrated impacts for regional ski tourism markets. Climate change analogue studies in North America (Dawson et al. 2009) and Europe (Steiger 2011) have shown that impacts of warm winter seasons on the supply side (e.g. season length) and the demand side (e.g. total skier days in a skier market) were smaller in past warm seasons than was anticipated both by model results (e.g. Scott et al. 2008, Steiger & Stötter 2013) and skier surveys (e.g. Behringer et al. 2000, Unbehau et al. 2008). One of the main reasons of these unexpected results is due to the adaptive behaviour of skiers and the simulation and modelling of ski resorts as isolated entities of a ski market.

Few studies have analysed individual human, environmental and supply-side interactions in tourism phenomena. Johnson & Sieber (2009, 2010 and 2011) developed an ABM of tourism dynamics such as travel, lodging and leisure patterns. Regarding winter tourism, responses to environmental impacts and changes in tourism dynamics, Pons-Pons et al. (2012) developed a georeferenced ABM to analyze the climate change impacts on ski tourism in Andorra and the Pyrenees (Pons et al., 2014) and Balbi et al. (2013) used a spatial agent-based model for assessing strategies of adaptation to climate and tourism demand changes in an alpine tourism destination. In recent years, ABM models have been identified as a promising method to analyse tourism

dynamics (Baggio, 2008). First, because they permit to model and characterize interacting human-nature processes of heterogeneous individual behaviours over time and space (Parker et al. 2003). In an ABM, tourist agents can be characterized with heterogeneous behaviours, a frequent issue in tourism dynamics, to govern activity, decision or accommodation preferences. One example for such tourism dynamics is the principles underlying the decision to visit a ski area (e.g. travel distance) and/or the demand response if a ski area is closed. Second, this approach is well suited for scenario development, data analysis, problem diagnosis and policy comparison (Ligmann-Zielinska & Jankowski 2007, Johnson & Sieber 2011). Since ABM facilitates the representation of individual-level spatio-temporal interactions, they have a relevance to representing the dynamics and characteristics of tourism.

The aim of this project is to understand how climate change and ski resort conditions could affect the skier behaviour and the spatial distribution of skiers at regional level in Austria. Our methodology comprises of linking a supply-side model of ski area operations (SkiSim, Steiger 2010) with a dynamic geospatial Agent-Based Model representing skiers' travel decisions and their behavioural adaptation (Pons et al. 2014). A survey to capture travel behaviour and destination choice has been conducted to inform the demand-side model. The ABM simulates the distribution of skiers in Austria with daily varying quantity (number of open ski areas within a defined travel distance) and quality (size, price, natural snow conditions) of available ski areas based on modelling results from SkiSim. The impact of snow deficiency and/or climate change on destination choice and attendance patterns are simulated for different past conditions representing a cold, a warm and an average winter season for all Austrian ski resorts.

## **2. The Austrian ski industry**

Austria is ranked third after the US and France in terms of skier days (51.6 Mio. in 2014/15) and has the second highest number of ski lifts (3028) in the world (Vanat, 2016). Given the population of Austria (8.6 million in 2015, Statistik Austria 2016), the supply of ski areas is disproportionately high, resulting in a high share of foreign skiers (66% according to Vanat 2014).

Austria has a favourable geographic location in the heart of Europe with populous neighbouring countries and thus benefits from a large potential source market with Germany being the most important one (approximately 38% of overnight stays in the winter half year). Considering an average participation rate of 21% (Vanat 2014) in skiing/snowboarding in countries within a 2-hour driving distance (e.g. Austria, Switzerland, Northern Italy, Southern Germany), the market potential of day-trippers of Austrian ski areas is between 1.32-4.22 million people, with the higher value of market potential being available in the West and the lower being available in the South of the country. Extending the perimeter to an 8-hour driving distance with an average participation rate of 15% in these countries (Vanat 2014), the potential market of holiday-makers is between 23.25-35.1 million people (based on own analysis). The share of air travellers on total overnight stays is rather low (9%, Austria Tourism 2012).

In our study, we include 205 ski areas in Austria with a mean altitude between 900 and 3100 m (median: 1400 m), a size between 2.5-284 km of ski slopes (median: 18.3 km), and a median share of ski slopes equipped with snowmaking of 80%.

### 3. Data and methods

#### 3.1. Skiers survey

Based on an extensive literature review (e.g. Konu et al., 2011; Joppe et al., 2013; Bédiová & Ryglová, 2015; Dawson et al., 2011; Dawson & Scott, 2010; Hopkins, 2013; Behringer et al., 2000; Godfrey, 1999; Matzler et al., 2008; Gilbert & Hudson, 2000; Won et al., 2008), a survey was designed and conducted with winter sport tourists in Austrian ski resorts to capture travel behaviour and destination choice of skiers. The survey looked for the winter sport tourists' characteristics (e.g. skills, commitment, number of ski days per season), preferences (e.g. preferences of ski resort size), factors determining destination choice of holiday-makers and day-trippers, motives of skiing, travel time thresholds to ski resorts, willingness to pay, sensitivity to marginal ski conditions or the understanding of snow reliability. With a choice experiment (Louviere et al. 2000) with hypothetical ski areas consisting of different attributes, we intended to get a better understanding of destination choice factors and trade-offs between certain factors.

The goal of choice experiments is to provide a more realistic and comprehensive assessment of individuals' choice behaviour as well as to model the accepted trade-offs (in destination choice of winter sport tourists), as individuals' choices are influenced by several factors at the same time (Pröbstl-Haider et al. 2016). Choice experiments are theoretically grounded in assumptions of the random utility theory (RUT), which proposes that choices and alternatives have certain utilities and can be modelled as a function of the alternatives' attributes (McFadden 1974; Train 2009). According to RUT, individuals will choose the best option of all alternatives with the highest overall utility (Louviere et al. 2000; 2010). The overall utility of an individual's choice ( $U_{in}$ ) consist of explainable ( $V_{in}$ ) and random/unexplainable components ( $\varepsilon_{in}$ ) (Louviere et al. 2010):

$$U_{in} = V_{in} + \varepsilon_{in}$$

From a set of possible alternatives ( $C$ ), an individual ( $n$ ) will choose the option with the highest utility, thus the probability ( $P$ ) of choosing an option ( $i$ ) over all other options ( $j$ ) can be calculated as:

$$P(i|C_n) = P(V_i + \varepsilon_i > V_j + \varepsilon_j; \forall j \in C)$$

To calculate the final probabilities of one alternative from a set of other alternatives, a logit model is applied:

$$\frac{\exp(V_i)}{\sum_{j \in C} \exp(V_j)}$$

The idea of choice experiments is to analyse individuals' repeated choices made in hypothetical scenarios. The hypothetical scenarios consist of numerous alternatives, also called choice sets, with combinations of different attributes and attribute levels.

