Finnish snowboarders’ perceptions of climate change and responsible travel

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The winter temperatures in northern regions will likely be affected the most by climate change. As climate change already affects winters in Finland, many Finnish snowboarders choose to travel elsewhere to find better winter conditions.

The purpose of this research is to identify the mind-sets of the snowboarders towards climate change and responsible travel. The main research question was: how do Finnish snowboarders perceive climate change in relation to snowboard travel? And the sub-questions were: How are Finnish snowboarders choosing the destination when planning a trip? How do the snowboarders travel to and within the destination? And, on what basis are snowboarders choosing the accommodation services they will use?

Snowboard culture has always been different from skiing, as snowboarders were banned from most ski resorts until mid-1980s. Even nowadays most snowboarders consider themselves different from skiers. Snowboarders can be divided into different sub-groups, but this research examines closer only freestyle, freeride and slope snowboarders.

The commissioning party of this thesis is Protect Our Winters (POW) Finland. The organizations' purpose is to encourage people from winter sport community to make daily decisions affecting climate change as well as influencing society more broadly.

Climate change has various impacts on tourism, it influences environmental conditions that attract and deter tourists. Polar region, North Europe and North America are projected to warm the most during winter, and ski destinations around the world are impacted by these changes.

This research was conducted by Internet based questionnaire. The survey was made with Webropol and the target group was all Finnish snowboarders and the questionnaire was distributed through different social media channels. The results of the survey were analysed by quantitative approach. The responses of the survey answered to the research questions.

The results show that Finnish snowboarders seem to know relatively well of the impacts of individual factors of tourism on climate change. Although their travel decisions are mainly influenced by the snow conditions, places of performance, off-piste possibilities and budget. Most snowboarders are not considering ecology when planning a snowboard trip. Some of the respondents had not even realised the impacts of their own actions with snowboard travel.

For future suggestions, POW Finland could create a campaign with different operators from ski industry to promote and market sustainable travel options for snowboarders and skiers. Also winter travel companies should implement more sustainable actions to their operations.
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1 Introduction

Climate change is evidently affecting more winter temperatures in northern regions, than in other parts of the world. Winter sports and activities rely on proper winter conditions, which will be threatened in the future by the climate change. The temperatures will rise, precipitation will increase, glaciers will melt and snow cover time will shorten. The predicted impacts vary according to different climate scenarios and by the location and the altitude of the destination. Winter sport destinations must adapt and mitigate to these changes in order to retain their profitability. (UNWTO 2008, 55-59.)

As climate change is already impacting winters in Finland and other parts of the world, it is also affecting performance of ski resorts and the whole snow sport industry. When there is no guarantee of snow in most part of Finland many snowboarders choose to travel somewhere else to find better winter conditions. This is why I want to study Finnish snowboarders habits of snowboard travel and find out how they perceive their travel is impacting on climate change, and are they willing to change any of their travel habits towards more sustainable manners.

This thesis is researching Finnish snowboarders’ attitudes and behaviours towards the relation of changing climatic conditions and snowboard travel. Climate change is a global issue that already affects environments and communities around the world. The atmosphere, Earth’s surface and oceans have warmed, sea levels have risen, the amounts of ice and snow have reduced and greenhouse gas emissions have increased (International Panel of Climate Change 2013, 4). The impacts of climate change are global and many of these observed changes have happened in less than past 70 years and are unprecedented over decades to millennia. (IPCC 2013, 4; United Nations 2017) Due to International Panel of Climate Change (2013, 5) each of the past three decades has been individually warmer than any previous decade since 1850. In the future these impacts will be even more costly and difficult to fight, if drastic actions are not taken today (United Nations 2017).

For me snowboarding is more of a lifestyle than just a hobby. I have been snowboarding over 15 years and snowboarding is present in my life throughout the year, not only during wintertime. I spend almost all my winters around the sport engaging myself into it by snowboarding approximately three to five times per week, following different snowboard media channels and by working with Finnish Snowboard Association as an organiser of snowboard competitions around Finland. The culture has become rather familiar to me.
and therefore it will be easy for me to research it. Although, for this research I will try to place myself outside of the culture to be able to objectively review the results.

The research attempts to identify the mind-sets of Finnish snowboarders’ towards climate change and responsible travel. The main research question of this thesis is: How do Finnish snowboarders perceive climate change in relation to snowboard travel? And the sub questions are:

• How are Finnish snowboarders choosing the destination when planning a trip?
• How do they travel to and within the destination?
• On what basis are snowboarders choosing the accommodation services they will use?

The key concept of this thesis is climate change, but the research also deals with the concepts of responsible travel and tourist typology. These concepts form a frame of reference for this research and they are introduced to ensure better comprehension of the upcoming content. The climate change is defined in the beginning of the introduction to immediately form a picture for the reader of the scenario, in which this thesis focuses on.

Responsible tourism’s purpose is to minimise the possible negative impacts of tourism industry to the environment, communities, cultural heritage and societies around the world, while maximising the benefits of the tourism sector. In 1999 the UNWTO conducted a Global Code of Ethics for Tourism (GCET) that still works as a fundamental frame for responsible and sustainable tourism. Generally responsible travel concentrates on three main aspects; environmental, social and economic considerations. It is addressed to all the key-players of tourism sector: travel industry, governments, communities and tourists. (UNWTO 2017a.) Basically all those that are involved in tourism are also responsible of its sustainability. Private sector enterprises and tourists itself creates most of the tourism impacts by their actions. However, governments should play a leading role in the process in order to achieve very significant progress with the sustainable development of tourism industry. (UNEP 2005.)

Tourists’ motivation and behaviour can be predicted through a tourist typology, which is a sociological research method. Even a brief understanding of the typologies provides us a deeper understanding of different tourist segment’s choice processes. Personal attributes such as motivation, attitudes, perceptions and their interaction allow the identification of different tourist roles. The typologies afford a way to understand tourist behaviour and activity, although the typologies are not complete and cannot be applied to all tourists all times. (Cooper, Fletcher, Fyall, Gilbert & Wanhill 2008, 50.)
Cohen’s (1972, in Cooper & al. 2008, 50) typology divides tourists in fourfold classification: organised mass tourist, individual mass tourist, explorer and drifter. He describes the first two roles as institutionalised and the latter types as non-institutionalised (Cohen 1972, in Cooper & al. 2008, 50). According to Cohen, institutionalised tourists are seeking more familiarity and the tourists’ uses services from travel agencies, tour operators, transportation operators and hoteliers. They are low on adventurousness and normally purchase ready-made packages, which include none or few personal choices. And these tourists have only little contact to local environment, culture or people. Whereas, the non-institutionalised tourists travel individually and generally avoid tourism industry as much as possible, only having contact when absolutely necessary. They are looking to get off the beaten track and they try to avoid the environmental bubble, as much as possible. The non-institutionalised tourists have closer contact to local environment and people, and they try to immerse themselves more to the local culture. (Cooper & al. 2008, 51.) Therefore, it is possible to presume that the non-institutionalised tourists are normally more aware of the impacts of tourism, sustainability and responsible travel. As they have a higher possibility to influence to their individual travel choices and their personal decisions determinate the sustainability of their trip.