The observation of repeated choices reveal certain preferences of the individuals, showing the overall importance of each single attribute compared to the other attributes presented in the choice task. Choice data are analysed with Sawtooth Software to estimate the overall probability of an individual's choice.

The survey was conducted in 53 ski resorts in Austria during the winter season 2015/2016 and consisted of two stages: First, a self-administered survey was distributed to German speaking winter sport tourists at the 53 selected ski resorts from mid-December 2015 until the end of March 2016. A total of 9181 surveys were filled out. Respondents were asked to provide their email contacts to participate in the more complex and comprehensive online survey. In a second step, participants that provided an e-mail address (n=5910) were sent a link to the online survey. Due to invalid e-mail addresses and error messages, 4496 e-mails were successfully sent. In the end, the online survey was completed by 2052 respondents leaving a return rate of 42% of the successfully sent email contact sample. The return rate based on all in-situ surveyed skiers was 20%, without significant differences between age groups, except respondents older than 65, who showed a lower return rate with 11%, indicating a lower willingness to participate in an online survey in this age group. To obtain a control data set for further analysis, the survey was published on various webpages of interested ski areas. The online data collection generated a broad data set of 2003 respondents. The two samples were compared, deviations explored and outliers removed. In total, 3706 respondents provided valid information about their destination choice behaviour to ski resorts in the Alps.

In the choice experiment, respondents were asked to make repeated (8) choices between three hypothetical (and randomly presented) combinations of destination profiles described by a set of attributes - or to choose none. These attributes consist of two to three levels (Tab. 1). The attributes and attribute levels are based on an extensive literature review and on data about Austrian ski destinations. It is assumed that the attributes have an influence on destination choice. The choice of attributes differs between day-trippers and holiday-makers due to their different basic characteristics (e.g. spontaneous trip vs. trip planned several weeks in advance, declining importance of distance with increasing length of stay). The results were analysed with Sawtooth Software using Bayesian hierarchical modelling to estimate the overall probability of an individual's choice and part-worth utilities for the different levels of the attributes.

Table 1. Attributes and levels used in the choice-based conjoint analysis.

<i>Day-tripper</i>			<i>Holiday-maker</i>		
<b>Attribute</b>	Definition	Level	Attribute	Definition	Level
Travel time	Assumed travel time to destination	max. 1h; max. 2h; max. 3h	Additional non-snow activities	Additional non-snow related activities offered at destination	varied; small
Km of slopes open	slopes open during this day at destination; presented in km	<50km; 51-100km; >100km	Size of ski area	Size of slopes at ski area; presented in km	<50km; 51-100km; >100km
Snow conditions	during this day; represented by icons	Natural snow to valley; natural snow in higher altitudes; no natural snow	Snow guarantee	in general at destination; represented by icons	One icon: low; two icons: average; three icons: good
Costs for a day pass	Presented in Euro	<35€, 36-45€, >46€	Costs for a day pass	Presented in Euro	<35€; 36-45€; >46€
Frequency/crowding	Number of people during last visit; represented by icons	One icon: less; three icons: many	Frequency / crowding	Number of people during last visit; represented by icons	One icon: less; three icons: many
Experiences with snow conditions	during last visit	good; bad; no experiences	Experiences with snow conditions	during last visit	good; bad; no experiences

Based on the importance of each attribute, a hierarchical cluster analysis applying the Ward's method was performed, which produced reliable outcomes with significant differences.

### *3.2. Ski operations model*

The ski operations model “SkiSim” was developed to overcome a major limitation of climate change impact studies in the winter tourism sector (Scott et al. 2003): the non-consideration of snowmaking, a common measure in the ski tourism industry to balance natural snow variability.

For this research, version 2 of the model was used as basis (for further details see Steiger 2010; Steiger & Abegg 2013; Steiger & Stötter 2013) and further refined to produce more realistic results at the ski area level. SkiSim calculates daily snow depth in 100m elevation bands for each ski area, including snowmaking. Snowmaking is active if temperatures are sufficiently cold and if it is necessary to maintain the ski season until a defined closing date. Ski slopes were analysed in GIS with a digital terrain model to identify the share of ski slopes per aspect (west-east, north, south) and elevation class (100m bands).

Slope aspect was included in the temperature index model by adding a correction factor to the degree-day factor being responsible for snow melt: 1.5 for south-facing slopes and 0.5 for north-facing slopes (Hottelet et al. 1994). Another aim was to consider individual snowmaking capacity (the amount of snow that can be produced in 24 hours of snowmaking) instead of as assumed the state-of-the-art snowmaking system in all ski areas, as in previous SkiSim applications. As data on snowmaking capacity was not available for all ski areas, snow reports of the last 10 winter seasons were used to identify the first and last day of ski operation for each ski area. Snowmaking capacity was then calibrated for each ski area comparing reported and modelled start/end dates. The temperature threshold of snowmaking was set to  $-2^{\circ}\text{C}$  representing the efficiency of new snowmaking systems and thus potentially overestimating snowmaking efficiency and capacity of ski areas with not up-to-date snowmaking systems.

The closing date is scheduled several weeks or months before the season starts. Thus in many ski areas, the ski season is terminated earlier than snow conditions would allow. To account for that effect, the reported end dates were used to distinguish between ski areas with different scheduled season closings. In consequence, enough snow is produced to maintain the ski season until this date, but the ski area is closed after that date independent of snow conditions. An analysis of reported closing dates revealed six categories of season closings differing from year to year due to the variable Easter date, but which were averaged over the ten available seasons: Mid-march (March 19), end of March (Mar 30), early April (Apr 9), mid-April (Apr 20), first of May and glacier ski areas closing in mid-June except one with all-year round ski operation.

The output of SkiSim is the size of the ski area (=open km of ski slopes) and the variable “winterly landscape” on a daily basis used as input in the ABM. As in most ski areas not all slopes are covered with snowmaking, we also included the individual snowmaking coverage. Thus daily ski area size is the sum of open ski slope area that is covered by snowmaking (total snow depth  $\geq 30$  cm) and the open ski slope area without snowmaking (natural snow depth  $\geq 30$ cm). For winterly landscape a threshold of 5 cm natural snow depth is used and three classes are distinguished: natural snow from base to the top, natural snow only in the upper half of the ski area, no natural snow.

### *3.3. Demand-side agent-based model*

The ABM permits to simulate the skier behaviour such as the travel and the destination choice dynamics at regional level and model the future changes due to climatic and socioeconomic

changes. Geographical and socioeconomic characteristics of the ski resorts were used to define the supply-side features of the ski resorts: location, size in km of slopes, bed capacity of surrounding villages, cost of a lift ticket and ski lift capacity. The latter was based on a ski area manager survey (n=69) and turned out to be 40% of maximum ski lift capacity (persons per hour).

Each agent being a day-tripper (going to a ski resort and coming back home the same day) or a holiday-maker (spending several ski days) is allocated to a place of origin (European NUTS3 region) and tries to consume a certain amount of skiing days per season. The decision which ski area to choose on a given day is dependent on an attractiveness index consisting of the attributes described in Tab. 1 and the cluster-specific weighting of each attribute. Note that some of the attributes are constant throughout the season (e.g. distance, price), whereas others are dynamic (e.g. open ski slopes, natural snow conditions), depending on SkiSim model results.

The number of agents per NUTS3 region available in the ABM was estimated by use of the survey results, overnight statistics and some assumptions as described in the following. In Austria, 51.6 million skier days are generated per season, but no further details concerning nation shares and/or share of day-trippers and holiday-makers were available. Thus, overnight statistics were used to estimate the number of skier days generated by skiers staying at least one night in Austria. Overnight statistics are available on a municipality level and by tourists' country of origin (for Germany and Austria the origin information is even based on provinces/states) and we only included districts with ski areas. As not all winter tourists in ski destinations are visiting the ski area every day of their stay (then generating a skier day), we applied a correction factor of 0.75 for the conversion of overnight stays to skier days. The number of agents per country (respectively 'state/province' for Germany and Austria) was calculated with the average skiing days per season coming from our survey. As it is likely that respondents living close to ski areas are more frequent skiers, we calculated the average number of skiing days for 'greater regions' (i.e. Switzerland, three Austrian and three German regions), as the number of respondents was not sufficient to differentiate between states/provinces or even NUTS3 regions. With this procedure, we were able to calculate the number of holiday-maker agents per greater region. The remaining day-trip agents were then calculated based on the ratio of the number of skiing days during day-trips and during holidays derived from the survey, again per greater region. For countries we did not include in the survey (non-German speaking), an estimation of the share of skier days on day-trips and during holidays is not possible. Therefore, we assumed that skiers from other countries do only perform skier days during holidays, which can be derived from overnight statistics as described above. This is a simplification, as some bordering regions in Italy and Slovenia potentially generate some day-trippers for ski areas in Southern Austria, and bordering regions in Hungary, Slovakia and the Czech Republic generate some day-trippers for ski areas in the eastern part of Austria.

#### **4. Results**

The cluster analysis based on the importance of the attributes from the choice experiment resulted in four distinct clusters for day-trippers and holiday-makers. To improve the understanding of the different tourist groups, each cluster was cross-tabulated with external variables such as age group, household income, family status, skier days, skill level, preferences of ski area size, commitment level, or motives of skiing. Subsequently, the statistical significance was tested between the segments.

The four types for day-trippers based on the importance of choice attributes were characterized as follows (Fig. 1):

- D1: The demanding experts (n=151; 13%) look out for snow conditions but also the size and offer of ski areas are of importance. On the other hand, travelling time and ski ticket price is not a big issue.
- D2: The price-sensitive beginners (n=341; 29%) focus on ski ticket prices and have a stronger preference for small ski areas (<50km).
- D3: The time-sensitive enthusiasts (n=387; 33%) pay attention to the distance and travelling time to a ski area.
- D4: The ski slope fanatics (n=286; 25%) focus on size and offer of the ski areas, also experiences with snow conditions are of major importance.

The holiday-makers can be described as follows (Fig. 1):

- H1: The demanding experts (n=458; 27%) look out for snow-secure ski areas.
- H2: The price-conscious recreational skiers (n=411; 24%) includes a large number of beginners, who pay attention to the costs of the ski tickets and crowding.
- H3: The enthusiastic beginners & old hands (n=390; 23%) focus on former experiences with snow conditions and include in particular respondents over 55 years.
- H4: The ski slope fanatics (n=428; 25%) pay most attention to the size of ski areas and include more frequently that the other clusters young, single men with high commitment for winter sport activities.

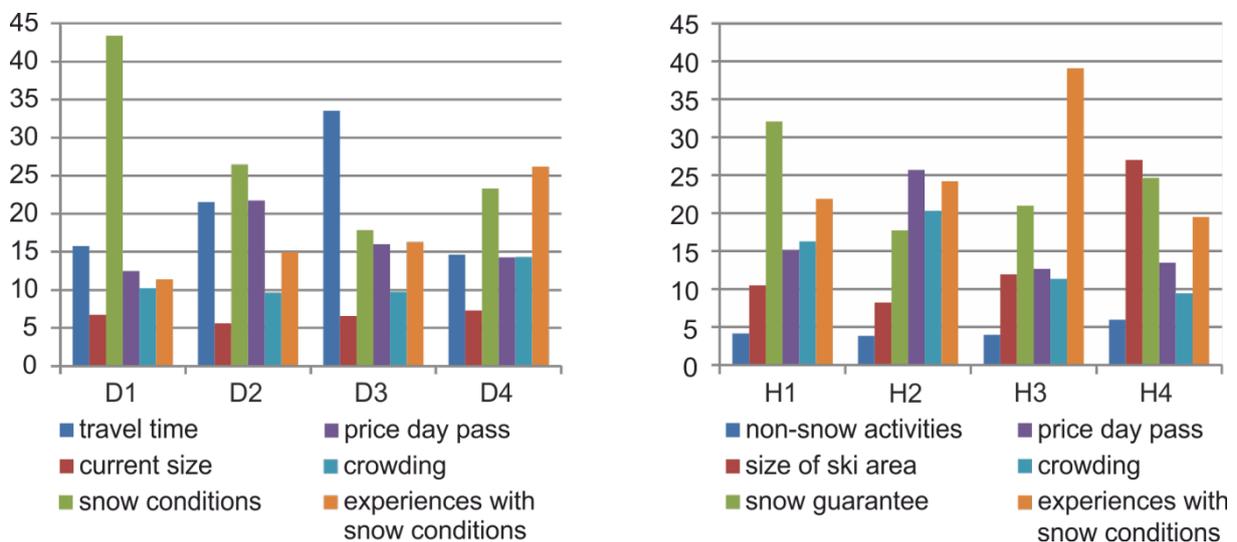


Figure 1. Final cluster profiles for day-trippers (left) and holiday-makers (right) (importance in % of attributes for destination choice).