In order for this thesis not to expand too much, it is delimited to consider the impacts of climate change, Finnish snowboarders and ski destinations around the world. Finnish snowboarders can mainly be divided into three main sub-groups: freestyle, freeride and slope snowboarders. And different sub-groups supposedly have different kind of attitudes towards the effects of climate change. Moreover, this research will focus more to the destinations in Finland, and numerically largest ski resort areas in northern hemisphere.

This thesis starts with an introduction to the topic. After introduction, the thesis is divided in three parts: snowboard culture and Protect Our Winters –movement, impacts of climate change on tourism and impacts of climate change on winters. The first part is explaining the history and current situation of snowboard culture to give the reader an understanding of the perspective of this research, and to define the idea and actions of the commissioning party. The second part describes the various impacts of climate change on tourism. The third part illustrates how climate change is impacting to winters and snow sport industry. After theoretical part comes the empirical part, which introduces the research methods used, the creation and distribution of the quantitative survey, the analysis methods and the results of the research. In the last discussion and conclusion –section the results are summarised, future suggestions are given for different snow sport tourism operators and POW Finland, as well as improvement recommendations are given for possible future research of this topic.
2 Snowboarding culture and Protect Our Winters -movement

The birth of snowboarding is impossible to date, but the activity, as understood today, emerged from cultural roots of surfing and skateboarding in North America in the late 1960s and 1970s (Heino 2000; Howe 1998, 5-6; Thorpe 2011, 20). Snowboarding was not developed for need of transportation, as were skiing and many other snow sports, nor it was developed for competitive reasons (Heino 2000; Hodgson 1998, 93). It was something different and new, and youth were attracted to it immediately. For youths snowboarding was a way to make a distinction from their parents’ practices. (Heino 2000)

Most ski resorts banned snowboarders until mid-1980s, and the restrictions fed the subculture of snowboarding by bringing an extra tension element to the sport (Humphreys 1997, 150; Hänninen 2015; 12). In the early days of the sport, snowboarding was viewed as unpredictable, irresponsible, radical, aggressive and risky action, which differentiated considerably from restrained and disciplined skiing culture (Howe 1998, 39; Thorpe 2007, 287-288). Snowboarders separated themselves from skiers with language, equipment, style of dress, and body presentation (Heino 2000). Even after a big breakthrough in 1980s in North America, when snowboarding was allowed in more and more ski-fields, snowboarders continued to perceive themselves as “different” from skiers (Howe 1998; Thorpe 2011, 22).

In early 1990s snowboarding gained huge popularity especially among youths (Howe 1998, 93). At the same time media and corporate sponsors started to notice the growing market potential of snowboarding and other extreme sports (Thorpe 2011, 25). These instances strengthened the “lifestyle” image of snowboarding by marketing it as an alternative sport (Thorpe 2007, 287). Snowboarding increased popularity in Finland in latter half of 1990s when Finnish snowboard culture transformed from marginal to mass popularity. In few years the number of enthusiasts grew exponentially and the style of dress changed to reflect the popularisation of different types of youth cultures. (Hänninen 2012, 20.) Nowadays freestyle snowboarding is very commercialized and mainstream fashion trends are blended with its stylistic features. Snowboarders and skiers are no longer so different from each other (Lindström 2012; 9).

Concept of lifestyle can be linked to snowboarding since an individual can acquire and indicate cultural, social and economic capital through it. For example, an individual can do something important for himself, develop new, distinguish himself from others, establish social relationships, socialize with certain types of conceptual models and modes of operation, and also develop them with snowboarding. (Ojala 2015.) At the beginning the core
values of snowboard culture were co-operation, self-expression and resistance of competitions, just because of competing. Therefore, today’s fun, social and self-realization values originate from snowboard history itself. (Humphreys 1997, 150; Hänninen 2012, 18.)

Nowadays snowboarders can generally be divided into three sub-groups: freestyle, freeride and slope snowboarders. Although various sub-groups include jibbers or freestyle riders, competitive athletes, extreme or big mountain riders, alpine boarders, novices, weekend warriors and poseurs. Arrays of embodied practices are engaging participants from these groups, in an attempt to negotiate, transform and preserve the snowboarding body. Snowboarding field is in a constant state of negotiation, as groups and individuals are regularly engaging in demonstrated struggle over status and access to capital. (Thorpe 2011, 117-119.) The picture below represents the three main sub-groups of Finnish snowboarders. The picture includes general denominators of these sub-groups, which are outlined by the author.

Figure 1. Picture of three main snowboard sub-groups

Freestyle snowboarders ride mainly in terrain parks, half-pipes and in urban areas, performing different variety of tricks. Currently they represent the majority of snowboarders. (Thorpe 2011, 29.) Freestyle riders usually follow actively freestyle snowboard culture from different Internet channels, mainly new video edits from the top snowboarders. Freestyle snowboarders also actively internalise new trends for their snowboard clothing and style of riding, mostly buying new set of snowboard clothes almost every year. They have special freestyle snowboards and they may use a helmet, but not usually use any other protection gear.

Freeride snowboarders in turn ride mainly backcountry, looking for the best possible snow and best lines to ride down from the mountain, sometimes performing tricks mainly from natural features. Freeriders usually prefer to hike or use other means, such as snowmo-
bikes or helicopters, to reach remote backcountry terrain. (Thorpe 2011, 29.) They invest in technical clothing that protects them from ever changing winter conditions and they have special freeride snowboards or split board. Freestyle snowboarders also use helmet and other safety gear, such as avalanche backpack, back armour, avalanche transceiver, snow shovel and probe, in case of accidents on the mountains. Freeride snowboarders follow freeride culture also from the Internet, watching and sharing videos, photos and stories from the mountains.

Slope snowboarders are not usually that actively involved in snowboard culture. They go snowboarding mostly during weekends and holiday time, when they ride only maintained ski slopes and sides of the slopes with their older snowboard gear. They don’t probably have special snowboard clothing, but use some winter clothes they can find from home and replaces the clothes only few times in a decade.

2.1 Protect Our Winters – movement

The commissioning party of this thesis is Protect Our Winters Finland, which is a part of international organization of Protect Our Winters (later in the text referred as POW and POW Finland). POW – movement was founded in 2007 in North America by professional snowboarder Jeremy Jones, who wanted to mobilize people from snow sport community to act against the global climate change. Since then, POW has gained over 130 000 supporters. The earliest supporters of POW were famous athletes and respected corporations, and soon afterwards the movement began to include the wider outdoor sports community, such as individuals, pro athletes, resorts and winter sport companies. Today POW operates in United States, Austria, Finland, France, Norway, Sweden and United Kingdom. (POW 2017a.)

The aim of the organization is to activate a passionate community and influence policymakers by creating a political will for relevant actions. Their focus is on youth education, community-based activism and political advocacy. (POW 2017a.) POW works opportunistically and creatively, and they see that the outdoor community has a great influence, which comes from the passion of the athletes, participants and businesses involved, but also from the profile and economic influence of the community. Climate activism has been missing powerful social movement; therefore, POW’s work is notably important and influential as it is one of the few groups working with this social movement. (POW 2017b.)

POW has different programs and events through which they to unite and mobilize the people from outdoor community. For example, they have a programme, in partnership
with two businesses from outdoor field, called “Hot Planet/Cool Athletes”, which is in-school climate assembly program led by pro athletes. The program’s target is to educate and inspire young students to become the next generation of environmental leaders. (POW 2017b.) POW also has Riders Alliance, which is a platform for the outdoors pro athletes, who has the passion and capabilities, to spread their information and knowledge globally. POW works separately with each athlete, to support them with their individual interests and goals by providing them the tools and opportunities they need to create positive change. (POW 2017c.) In addition, POW works closely with climate policy by trying to influence national and regional policy- and lawmakers. They have written a policy agenda based on the feedback they have received from POW’s community. The policy agenda focuses on mitigation of greenhouse gas emissions and they have three main priorities that address issues, which are significantly important for the outdoor sports community.

The priorities are:

- Set an economy-wide price on carbon
- Transition to a clean-energy economy by investing in solar energy
- Utilize innovative transit solutions to minimize emissions from the transport sector (POW 2017b; POW 2017c).

Although POW has a great agenda and they work with really important issues, by influencing the mind-sets of politicians, individuals, future generations and businesses, they refer themselves: “in the end we are pro athletes, dirt bags and diehards; for us, winter is not just a passion, but a way of life” (POW 2017a).

2.2 Protect Our Winters Finland

Protect Our Winters Finland was founded in winter 2015 by few local POW-activists in desire to reach Finnish snow sport community for which snow is important. POW Finland’s purpose is to encourage people from winter sport community to make daily decisions affecting on climate change and to influence society more broadly. They share easily understandable information about climate change and its impacts on winter sports, they try to influence policymakers and companies in the industry. POW Finland organizes events and campaigns, where they can personally meet individual people discuss about climate issues with them. (POW Finland 2015b.)

POW uses so-called ambassadors, generally known winter athletes, to promote actions of the organization and to share information and ideas about climate change and its influences. The ambassadors voluntarily circulate in events in a mission to encourage people to participate in the movement’s activities. They also play an important role in the produc-
tion of social media material. Some of the most known ambassadors of POW Finland are national team snowboarders Enni Rukajärvi and Markku Koski, cross-country skier Anna-Kaisa Saarinen and ex-freestyle skier Pekka Hyysalo. POW Finland also co-operates with various companies and organizations, the main partners are Ruka Ski Resort, Finnish Ski Association, Rethink, Storaenso, Porvoon Energia, Elisa, Pyhä Ski Resort and Salla Ski resort. (POW Finland 2015b.)

POW Finland has made a “path for saving the winters”, which is an informative package that tries to inspire and encourage individual people towards more sustainable and low carbon society. The “path” includes seven steps that are in order of importance by which are most effective ones in a fight against climate change. The points are not meant to be radical or completely new changes to one’s life, but more about small steps towards a climate-friendly society. (POW Finland 2015a.)

The first step suggests affecting to politics by voting only candidates that support environment and sustainability. It also advises to keep contact with the candidates and tell them that they will lose a vote if they don’t run enough ambitious climate policy. The next step is about speaking aloud about climate issues to one’s family, friends and co-workers in real life and in social media platforms. The third step recommends studying about climate change from reliable sources. The fourth step suggests living simpler life, by reducing consumption and not buying new stuff until it’s necessary. The fifth step advises to eat more sustainable way, by including more vegetables and sustainably produced ingredients, and not throwing food away. The sixth step proposes to travel less and closer, favouring public transportation and avoiding flying. If flying is must, a person should stay in the destination for longer time. And the last step is about favouring companies that has environmentally friendly products and use sustainable operations. (POW Finland 2015a.)
3 Climate change’s impacts on tourism

Tourism industry is one of the largest and fastest growing economic sectors in the world, and it requires significant amount of resources to work (UN Environment 2017c; UNWTO 2017b, 2-3). Tourism has experienced continuing expansion over the past six decades and as a result many new destinations around the world have opened in addition to the traditional favourites of North America and Europe. The positive trend of international tourism followed previous years also in 2016 with growing numbers of international tourist arrivals (overnight visitors), to reach total of 1,235 million worldwide. In 2016 international tourism receipts was estimated to be 1,102 billion euro, which equals 10% of world’s GDP. Tourism also holds one in then jobs around the world. (UNWTO 2017b, 2-3.) In the industry of this scale there are numerous stakeholders with different interests and values (UN Environment 2017c). Consequently, as many tourism destinations are closely linked to environment there are no possibilities to avoid any further impacts (UNEP 2017c).

Climate change instead can be described as a long-term change in climate system, which can be identified by statistical tests. The changes take place in mean state of climate or in its variability, and continue typically for decades or longer. The changes in climate can happen due to external factors of natural internal processes such as changes in the atmosphere, volcanic eruptions or changes in land use. (IPCC 2014a, WMO 2017.) Alternatively, Framework Convention on Climate Change (UNFCCC, 1992) define climate change as: “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”. The UNFCCC thus distinguishes change of climate due to human activities changing the composition of the atmosphere and climate variation derivable from natural causes (IPCC 2014a).

Since industrial revolution, over a century ago, human activities have been changing the natural greenhouse effect (NASA 2017a). The IPCC confirms human influence on the climate system to be the main cause of global warming by 95 per cent probability. The impacts are clear and growing, and they are observable across the globe, on all continents and oceans. (IPCC 2014b.) Carbon dioxide (CO2) is one of the most significant greenhouse gases, which is mostly generated by burning of fossil fuels such as oil, coal and natural gasses. Also, a certain farming methods and clear felling of forests has accumulated quantities of CO2 and other greenhouse gasses in the atmosphere, which in the long run cause global climate change. (UN Environment 2017b, IPCC 2014a) Moreover, in its Synthesis Report the IPCC (2014b) states that the more human activities affect climate; the greater is the likelihood of climate change to have pervasive, serious and irre-
versible impacts on humans, environment and ecosystems. Long-term changes will thus occur in all components of the climate system (IPCC 2014b).

On the other hand, climate change causes only some of tourism’s environmental impacts and the industry itself generates wide range of impacts on environment. In the next chapter are presented some of the general environmental impacts of tourism. Otherwise this research focuses on environmental impacts of climate change on tourism.

The quality of natural and man-made environment is essential to tourism (UNEP 2017c). Although tourism’s relationship towards environment is complicated as it may involve many activities that can have unfavourable impacts on the environment (UNEP 2017b). Generally, these impacts are from construction of tourism infrastructure such as hotels, roads, airports and other tourism facilities. As tourism mainly depends on natural environmental resources, these negative impacts of tourism development can destroy them. (UNEP 2017c.) Tourism potential of a destination is correlated to its biodiversity, if the biodiversity decreases the destination loses its tourism potential (UNEP 2017b). On the other hand, if tourism contributes to environmental protection and conservation, it can create valuable effects on the environment. Conservation and protection are tools to raise awareness of environmental values, and they can increase the economic importance of the area. (UN Environment 2017c.) When level of visitor use exceeds the carrying capacity of the environment it will create negative impacts by straining land and resources. Natural habitat loss, discharges into the sea, soil erosion, increased pollution, strained water resources and impacts on vegetation and wildlife, are only few negative environmental impacts of tourism. (UN Environment 2017d.)