The different tourist types with its different travel behaviour and destination choice serve as basis for the demand-side model. The integral model permits to simulate the daily attendance of each Austrian ski resort during a winter season. Three past seasons were simulated representing a cold (2005/06), an average (2003/04) and a warm (2006/07) winter season to capture the changes on

the dynamics and patterns of travel and destination choice and to see if the model chain performance is different.

A model interface (Fig. 2) was developed to visually track for each ski resort, if it is open or closed, the number of open days, the daily attendance, the share of origin markets, the share of the total Austrian Ski Market and the crowdedness. This last indicator permits to track those days where the maximum capacity in terms of allocation of skiers is reached.

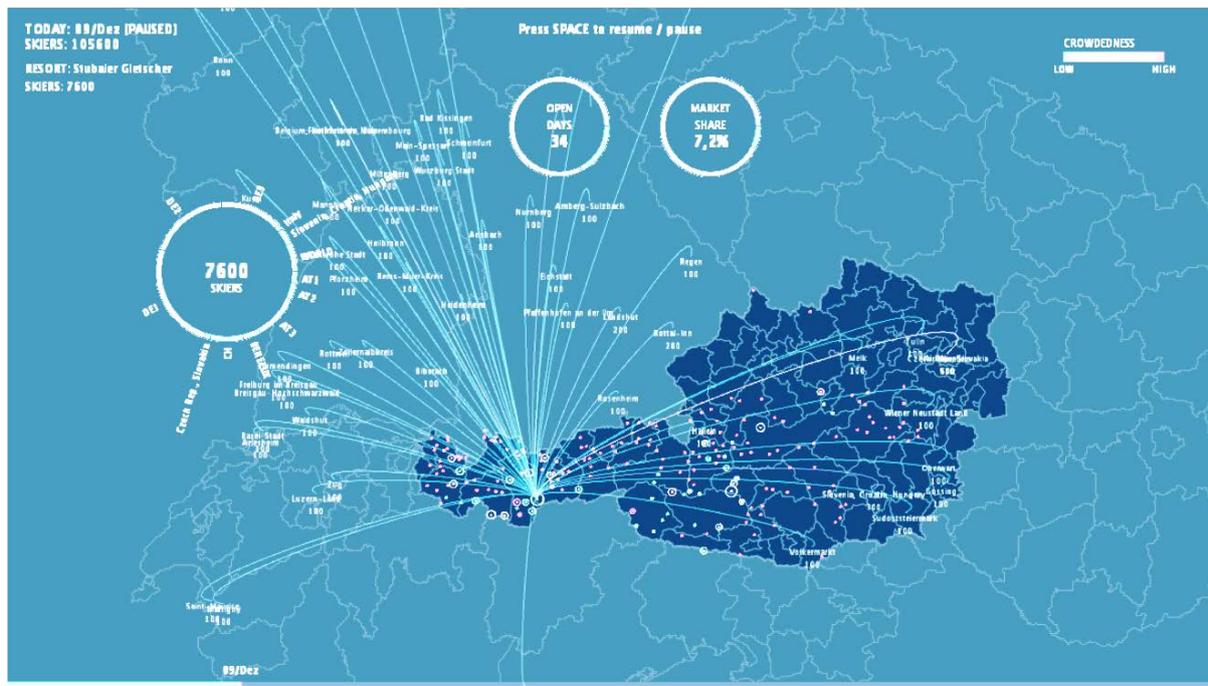


Figure 2. Model interface to explore results on the daily skier attendance and the origin of skiers for each ski resort in Austria.

When comparing model simulations with real visitation data for the three seasons, the model captures the main distribution patterns in the Austrian ski market. The evaluation of results is ongoing and the model will be further refined. Currently the attendance of small ski resorts is overestimated and attendance at large ski resorts is underestimated.

## 5. Conclusions

An integral model coupling a supply-side component (SkiSim) with an Agent-Based Model informed with a specific survey was used to explore the travel and destination choice patterns and dynamics in Austrian ski resorts. The aim is to overcome limitations of past impact assessments, analysing only either the supply side (e.g. season length) or the demand side (e.g. skier days, overnight stays).

Although we have adopted an accidental sample design, positive comparisons with national survey data point to a good quality of the sample in terms of its representativeness of the population (Schnell et al., 2008). Still, limitations exist because of the internet based survey design restricting the survey to participants with internet access. Due to data limitations, we had to estimate the share of day-trippers and holiday-makers on skier days, as well as ignore the fact

that neighbouring regions of non-German speaking countries also have some (relatively small) potential to generate day-trip skier days. As any model, this model is a simplification of reality. But it is nevertheless a significant improvement and contribution to a more holistic approach in climate change impact assessments.

Currently the model roughly represents the distribution of skiers in different cold, warm and average winter seasons. As we are still in the process of result validation and iterative model improvement, it would be too early to show and analyse the raw results. Once the model is finally calibrated, future scenarios representing changes on the climate and on the socioeconomic conditions will be run to project expected changes on the Austrian market.

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# Entrepreneurship in nature-based winter tourism under changing climate

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## Abstract

Climate change presents a significant stress object for nature-based winter tourism and calls for both adaptive capacity and mitigation activities in the sector. While the sector consists of several stakeholders being affected by the changing climate, the role of the operators in tourism, namely the tourism enterprises, is emphasized in relation to both concepts. However, the level of action in the sector has remained low, despite the growing awareness and understanding about the causes and consequences of the phenomenon. Several studies on climate change risk perceptions in general and climate change awareness among tourism stakeholders have indicated that knowledge and awareness about climate change does not necessarily lead to action: Awareness about climate change and its potential risks may be on a high level, but the stakeholders show no signs of proactive action (in relation to adaptation or mitigation). One reason for the inactivity of stakeholders may be related to ideology that relates with entrepreneurship. Values are considered to hold an important role as psychological stimulus for the development of risk perceptions and behavioural intentions. Therefore, an approach that focuses on the tourism stakeholders' values and ideas about tourism entrepreneurship may bring interesting new insights to the tourism and climate change research, and support the industry in adaptation and mitigation processes.

This paper presents the findings of an exploratory study that examines the values and attitudes of nature-based winter tourism entrepreneurs in relation to adaptation to climate change. It utilizes data from thematic interviews realized among nature-based winter tourism entrepreneurs in Finland. The aim of these studies, realized between 2009 and 2014 was to examine entrepreneurs' attitudes to climate change and environmental changes in general, and to climate change adaptation in order to assess what kind of responses and reactions the entrepreneurs have. Moreover, the studies assessed their thoughts and needs concerning cooperation and support from external actors, such as the government.