3.1 Various impacts on tourism

Climate change will affect to our lifestyles, health, economies and social wellbeing yet the degree of these consequences will vary on a regional basis depend on which extent nations, economic sectors, and individuals adapt to changes and mitigate emissions (UN-WTO 2008, 5; UNWTO 2009, 4). To all nations and economic sectors, adaptation and mitigation is the way to contend the challenges of climate change, and tourism industry is no exception to it (UNWTO 2008, 5). According to Scott & Lemieux (2009, in UNWTO 2009, 4) tourism and travel sector is considered to be highly sensitive for climate change because its' close relationship to environment. Climate change affects tourism destinations and operations in various ways (UNWTO 2009, 4).
Climate influences environmental conditions that attract and deter tourists, therefore it plays a major role in destination choice and tourist spending. The length and quality of tourism seasons is also defined by climate. (UNWTO, UNEP & WMO 2008, 12; UNWTO 2009, 5.) In some of the destinations climate is the key resource upon which the travel and tourism operations are based (UNWTO 2009, 5). Climate variation affects a wide range of natural resources that are critical attractions for tourism, such as water levels and quality, snow covers and glacier extent, biodiversity and wildlife. Although it can also affect to environmental conditions that can deter tourists, for example wildfires, infectious diseases, insects or water-borne pests, algal blooms and extreme events, such as heat waves, hurricanes or floods. (UNWTO, UNEP & WMO 2008, 12; UNWTO 2009, 5.) As a result, various tourism operations that affect profitability (heating-cooling costs, water supply and quality, snowmaking requirements, evacuations and temporary closures) are influenced by climate directly (UNWTO 2009, 5). Furthermore, climate is a critical element of tourist decision-making. The key drivers of tourism demand at global and local scale are seasonal climate fluctuations at destinations and large outbound markets. Weather influences holiday satisfaction and tourism spending, but is also an essential component of the travel experience. (UNWTO 2009, 5.)

Consequently, climate change’s integrated effects are expected to have far-reaching impacts on tourism industry and destinations. The varied impacts of climate change are already affecting tourism and travel businesses and communities, who depend upon it; climate change is not only future, distant threat to the industry. Moreover, travellers’ decisions on destination choosing and timing of their trips are already altered by climate change. (UNWTO 2009, 5.) Climate changes’ impacts will vary extensively by geographic region and sector; however they will result in both negative and positive impacts for the tourism industry. There are four broad categories by which climate change will impact the global tourism sector. (UNWTO, UNEP & WMO 2008, 12.)

### 3.1.1 Direct climatic impacts

Locations’ suitability for a wide range of tourist activities is co-determined by climate, which is the most important driver of global seasonality in tourism demand. Climate has an important impact on operating expenses, such as food and water supply, heating-cooling, insurance, snowmaking and irrigation costs. (UNWTO 2008, 6.) Other impacts will include additional emergency preparedness, increased infrastructure damage and business interruptions (UNWTO 2009, 5). Competitive relationships between intra-regional tourism flows and destinations can be influenced by changes in the quality and length of
climate-dependent tourism seasons (e.g. winter sports or sun-and-sea holidays) (UNWTO 2008 & 2009).

According to UNWTO (2008, 19-21), tourism is very likely to face a shift of attractive climatic conditions towards higher latitudes and altitudes. Therefore, some of the popular holiday areas are anticipated to lose their attractiveness (e.g. Mediterranean in summer), whereas other areas, such as southern Canada or southern England, are expected to face improving tourist flows. If seasonal and geographical redistribution of visitor flows are to be expected, uncertainty factors related to tourist destination loyalty and climate preference require attention. In the future projected natural snowfalls will be declining and in many winter sport destinations there are well-established vulnerabilities. Ski industry in the European Alps, Australia, Eastern and Western North America and Japan is very likely facing contractions, even with increased snowmaking. The projected impacts will vary in destinations at these countries by magnitude and over different time span. (UNWTO 2008, 6.)

Changing climate and warming atmosphere are affecting to natural snowfall and to the length of the seasons, which is a great risk to winter sport destinations around the globe. As a result, many ski resorts will be facing serious complications from these impacts. The resorts are forced to open later, due to the lack of suitable weather conditions, and they also must close earlier in the spring because of warmer climate and melting snow. Therefore, the seasons will become shorter than before and this all will show in ticket sales and overall revenues of the resorts. Many of the resorts, especially ones in lower altitudes, needs to use snowmaking machines to generate enough snow to even be able to open their slopes for customers. Moreover, snowmaking is a huge economic burden for the ski resort businesses, but also a factor affecting to sustainability of the resort. For these reasons, some of the resorts cannot operate profitability anymore and they are forced to move to higher altitudes, or to north facing walls where there is less sunlight, or even shut down their businesses.

Overall, the competition among well-functioning ski resorts will become tougher in the future. Many of the resorts have to make major changes to their operations, such as:

- Implement efficient snow-making
- Preserve glacier areas
- Move ski areas to higher altitudes and colder, north facing slopes
- Improve water use
- Integrate with other resorts
To maintain their customer base, profitability and position in the field and reduce economic vulnerability and share snowmaking costs. (UNWTO 2008, 7.)

### 3.1.2 Indirect environmental change impacts

Tourism destinations are often placed on high quality natural environments (UNWTO 2009, 5-6). Extensive climate-induced environmental changes will have serious effects on tourism at the regional and destination level, because the environmental conditions are so critical for tourism sector (UNTO 2008, 12-13). Tourism will be affected to varying degrees by changes in biodiversity loss, water availability, reduced landscape aesthetic, coastal erosion and inundation, damage to infrastructure, increased natural hazards and increasing incidence of vector-borne diseases. Indirect effects of climate change to environments are likely to be largely negative than the varied impacts of climate change to tourism. (UNWTO 2009, 5-6.) Nature-based tourism and mountain, coastal and island destinations are considered especially sensitive to climate-induced environmental changes (UNWTO, UNEP & WMO 2008). If the quality of the attractions decreases obviously, visitors may be prevented from visiting (UNWTO 2009, 5-6).

For snowboarding and other winter sport communities changing conditions on mountainous areas are posing a threat for the future of the sports. Changing climate is affecting to the changes in snow and glacier conditions. For this reason, the snowpack may become unstable and therefore more unsecure for snowboarders and skiers. As a result, there would more likely be greater risks of avalanches and winter storms. If the conditions shift considerably to more dangerous, some areas or resorts may need to be closed from these activities. Tourists may also decide for no longer visit certain areas, if there is absence of glaciers and snow.

### 3.1.3 Impacts on mitigation policies on tourist mobility

Simpson et al. (2008) and Gössling et al. (2008, in UNWTO, UNEP & WMO 2008, 13) suggests that national or international mitigation policies, which seek to reduce greenhouse gas (GHG) emissions will likely impact on tourist flows. Tourists might change their travel patterns (e.g. destination choices or shift in transport mode) because of likely increased transport costs and environmental attitudes (UNWTO 2009, 6).

A positive implication could be that in the future snowboarders would choose destinations closer to their homes. For example, snowboarders in Finland would travel mostly to destinations in Finland, Sweden or Norway. This way the carbon footprint of their trip could
become smaller. A negative side of these mitigation policies could be that in the future snowboarding could evolve into elite sport, where only handful of people would have the money and possibility to do it. Or there would be less people in the sport in areas where there the conditions are not good anymore.

3.1.4 Indirect societal change impacts

Adaptation and mitigation of the impacts of climate change will have an economic cost. Future economic growth and the political stability of some nations may be threatened by climate change, if not tackled on the early stage. If climate change plays a role on such reduction of global GDP it would have negative implications for expected tourism growth in the future. Tourists are opposing social unrest and political instability, and there would be negative consequences in the climate change security hotspots for tourism. (UNWTO 2009, 6.)