Analysis of the data reveals issues about the views on entrepreneurship in general, on the independence and individuality of the enterprises (that mostly consist of SMEs); on the role and responsibilities of different stakeholders in the processes of adaptation; and on the attitudes towards innovations and actions in changing climate. These issues seem to affect decision-making in the enterprises, but their importance as predictors of action and behavioural intentions needs to be studied more thoroughly. Additionally, more information is required about the role of the surrounding social environment as a co-creator of these kinds of values. Nonetheless, the research on awareness, perceptions and values in the context of climate change adaptation adds new knowledge to this field of research. Understanding the entrepreneurs' attitudes and actions in changing climate may be crucial for the future development of the whole sector.

**Keywords:** Nature-based tourism, Entrepreneurship, Adaptation, Climate change, Global environmental change, Mitigation

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# Factors affecting cancellation behaviour: Is this prompted by a typical guest or specific weather condition?

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## Abstract

A significant number of hotel bookings are not realised. This holds also true for a representative database of seven hotels in a winter destination. Here the cancellation rate is about 18 per cent based on 70,000 bookings in the winter season of which a third in turn is associated with a cancellation fee. Probit estimates show that the probability of cancelling a hotel booking is significantly higher when booking is done early. Large groups and bookings in the high season show a significant higher no-show/cancellation risk. Presumptive guests who booked via travel agencies have a significantly lower cancellation probability (-12 percentage points) while guests booked over online channel have the highest. Cancellation probabilities also vary widely with respect to room category. Furthermore, guests booked via travel agencies are most likely to cancel because of poor snow conditions or unusual high temperatures at the arrival date. Regardless of the booking channel and type of guests we find that high temperature at the planned arrival date leads to higher cancellations in the late season. Finally, cancellations of guests booked over online channels tend to increase over time.

**Keywords:** Cancellations, Hotels, Booking channel, Weather conditions

(The body text is excluded upon the authors' request.)

# Santa Claus Destinations: Nordic stage versus Anatolian Heritage

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## Abstract

Past sixteen centuries have witnessed the transfiguration of an esteemed saint of eastern Christianity into an Americanized commodity. Today, Saint Nicholas of the 4th century Roman Anatolia is now recognized as more of a commercial tool, under his nick "Santa Claus". Many businesses, be it a small shop or a vast destination, have been and are benefiting from Santa in order to foster consumption. The aim of this study is to make a comparative analysis of the conventional and emerging Santa Claus destinations, particularly focusing on the two attraction sites - the Santa Claus Village in Rovaniemi (Lapland, Finland) and the St. Nicholas (Father Christmas) Museum in Demre (Antalya, Turkey). For this purpose, a preliminary content analysis has been drawn from web-based visitor reviews regarding the two attractions. The results show that there is high visitor satisfaction for both attractions. While families dominate the visitor profile for the Santa Claus Village, couples outnumber families in Demre, implying less of a child attraction. Peak seasons centre around winter in Rovaniemi and summer in Demre. Most reviews reflect that while Rovaniemi is a Santa destination including active participation and entertainment of families, Demre is a Saint destination satisfying faith, cultural accumulation, and aesthetical appreciation. Suggestions are provided as to develop further research on the matter with more thematic content analyses.

**Keywords:** Santa Claus, Saint Nicholas, Tourism, Finland, Turkey, Visitor generated content

## Introduction

Past sixteen centuries have witnessed the transfiguration of an esteemed saint of eastern Christianity into an Americanized commodity. That is to say; Saint Nicholas of the 4th century Roman Anatolia is now recognized as more of a commercial tool, under his nick "Santa Claus", rather than as a holy figure to be commemorated. Many businesses, be it a small shop or a vast destination, have been and are benefiting from Santa in order to foster consumption. Perhaps, an optimized utilization of Santa could be attributed to Rovaniemi of the Finnish Lapland, whose authorities in the last three decades have pursued a successful job in branding their destination as the home of Santa, building on the legends that he resides in the North Pole. On the other hand, thousands of kilometres away from the Arctic lies the "historically real" home of Santa. Demre, a district of the tourism giant Antalya province, is home to the Church of Saint Nicholas, where the Archbishop spent his life for real. Today, the church is converted into a museum, serving as a major tourist attraction.

The aim of this study is to make a comparative analysis of the conventional and emerging Santa Claus destinations, Rovaniemi and Demre, particularly focusing on the two attraction sites - the Santa Claus Village in Rovaniemi and the St. Nicholas ("Noel Baba – Father Christmas") Museum

in Demre. For this purpose, a preliminary content analysis has been drawn from web-based visitor reviews regarding the two attractions. In this way; understandings and expectations of the demand side have been disclosed and their implications for the both destinations have been driven.

With the foundation of the Santa Claus Village in 1985, Rovaniemi has been a success story by eliminating other Northern claimants (Hall, 2008; 2014), who have been competing for Santa Claus tourism by relying on legends of his polar identity. The village includes the Santa Claus Office, the Santa Claus Main Post Office, Christmas House Santa, Santa Park, Snowman World and the Arctic Circle landmark, and together with other attractions and activities such as the Sámi culture, aurora watching, the midnight sun, deer/dog-sledding, snowmobiling and skiing, this formerly least developed region of Finland has enjoyed a steady growth in overnight stays over the past decades (Fig. 1), with the peak season concentrated around the Christmas period (Fig. 2). As of 2015, 212,239 stays were made by Finnish people, and the rest 258,143 were by international tourists (Rovaniemen Matkailuneuvonta, 2016).

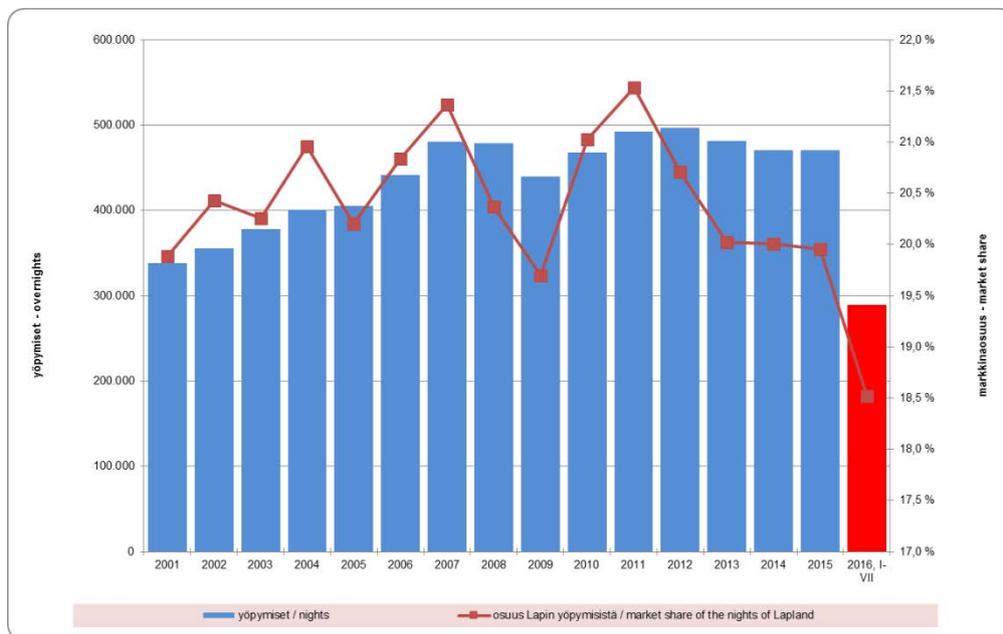


Fig. 1. Annual Growth of Overnight Stays in Rovaniemi (Source: Rovaniemen Matkailuneuvonta, 2016).

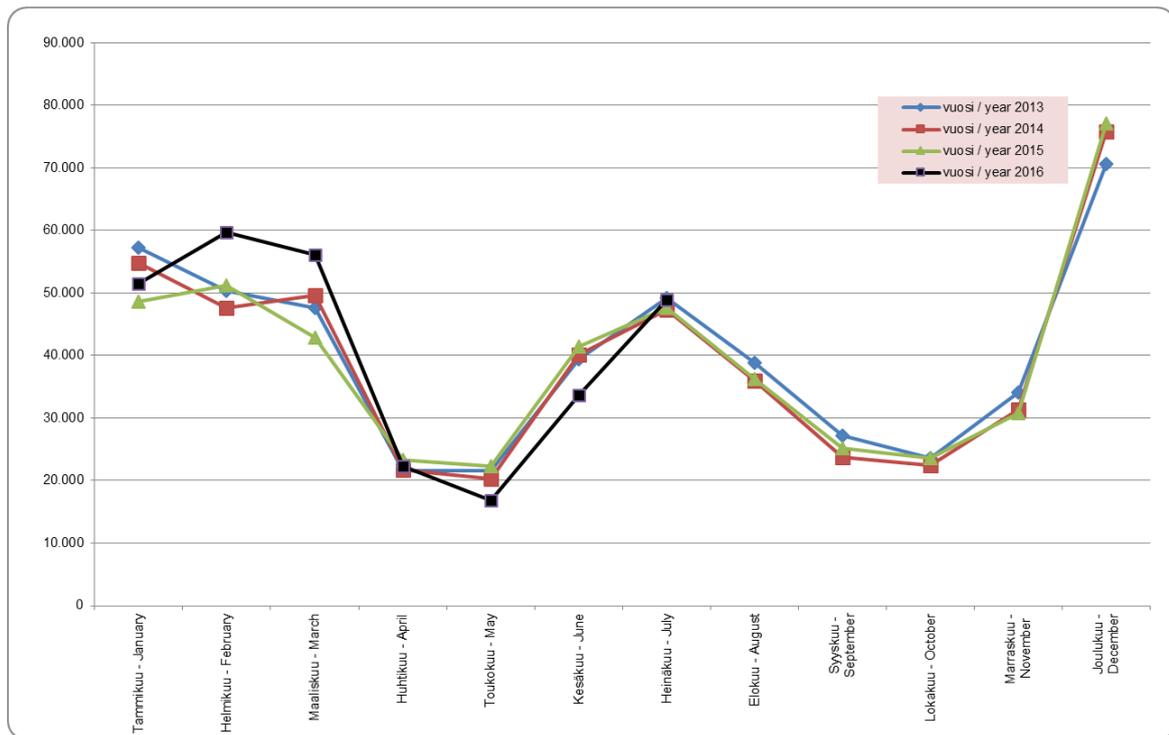


Fig. 2. Seasonality of Overnight Stays in Rovaniemi (Source: Rovaniemen Matkailuneuvonta, 2016).

Pretes (1995) notes that Rovaniemi can only survive by maintaining the originality claim on its reproduced Santa image that serves as a marker of Christmas consumption. However; such image is already at stake because of no-snow Christmas risk in a changing climate, thus; even the ultimate re-branding strategies have already been spoken out (Tervo-Kankare et al., 2013; Hall, 2014).

Demre, on the other hand, is one of the 15 districts of the Province of Antalya, which is a city known to be the capital of tourism in Turkey. It covers an area of 473.2 km<sup>2</sup> that is surrounded by the Taurus Mountains and the Mediterranean Sea. Although the destination is part of Antalya, Demre could still be regarded at the development stage of its life cycle. However, if the plans for building the third international airport here holds true, Demre could see a rocket rise to consolidate its tourist arrivals. Otherwise, the region is relatively remote for international accessibility, with the closest airport located at a 147 km distance.

Demre has its roots dated back to the 5th century BC to what used to be called “Myra”, as a principal city of the Lycian League – an ancient democratic federation in Anatolia. Following the yoking of Lycia by the Roman Empire, the city has been flourished and built-up and become a venue of religious significance since it has been declared as a diocese, whose bishop in the 4th century was the legendary Saint Nicholas. In the 11th century, the city has been captured by the Turks migrating into Anatolia from Middle Asia and eventually become a part of the Ottoman Empire. During the last decade of the empire, the place has been given the village status under the name “Eynihal” in 1904. United with three other villages, it has become a municipality in 1968, and a district in 1987 with its name initially designated as “Kale”, and later in 2005 as “Demre”, representing one of the 15 districts of the Province of Antalya in the present-day Turkey.

The District of Demre is composed of 2 municipalities and 9 villages where, according to the 2012 census, 25,489 people officially reside. However the reality is somewhat different, since seasonal population increases occur in relation to the dynamics of the agricultural and the tourism sectors. Temporal increases are mostly associated with the employment of seasonal workers, recruited by the greenhouse and service businesses, as well as the visits of second home owners.

Traditionally, agriculture has been quite the dominant economic sector in Demre. The conventional open area vegetable growing, especially of pepper species, is now continued year-round in the greenhouses, whereas growing pomegranates and citrus fruits make up the other important branch of agricultural activities. Commercial and industrial activities present relatively small scale operations, mainly including two wholesale market halls for fruits and vegetables and a recently opened middle scale catering firm. Small size boat building ateliers are also a segment of the local industry. Tourism is perhaps the most promising sector for the future of Demre, although it has not been fully developed yet as to position Demre as an overnight destination. Nevertheless; daily boat trips, unique cultural attractions, and sandy beaches all make up the pull factors.