For snowboarding this could mean loss in interest towards the sport due to poor and changing winter conditions. People would not be willing to invest in it anymore, or it would become too expensive for normal people to do so. This could mean that in the future snowboarding could become a hobby for elite, who has the money.

3.2 Impact of tourism on climate change

According to UNWTO, UNEP & WMO (2008) in 2005 tourism contributed approximately five per cent of global carbon dioxide emissions to human-induced climate change. It was the first attempt to calculate CO2 emissions from tourism. Emissions from three main sub-sectors were calculated: transportation, accommodations and activities. As well as contribution to radiative forcing, which includes all greenhouse gases. (UNWTO, UNEP & WMO 2008.)

In 2005 transportation generated around 75% of total tourism CO2 emissions, the share is significantly larger if taken into account radiative forcing specific to transport, ranging from 82% to 90%. As can be seen on the figure below, air transport made up alone 40% of tourism CO2 emissions and trips made by car accounted for 32%. Emissions from accommodation were 21%, only 4% from activities and 3% from other ways of transportation. (UNWTO, UNEP & WMO 2008; UNWTO 2008.)
The emissions vary tremendously across the whole tourism industry and within individual trips. Long-haul travel by air represents only 2.7% of all trips, but contributes 17% of global tourist emissions whereas international trips by coach and rail account for 16% of all trips, generated only 1% of global tourism transportation emissions. (UNWTO, UNEP & WMO 2008; UNWTO 2008.) Average tourist journey generates estimated to 0.25t of CO2, while other can amount more than 10t CO2 (e.g. crossing the South Pole) (UNWTO 2008). In the future, global tourism carbon dioxide emissions are projected to increase by 130 per cent by 2035 under “business as usual” scenario. Where air travel will be the biggest grower. (UNWTO 2009, 6.)

The information on the table above is from 2005 and there is no newer information available. It may be assumed that the ratio between these sub sectors has not changed much, although the number of national and international tourists has increased (UNWTO 2017b, 2-3).

### 3.3 Impacts of a typical snowboard trip on climate change

A typical Finnish snowboard trip is made with friends to a destination in Finland or to the Alps. The trip normally lasts around a week and is situated near high peak seasons, such as Christmas and New Year, winter holiday or Easter. The most common way of transportation to destinations in Finland is a car, and an airplane to destinations in Europe. Snowboarders usually accommodate in small huts or apartment hotels near or at the resorts. If there is a need of transportation within the resort it is normally made by walking or with an own car. The trip is normally purchased independently, without using any tourism agencies, and all the parts of the trip are purchased separately such as transportation, accommodation, food, and destination activities (ski passes).
3.3.1 Transportation

All transportation methods generate together approximately 75% of tourism’s GHG emissions (UNWTO 2008, 34). It is obviously also the main CO2 contributor of typical snowboard trip. The amounts of emissions vary depending on the location of the destination and which kind of transportation is used. Air travel generates most of the CO2 emissions from tourism sector, if choosing to use public transportation such as train or buses; snowboarders could reduce their transportation emissions by 37% (UNWTO 2008, 34). If travelling by own car, person’s driving behaviour determinates the large extent of the emissions and fuel efficiency of the trip. It is addressed that “restrained driving” compared to “aggressive driving” can decrease fuel consumption by 30%. Air-conditioning and extra load also increases fuel consumption. (UNWTO 2008, 168.) Although, if as many snowboarders would travel with the same car instead of everyone using their own, it would reduce the transportation emissions of the trip. The snowboarders can also minimise their transport emissions at the destination by walking, using public transportation or renting fuel-efficient vehicles (UNWTO 2008, 168).

Therefore, by changing their travel patterns, snowboarders could contribute greatly to their CO2 emissions. Choosing destinations closer to home, using public transportation as much as possible, avoiding flying for short period of time, changing driving behaviour and using as few cars as possible, are the best options for snowboarders to reduce their carbon footprint.

3.3.2 Accommodation

The accommodation sector generates approximately 20% of the GHG emissions from tourism activities and there is a huge potential to improve its carbon efficiency, even though it is an intensive energy user (UNWTO 2008, 10). The accommodation sector’s largest portion of overall energy consumption becomes from heating and cooling of the spaces, although the energy expenses vary by type of accommodation and by location. (UNWTO 2008, 63.) Even 30-40% of the emissions could be reduced with existing technologies and practices. Documenting of energy use, applying renewable energy sources, taking action into improved energy-efficiency and reducing energy use are the ways for tourism’s accommodation sector to become more energy efficient. (UNWTO 2008, 10.)

It might be hard for snowboarders to deliberately choose an accommodation from provider that is paying a great attention to its sustainability. Generally other factors, such as location, prize, size and equipment, may weight more when choosing an accommodation. For
this reason, the accommodation service provider has a greater responsibility of sustainable actions. By informing customers about inclusive recycling and possible renewable energy used, the provider could raise customer’s awareness about sustainability. Moreover, if snowboarders choose an accommodation within walking distance to the resort, they may not need to use car or other transportation alternatives that much during their stay.

3.3.3 Destination activities

While activities’ CO2 emissions are approximately only 4% of the whole tourism industry’s emissions, the concern of the energy use for snowmaking is valid. When evaluating its sustainability, both technical and regionally specific social factors must be considered. In the best-case scenario, technically, renewable energy can be used for snowmaking and thus it does not contribute more to climate change. Older energy systems could be improved 25-50% by increasing the energy efficiency of the resort operations. Therefore, use of renewable energy should be priority for all ski areas that use snowmaking. (UNWTO 2008, 90.)

The social factors of winter tourism must be recognized when defining the net impacts of snowmaking activity on greenhouse gas emissions. Thousands of snowboard and skier visits may be displaced to another ski resort or to other tourism activities, if a local ski area is forced to close due to poor winter conditions. The alternate resort may be nearby with less than 100 km distance, or in many cases more than 500 km away. In this case alternative emissions may be produced from transportation, such as car, trail, coach or even air travel. If there is no alternate ski destination nearby snowboarders and skiers may choose other, much more greenhouse gas intensive, activities and travel options. (UNWTO 2008, 90-91.)

The main activity of the trips is obviously snowboarding, and most chooses not to do other activities during the trips. Although at the destinations in Alps snowboarders may hire a local backcountry guide to lead them to safer off-piste tracks. As the above table shows, even the activities contribute only average four per cent of tourism’s CO2 emissions it is still good to consider about the effects of snowmaking and their energy use. By choosing a destination where renewable energy source is used or a natural destination, where there are no ski resort services, snowboarders can reduce their trip’s overall GHG emissions. By favouring destinations that are already using renewable energy, snowboarders and skiers may press other ski resorts also to change their energy sources.
4 Climate change impacts on winters

Since the 1850s, the global mean temperature of the globe has risen 0.85 degrees Celsius. In addition, the last three consecutive decades have been successively warmer at Earth’s surface than any before. (IPCC 2013.) According to scientists, the climate will continue to warm in the future for several decades and the predicted rise in global mean temperature over the next century will vary between 0.3 and 4.8 degrees Celsius (IPCC 2014a, NASA 2017). The impacts of climate change have been visible in recent decades both in natural and man-made environments, across all continents and oceans. The most comprehensive and severe impacts of climate change have been affecting natural systems (IPCC 2014a). The effects of climate change are large in number and they increase considerable stress on communities and ecosystems (UN 2017, WWF 2017). Climate change affects warming of the atmosphere and hence causes changes in weather conditions, reduction on amount of snow and ice, melting glaciers, rising sea levels, and warming and thawing of permafrost (IPCC 2014a, UN 2017, WWF 2017). Many freshwater, marine and terrestrial species have also had to change their geographical ranges and other mode of life due to climate change. Furthermore, climate change evolves climate-related extremes, such as cyclones, floods, heat waves, droughts and wildfires, which can all drastically impact on food production and water supply, morbidity and mortality, alteration of ecosystems, and damage to infrastructure. (IPCC 2014a.)