The dominant Mediterranean climate of hot arid summers and warm wet winters provide Demre with a vegetation of fertile alluvial soil and maquis on its delta and pine forests on the surrounding mountains. The blend of the warm climate, turquoise waters and the gold coastline position Demre as a highly attractive venue for sun-sea-sand activities. The beaches host not only the holidaymakers but also the loggerhead sea turtles (*Caretta caretta*) which are regularly monitored by animal protection organizations. Another attraction off the beach is the Pirate's Grotto along with the Island of Kekova, which has been given the status of "specially protected area" in 1990. Besides all these, the fountain along the riverside is also worthwhile mentioning as a natural attraction with its spa that is believed to heal some diseases, especially those associated with stomach and skin.

Situated on Turkey's two major long-distance footpaths, "The Lycian Way" and "The Saint Paul Trail", Demre has many complementary cultural assets to offer to its visitors such as the ancient settlements of Myra, Andriake, Dolichiste, Simena, Theimussa, Sura, and last but not the least, the Church of Saint Nicholas. Being the original church of Saint Nicholas, patron to many cities and countries and legend to many children with his "Santa" identity, here is the top visitor attraction site of Demre. It has been converted into a museum with exhibitions of elements inherent to the Archbishop, and unique architectural and artistic features especially in terms of its acoustics and mosaics. Nowadays, marketing of Demre strongly identifies with the image of this legendary figure, yet at the expense of trading him with "Santa", and to the extent of replacing his bronze statue with a plastic figure.



1981 Bronze St. Nicholas



2000 Russian Saint Nicholas



2005 Bakelite Santa Claus



2006 Fiberglass Turkish Santa

*Fig. 3. The Four Faces of Saint Nicholas in Demre (Source: Myers, 2017).*

In 2015, the museum was the 7<sup>th</sup> most visited with 364,529 visitors (Turkish Ministry of Culture and Tourism, 2016). Although the most evident event that has been identified with Demre would be the Noel Baba (Father Christmas) World Peace Week, which has been celebrated since 1983 on the first weeks of December as a commemoration to the death of Saint Nicholas, peak visitation has usually been observed during the months of July and August. Moreover, Demre has only 7 hotels and a few inns which make a bed capacity of 720 – a tiny figure when compared to the almost half million total beds of Antalya, one thirds of which are five-star. Therefore, although Demre acquires high number of visits on a daily basis, the ratio of overnight stay is kept at a minimum.

### **Methodology and Results**

With an exploratory motivation, this paper looks into the existing web-based reviews by visitors to the aforementioned attractions in the two destinations. The reviews, as well as some relevant analytics, are available at the TripAdvisor website. The Santa Claus Village in Rovaniemi is represented as separate attractions as “Santa Claus Village”, “Santa Claus Office”, “SantaPark”, “Christmas Exhibition and Santa Claus Photography”, and “Arctic Circle Information”. Likewise, the Saint Nicholas Museum in Demre is duplicated as “Church of St. Nicholas” and “Santa Claus Museum”. For standardization purposes, all representations have been consolidated into one for each destination. Frequencies of English keywords suggested by the TripAdvisor website have been highlighted on aggregates.

Table 1. TripAdvisor Analytics for Santa Claus Village (Rovaniemi) and Saint Nicholas Museum (Demre).

<b>Destination Attraction</b>	<b>Rovaniemi (Lapland, Finland) Santa Claus Village</b>	<b>Demre (Antalya, Turkey) Saint Nicholas Museum</b>
<i>Total Reviews</i>	3894	372
<i>Reviews in English</i>	1589 (41%)	104 (28%)
<i>Ratings</i>		
<i>Excellent</i>	1601 (41%)	195 (52%)
<i>Very Good</i>	1189 (31%)	115 (31%)
<i>Good</i>	664 (17%)	47 (13%)
<i>Poor</i>	284 (7%)	10 (3%)
<i>Terrible</i>	148 (4%)	5 (1%)
<i>Period</i>		
<i>Mar-May</i>	578 (15%)	75 (20%)
<i>Jun-Aug</i>	599 (15%)	143 (38%)
<i>Sep-Nov</i>	617 (16%)	111 (30%)
<i>Dec-Feb</i>	2102 (54%)	43 (12%)
<i>Traveller type</i>		
<i>Families</i>	1580 (48%)	103 (31%)
<i>Couples</i>	894 (27%)	133 (40%)
<i>Solo</i>	196 (6%)	24 (7%)
<i>Business</i>	67 (2%)	1 (0%)
<i>Friends</i>	572 (17%)	73 (22%)
<i>Keywords</i>		
1	Santa (Claus) (n: 1293)	Church (n: 73)
2	Christmas (Xmas) (n: 496)	St. (Saint) Nicholas (n: 44)
3	Reindeer (n: 411)	Santa (Claus) (n: 22)
4	Post (card/office) (n: 340)	Mosaic (n: 18)
5	Arctic (Polar) Circle (n: 300)	

## Discussion

The results based on TripAdvisor reviews show that there is some high visitor satisfaction for both attractions. Shares of those who rated their experiences as “very good” and “excellent” are 72% and 83% for Santa Claus Village and Saint Nicholas Museum, respectively. While families dominate the visitor profile for the Santa Claus Village (48%), couples outnumber families in Demre, implying less of a child attraction. Business and solo travellers make up a minor share. Temporal concentration is the highest in winter for Rovaniemi and in summer and the shoulder seasons for Demre, in line with the aforementioned visitation statistics. Despite the conventional Father Christmas event in Demre in December, review frequency is very low.

Of the 3,894 reviews for the Santa Claus Village, 41% are in English, and of the 372 for the Saint Nicholas Museum, 28% are. Other languages of review for Rovaniemi are Italian, French, Russian, Japanese, Spanish and German, and for Demre are Russian and Turkish. Some of the most repeated keywords for the Santa Claus Village are Santa (Claus), Christmas, reindeer, postcard/office and Arctic Circle and for the Saint Nicholas Museum are church, St. Nicholas, Santa (Claus), and mosaic. Most reviews reflect that while Rovaniemi is a Santa destination including

active participation and entertainment of families (e.g. Review 1), Demre is a Saint destination satisfying faith, cultural accumulation, and aesthetical appreciation (e.g. Review 2). An interesting finding is that while the "Saint" identity is not mentioned at all for the Rovaniemi attraction, the opposite is true for Demre (e.g. Review 3).

#### *Review 1*

Date: 13.12.2016

From: UK

Title: Magical experience not to be missed

On Sunday 11th December myself, my daughter and my 7 year old Grandson flew out from Newcastle with Thomas Cook to visit Santa in Lapland for the day. From start to finish the whole day was perfect Thomas Cook Staff were brilliant, Chelsea started a tag game with my grandson that continued until we landed back into Newcastle!

Almost everyone on the flight had lots of thick coats jumpers boots etc on. (my daughter, Lucas and I had leggings, sweatshirts and Uggs on) These are really not required as you are transferred to a changing location where you are kitted out with thermal suits woolly socks and snow boots, all you need to supply are gloves scarves and hats. We had our in our back packs.

After the transfer to the Santa village in the woods we all met Santa (we were split into small groups of about 14). This was really personal and children under 12 were given a present, Lucas was given a cuddly husky dog. You can take your own photographs or videos when you are in the room with Santa.

Then we had time to play in the snow -12. A reindeer sleigh ride followed, then into a cosy warm room to be served food which was superb. Back out for more snow fun then into the warm again to celebrate the Arctic Circle ceremony, with a really interesting story told by a lovely lady dressed in traditional Lappish clothing. By this time the sun had set and it was dark with a lovely moon shining. Husky sleigh ride next then back on the bus to be taken to Santa's post office (lots of shops all selling more or less the same expensive tourist things). You get the opportunity to go to visit Santa there too but we decided it would be confusing for Lucas after such an enchanting visit to Santa in the woods, and you will be charged 50 Euros for 2 photographs or 60 if you opt for a video! Louise was our Thomas Cook rep on the bus and our own elf was Johanna, both girls were more than excellent.

We were then transferred back to the changing facility where sadly it was back into our own clothes then back to the airport to fly home to the UK after one of the most memorable days of our lives and definitely the best day Lucas has had in his short seven years. I can't wait to take my other Grandson Charlie next Christmas when he is seven ho ho ho.

#### *Review 2*

Date: 30.5.2016

From: UK

Title: A very interesting and inspiring site

It isn't often that you get to walk around in a virtually intact Byzantine church, so the great preservation of the church of St Nicholas makes it well worth seeing.

It is hard to believe that a lot of the church was hidden by the silt that covered ancient Myra, but you can see for yourself how the current ground level is 15-20 feet above the floor. The

architecture is very interesting, with marble floors and intact wall paintings adding to the appeal.

On my visit it was quite busy, but in a respectful way, if that makes sense. St Nicholas is very important to the Russian Orthodox church, and many of the Russian visitors were treating this as a holy site, not a tourist one.

There were some signboards, but more information on the history of the site would have been welcome.

No matter what your personal views of St Nicholas are, the church is definitely worth an hour or so if you're in the area.

### *Review 3*

Date: 31.12.2015

From: UK

Title: The original Santa Claus?

We visited here during a week long cultural tour of Turkey. It was a very reasonable tour which was organised out of season to keep the tourist industry alive for a longer period and to encourage more visitors in December and November.

This site seemed particularly significant, being close to Christmas and because of the story of the Bishop and his later elevation to the title of St. Nicholas. I do not want to tell the story as it would spoil it for anyone who wanted to visit and did not already know it.

Because of this site this was the only place we visited in Turkey that suggested it was close to Christmas, although I suspect the theme carried on throughout the year.

Also, part of the cathedral has been well renovated and it is obvious that this is still a work in progress. The outside does not fully acknowledge the size of the site.

(...)

Who is the real Santa? The answer is determined by individual perception but also by destination branding efforts. Whilst the above reviewer stresses out the original "Santa"ness of the Archbishop of Myra, the reviewer below is seemingly convinced to have met the real Santa in Rovaniemi.

### *Review 4*

Date: 11.2.2017

From: Finland (Helsinki)

Title: To See Real Santa

Very close to airport or city center. You can visit and see real Santa, reindeers, huskys, ride snowmobile etc. Snowland has icebar and snowrooms and restaurant. Entrance is 20 e per person!

Negative reviews also help us distinguish the two destinations based on their landmark attractions. In Rovaniemi, the visitor could be dissatisfied with another perceived representation of an over-commercialized Santa Claus (Review 5). In Demre, one could be frustrated by ending up with a relatively commodified patron saint, and his admirers, and almost no signs of Santa (Review 6).

### *Review 5*

Date: 2.2.2017

From: Hong Kong, China

Title: You can skip

Commercial and commercial. Everywhere is fake and looks like a low quality theme park.

Full of souvenir shops selling stuff that they could think of selling. You can even buy Mama Tom Yum Kung cup noodles for 2euro.

Souvenirs that you cannot bring home to family and friends to represent this place. A waste of time if you think that coming to Finland / Rovaniemi you must visit the Santa Claus village. There is a huge construction building with fork lifts in the centre of the entrance, and you know this place continues to expand and operate commercially.

The queue to take pictures with Santa Claus was very long and slow even though you got to pay for it, so I skipped that.

Overall it doesn't give me a winter tale Santa Claus atmosphere.

### *Review 6*

Date: 15.9.2014

From: UK

Title: "Sad Santa Claus church for enthusiasts"

The church of St. Nicholas, the generous bishop of Myra (3<sup>rd</sup> Century) who became Santa Claus, is overhyped compared to the entrance price 20 Turkish Lira (this seems to be the standard all over Turkey). The place is full of tourists from Russia (St. Nicholas is the patron saint of Russia) clutching overpriced icons and dipping them in some goo (!) that comes out of his empty tomb. The frescos are there showing the life of the Saint. (...)

## **Conclusion and Suggestions**

Compared to Rovaniemi as a well-established overnight Santa destination, Demre reflects itself still as a destination just past its involvement stage with underdeveloped accessibility and superstructure, unsettled image, and high excursionist share in total number of visitors, which are all strong indicators of an early position in tourism area life cycle (Butler 2006), despite being home to a popular visitor attraction as the Saint Nicholas Museum. In this context; the following research questions are suggested for further research:

1. Which tourist demands what? "Historical Saint on a Sunny Beach" or "Commercial Santa in Snowy Christmas Surroundings"?
2. What theme should Demre develop into its image? "Santa" or "Saint"? Should Demre really look for a theme and disneyfy itself? Would "Santa" be the right figure for such an aim? Can economic success be achieved through a "Christmas Market" in order to resolve the seasonality problem?
3. Could Demre be globally more competitive in a warming future that threatens the image of Arctic Santa destinations such as Rovaniemi?

This preliminary study was limited to visitor reviews only in English and on one single, yet extensive, web platform. Future research should make use of the reviews in other languages as well, especially those in Russian as Saint Nicholas is an attraction for faith tourism in this market. Further categorization of Santa tourists could then be elaborated with a more thematic content analysis.

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# The 1st Workshop on the Future of Winter Tourism (FWT2017)

Rovaniemi, Finland, April 3 - April 5, 2017



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