Climate change is evidently affecting more to winter temperatures and precipitations than in summer, in northern parts of the world. Polar region, North Europe and North America are projected to warm most during winter. It is also likely that precipitation increase will be largest in winter in these regions. (UNWTO 2008, 55-59.) Pristine mountain landscapes and snow cover makes mountain regions as important destinations for global tourism. They also are the principle tourist attractions and features that are most vulnerable to climate change in mountain regions. (UNTWO 2008,7.) Although, the regional impacts of climate change will vary according to how different countries’ societal and environmental systems can adapt and mitigate to change (IPCC 2014a, NASA 2017). On-going changes and warming in all components of the climate system are caused by continuous greenhouse gas emissions (IPCC 2013). Taken as a whole, the net damage costs of climate change will likely to be significant, and will grow over time (IPCC 2014a). Only a massive and continuous reduction in greenhouse gas emissions can limit climate change (IPCC 2013).
4.1 Impacts on ski destinations world wide

The numerically largest ski resort areas can be found from North-America, Canada, European Alps and Japan. Increasing amounts of ski resorts have also opened to Middle East and Asia in recent years, despite of the warming trend of the climate. There is a total of 3612 ski resorts in whole Europe, where as 311 in Scandinavia and 2063 in Alpine countries, 813 in North America (including United States and Canada) and 597 resorts only in Japan. The numbers include also indoor ski resorts that have become more popular in recent years. (Skiresort.info n.d.) The numbers of ski resorts according to continents can be seen from the picture below. As the climate change will have various impacts on winter conditions it is projected to have serious effects on ski industry worldwide. However, projected impacts vary depending clearly on different climate scenarios, altitude of the ski resorts and their potential capability of snowmaking. (Gilaberte-Búrdalo, López-Martín, Pino-Otín & López-Morenoc 2014.)

Figure 3. Map of World’s ski resorts (Skiresort.info n.d.)

The impact of climate change will be potentially severe to the multi-billion Euro international winter sports industry. The snow sport sector’s close linkage between climate and economic performance are identified at risk to global climate change. The major vulnerabilities are the availability of natural snow and appropriate climatic conditions to make snow. However, the impacts on winter sport destinations vary over magnitude and different time span. (UNWTO 2008, 68.)
4.1.1 Europe

In Europe, it is projected that the snowline will rise by about 150 meters per every 1 °C increase in temperature. There will also be changes in patterns of precipitation (snow, rain, hail and sleet). It is estimated that the areas that now receive regular snowfall will in the future experience winter rain instead. Therefore, there will be fewer days with snow cover and less snow accumulation in lower elevations. Similarly, within the first half of the century most of the small and medium-size glaciers are likely to melt. In the future, many ski resorts in Europe will be facing difficulties in attracting winter sport enthusiasts and other tourists. This threatens nearly half of all ski resorts in Switzerland and the situation is even worse in Austria, Germany and the Pyrenees. (European Environment Agency 2016.) Most of the ski resorts in Europe already relies on artificial snowmaking, but with the impacts of climate change, the potential number of days with optimal conditions for snowmaking will be reduced. Pons-Pons, Johnson, Rosas-Casalas, Suerda & Jover (2012, in Gilaberte-Bürdalo & al. 2014) concludes that snowmaking in the lower altitude ski resorts will not be able to compensate the impacts of temperature increase.

4.1.2 North America

In North America climate change is projected to have severe negative impacts on winters and winter sport industry. Different states in North America and Canada are facing rising temperatures, less snowfall and more winter rain. Rising temperatures and decreasing snowfalls will shorten the snow seasons. Western and north-eastern areas of United States are facing falling total winter precipitation as snow has already decreased from these areas. Snowpack and snowfalls will decrease most in lower elevations of the western U-S. By the end of the century the winter temperatures are projected to rise an additional 4 to 10 degrees Fahrenheit, in the west snow depths could decline by 25 to 100% and in the northeast the snow season could decrease by half. (Burakowski & Magnusson 2012, 5-6.)

Most of the ski resorts (88%) in U.S participating in National Ski Areas Association’s annual survey in 2009/2012 indicated that they are already using additional snowmaking. If night time minimum temperatures will start to rise faster than daytime maximum temperatures, it will impact to the ability of snowmaking at ski resorts. Therefore, it is uncertain how long additional snowmaking can be used as an adaptation strategy. Many ski resorts are facing so called “backyard syndrome” despite of extensive snowmaking, which means that most of the urban snowboarders and skiers won’t go out to the slopes if they don’t
see snow on their backyards. (Burakowski & Magnusson 2012, 7-9.)

4.1.3 Japan

Japan has already experienced some impacts of climate change. Average winter temperatures in Hokkaido area, which is a famous ski area in Japan, have risen 1.3 degree Celsius over the last century and there has been significant decline in the amount of snowfall. Additionally, there has been increase in the amount of days with heavy precipitation and decrease in the number of days with no precipitation at all. In the future, the projected impacts of climate change include 2 to 4 degree Celsius rise in all Japan until the end of the century, frost days will decrease from 20 to 45 days per year and increase in annual precipitation by more than 10%. The climate will warm more during the winter than during the summer. Declines in snowfalls and snow cover will negatively influence to winter sport tourism. (Case & Tidwell 2008.)

Fukushima, Kureha, Ozaki, Fujimori and Harasawa concluded (2002, in Gilaberte-Búrdalo & al. 2014) that there could be 30% reduction in the amount of snowboarders and skiers visiting ski areas in Japan, if a climate scenario with +3 Celsius temperature rise and no significant change in precipitation would happen. However high elevation areas on the main island and Hokkaido in the north would be exceptions. On the contrary, low elevation ski areas and south of the country could experience up to 50% decrease in winter sport visitor numbers. (Gilaberte-Búrdalo & al. 2014.)

4.1.4 Finland

If greenhouse gas emissions continue to grow globally, temperatures in northern regions will grow more than average on Earth (Ilmatieteen laitos 2017b; Ruosteenoja, Jylhä & Kämäräinen 2016). According to current model estimates, the change in Finnish winter’s mean temperatures will rise about 2.5 times more than compared to the global temperature change (Ruuhela & Ruosteenoja 2012). Temperatures in Finland will raise more during winters than in summer. In the worst-case scenario, the mean winter temperatures in Finland could rise up to seven degrees before the end of the century. (Ilmatieteen laitos 2017b; Ruosteenoja & al. 2016.) In addition to temperature rising in Finland, precipitation can increase by 3-36% by the mid-21st century (Ruosteenoja & al. 2016).

Because of rising temperatures, the beginning of winter starts to move slightly forward from the present situation and spring begins earlier (Uusikivi 2014). When the winters are milder, even bigger part of rain comes down as water. The change is bigger in southern
Finland than in Lapland, therefore by the mid-century, the amount of snow may decrease about to half in the southern Finland. (Ruuhela & Ruosteenoja 2012.) By the end of the century, the snow levels in Lapland will begin to decrease and the winters will shorten significantly (Uusikivi 2014). Although the amount of snow varies already from year to year, it would seem that there would be increase in variability in the future. Even in the mid-century there might still be really snowy winters in Finland, though they will exist much less frequent than before. (Ruuhela & Ruosteenoja 2012.) In the future, the number of frost days will decrease by the end of the century at worst by up to 80 days. Winters in Finland are forecast to shorten for an average of 5 to 10 days in each decade until the end of this century. (Uusikivi 2014.)

Although the impacts of climate change on Finnish winter are largely easily predictable, in the coming years and decades, it should be remembered that natural variation on climate could still hide the trend of increasing global warming associated with climate change. Because of this, both phenomena’s are affecting our climate simultaneously and therefore needs to be taken into account. (Ruuhela & Ruosteenoja 2012.) Finnish ski resorts can improve their adaptation strategies by extensive snowmaking, as most of the resorts already do. However, additional snowmaking needs optimal conditions and requires great financial contribution.

4.2 Conclusion of the impacts on ski destinations

As a conclusion climate change has various effects impacting winter conditions. The impacts vary according to the location and altitude of the destination. The changes are similar to all: rising temperatures, melting glaciers, increase in precipitation, decrease in amount of snowfall, decrease of permafrost and shortening of the winter season. The changes will significantly influence ski areas and ski resorts around the globe, which may be resulted as a decrease in number of skiers and snowboarders. The ski resorts can enhance their adaptation strategies by additional snowmaking, which may help the resorts to maintain the length of the season and proper conditions of the slopes. Additionally, artificial snowmaking requires certain climatic conditions to be able to operate, and it also needs a great financial contribution from the resort.
5 Research methods

Research methods are used to explain certain phenomena by using a range of tools, and are usually divided into two main approaches: quantitative and qualitative approaches. The objectives and the nature of the research problem usually define the appropriate approach to be used. (Walliman 2011, 1-14.) The purpose of this research is to identify the perceptions of Finnish snowboarders towards climate change and responsive travel, a large amount of data is required to be collected and analysed. Therefore, a quantitative research method was chosen, because it is suitable in collecting information from a large, scattered population of respondents (Vilkka 2005, 73-77).

A quantitative research approach is about analysing collected numerical data mathematically based on known theories and its attempt is to generalize. The material used in quantitative research is normally based on statistics and questionnaires. Additionally, a qualitative research usually tries to understand a phenomenon through a smaller population and the materials used are for example interviews and theme interviews, various documents and observations. Qualitative research focuses usually on individuals and smaller sample sizes of the population, and therefore it is harder to gather a deeper knowledge of the problem, because the sample does not represent the full population. (Kananen 2015, 65-73; Metsämuuronen 2009, 220.) A research can also use both approaches together (Metsämuuronen 2009, 220).

Typical quantitative methods are mail survey, Internet survey, form interview or systematic observation. The mail or Internet survey is usually done by a structured questionnaire, where the all the questions are standardized, and every respondent answers to the same questions in same way and same order. Form interview is usually using a structured form, and the interviewer asks the questions from the respondent and writes the questionnaire itself. The form is often informed, which means that the researcher may ask some kind of supplementary questions from the respondent. Systematic observation is method, where the researcher observes for example event, situation, people’s speech or behaviour, or natural phenomenon’s. It can also use different kind of archive materials or published text, if the sample size is big enough and gives information about the research problem. The observations are written down to structured, pre-prepared form by the researcher. (Vilkka 2007, 27-30).

A survey questionnaire (mail or internet based) should be simple, short and easy to follow, to be clear for all respondents. In the survey, all respondents are asked the same subject questions in the same way. The respondent will read the written questions by themselves.
and answers them in writing. There are various types of questions that can be used in the survey. These are for example closed questions with single and multiple choice, open-end questions, open response option and different kind of rating or scale questions. In this method, the respondent can generally remain his or her anonymity, although there are some risks with Internet based surveys, as it is possible to trace the computers used. (Vilkka 2005, 73-77.)

The questionnaire should be pilot tested before the distribution of the survey. The role of the pilot testing depends on the situation of the survey questionnaire. Newly written questionnaire should be tested for clarity, comprehension, ambiguity and difficulty in responding. Information about the length, time and difficulty to complete are also important to the author. Other issues to be tested are approach and access, covering letter, ethical issues and so on. When all these issues are taken care, it is likely to increase response rates. (Punch 2003, 34.)

5.1 Used research method and the target group

This research was conducted by using a quantitative method. The objective was to answer to the research questions of this thesis. The main research question was: how do Finnish snowboarders perceive climate change in relation to snowboard travel? And the sub-questions were: How are Finnish snowboarders choosing the destination when planning a trip? How do they travel to and within the destination? And, on what basis are the snowboarders choosing the accommodation services they will use? Because of a big number of snowboarders and information needed, the quantitative approach was seen the best option for this purpose. It also allows gaining enough data in most efficient way, compared to, for example, using interview method.

The main tool to collect research material was chosen to be an Internet survey, which was conducted through different social media platforms and snowboard media websites. To be able to obtain relevant data a certain population needed to be studied. The target group of this research was all snowboarders living in Finland, including all three main sub-groups: freestyle, freeride and slope snowboarders. The author chose also to include all age groups, despite of the knowledge of parents likely making travel decision for people under age 18. Thus, young snowboarders have their own opinions. In this way, the survey would include all Finnish snowboarders and give an objective results about their attitudes towards climate change and responsive travel.
5.2 Creation and distribution of the survey

The survey was made in Finnish and it included 17 questions. The questionnaire was considered to be clear, easy to understand and not too long. The survey contained mostly closed questions that included single and multiple-choice questions, Liker’s scale rating questions and questions based on gap analysis. All the questions were adapted to the objectives of this survey, and they were formed after concluding the theoretical part of this thesis.

The structure of the survey consisted four parts; background variables, which consisted few demographic questions, such as gender, age, how many years they have been snowboarding, in which snowboard sub-group they would place themselves. The second part of the questionnaire asked snowboarders travel habits; how often they do snowboard travel and for how long, to where and how often. The third part asked what aspects impacts to their travel choices when choosing the destination, how do they travel and choose their accommodation. The fourth part consisted questions that asked the perceptions and attitudes of snowboarders towards climate change using gap analysis technique. This part included two questions that asked snowboarders’ perceptions about how much travel components are impacting to climate change and what they would be ready to change when planning next snowboard trips.

The questionnaire was created with online survey platform called Webropol. To gain enough respondents and to reach different sub-groups the survey was distributed in several channels in the Internet. The main platforms were be POW Finland’s Facebook page, Finnish Snowboard Association’s Facebook page and Rodeo Snowboarding media and magazine’s Facebook page. In this way, the questionnaire was targeted to reach most of the active snowboarders in Finland. The survey was also distributed through author’s personal Facebook page and some of her friends shared the questionnaire to their personal Facebook pages.

Before the distribution the questionnaire was pre-tested couple times with four people. There were some changes made into the questions according to the received feedback. Small changes were made to questions number 4, 5, 7 and 15. The question number 4 asked about in which sub-group the snowboarders would most likely to place them. The question was closed for only one option at first, but was changed to include a possibility to choose two from the three options. The questions 5 and 7, which asked about how many times the respondents have averagely done snowboard trips during a year, a time frame of “within five last years” was included. It seemed to be hard to think every year, as the
amounts of the trips may vary a lot according to different years. An explanation was added to question 15, as not all the testers fully understood the nature of the question fully. Also, an optional blank box was added at the end of the questionnaire for additional comments. However, the questionnaire got positive feedback from clarity and length of the survey, as well as from keeping the questionnaire in the matter.

The survey was released on 27th of October 2017 and it was kept open until Sunday 5th of November. The goal was to gain 150 responds to get enough data to be able to form reliable information.

5.3 The analysis method

A quantitative data analysis includes usually three main phases of the data processing before the actual analysing can begin. The first phase is about checking all the received data for the quality of the responses, and removing all incorrectly completed forms. The researcher should also examine all the questions and evaluate the missing data and possible errors. In the second phase, the data should be changed to right format, in order to be able to handle it numerically. With Internet based survey this phase might be unnecessary if the data comes already in numerical form. Although if some data analysis software is used the data needs also to be transferred into right form. And the third phase is checking the saved data once again. (Vilkka 2007, 105-111).

The results of this survey were analysed by using quantitative analysis method with the help of Webropol’s own data analysing tools and Excel. No specific data analysis software was used in this process, because statistical analysis is not part of the study program and the usage of any of these software’s has not been taught before.

The results were analysed by basic data analysis while going through all the questions one by one, additionally using cross tabulation with different background variables was used. The results were mainly converted to percentages for easier understanding of the large data and the percentages were also rounded to gain clearer results and smoother text. Some of the results were visualised by using different kind of graphs, which were all made using Excel. The answers from the last optional box were analysed by using basic qualitative data analysis methods. The answers were coded and then organised by key categories before analysing them.
6 Research results and findings

The Internet survey received 190 responses in ten days, between 27th of October and 5th of November 2017, from which 89 respondents were females, 100 males and 1 who did not want to specify. As can be seen from the figure below, the biggest age group was between 25 and 34 years old with 47% of the respondents, the second largest groups were 15-24 and 35-44 years old, both with 23 per cent of the total respondents. There were only four under 15, eight between 45-55 years and one over 55 years old. As a result, this research will later use only the three age groups between 15 to 44 years, to ensure the anonymity of the respondents.

Over fifty per cent (52%) of the respondents have been snowboarding over 15 years, 22% per cent between 10 and 14 years, persons who have been snowboarding 6 to 9 years represented of 12% and 3 to 5 years represented of 11%, only 4% of the respondents have been snowboarding a year or two. The survey also attended to find out in which of the three main sub-groups (freestyle, freeride or alpine) the snowboarders would most likely to place themselves. The respondents were given two options to choose from, as it might have been too hard for them to categorize themselves only into one group. The largest sub group was freeride with 100 responses, additionally freestyle got 94 and slope snowboarders 61 responses.

Asking these background explanatory questions of gender, age, snowboard background and snowboard sub-groups will help in segmenting the respondents. Using cross tabulation when analysing the results can show significant differences between these background variables.
6.1 Travel habits of Finnish snowboarders

The respondents were asked questions about their travel behaviour, how often, where and when they have done snowboard travel and how long their tips usually last, in Finland and in abroad. The snowboard trips were not anyhow defined in the survey and the respondents were given the freedom to define them themselves, although a trip generally means at least an overnight trip. Almost all the respondents (97%) had done at least one snowboard trip in a year inside Finland within last five years, and 71% had done at least one trip to abroad.

59 per cent of the respondents had done average 1 to 5 snowboard trips in a year within Finland, 26% had done 6 to 14 trips, 12% over 15 trips and only 3% had not done any snowboard trips inside Finland during the last five years. In addition, 29% of the respondents had not done any snowboard trips to abroad during the last five-year period. 62% had done 1 to 5 trips, only 6% 6 to 14 trips and 3% over 15 trips to abroad. The distribution of the trips can be seen from the figure below.

Figure 5. How many trips Finnish snowboarders have done average in a year within five years (N=190)

The below chart shows that in Finland the trips lasted averagely 1 to 5 days with 81% of the respondents, 6 to 9 days with 32% of the respondents and over 10 days only with 7 per cent. Additionally, in abroad the trips lasted 1 to 5 days only with 15% of the respondents, 6 to 9 days with 46%, 10 to 14 days with 18% of the respondents and over 15 days only with 7 per cent.
As can be seen from the figures above, in the earlier question about how many trips have the snowboarders averagely conducted during a year in past five years 29% of the respondents indicated that they have not been travelling to abroad within that time period, and in the second set of questions, which were about the durations of the trips, 25% of the snowboarders indicated that they had not been travelling to abroad at all. Therefore, it is possible to assume that approximately 97% of the all respondents have done snowboard trips in Finland and 75% to abroad. Averagely the longer the respondents had been snowboarding the more they have been doing snowboard trips within five last years, and the longer the trips lasted. Here the respondents were divided into two groups; the ones who have been snowboarding between 1-10 years and the ones over 10 years, and the groups were compared together.

The main travel peaks did not fully specify into traditional winter travel high peaks such as Christmas and New Year, winter holiday and Easter. According to all the respondents the main travel season of snowboarders is late February to March with 57% of the respondents, January to early February (42%) and April to May (35%). Also 33% and 32% of the respondents indicated that they have usually been travelling during Easter and Christmas-New Year time. Some snowboarders were used to travel during winter holiday (28%) and around first of May (22%), only 15% had done snowboard travel during early season and some 6% indicated travelling other times of the year, such as summer or early autumn.
As can be seen from the above chart, when cross analysing the travel peaks with the three main sub-groups, it is possible to notice different travel patterns. Freestyle snowboarders clearly travel most evenly throughout the season. They do more likely snowboard trips earlier and later in the season than freeride or slope snowboarders. On the contrary, freeride snowboarders travel most during mid-season. They also travel the least in early season and seem to avoid winter holiday peak the most. Slope snowboarders do trips rather evenly during the traditional ski season, from Christmas to Easter, although the main time for them is also late February to March. They also travel the least during the late season and usually not at all in off-season.

The last question about Finnish snowboarders’ travel habits was asking all the countries where the respondents have done snowboard trips. Besides Finland, approximately half of the respondents had done snowboard trips to Alps and within Scandinavia. The country that had visited the most was Austria with almost half (49%) of the respondents, 44% had done snowboard tip to Norway and 42% to Sweden, following by France (35%), Switzerland (30%) and Italy (27%). Only around 15% of the respondents had done snowboard trips to countries in other continents, such as Japan (16%), Canada and USA (both 11%). Less than 6% had visited other countries, such as New Zealand, Poland, Andorra, Chile, Bulgaria and other.

In this question only 86% responded that they have done snowboard trips in Finland, which may be incorrect due to the layout of the question. Assumedly not all the respondents understood the question right; possibly some expected the question to consider only foreign countries and therefore skipped Finland unintentionally.
When cross-analysing the destination countries as seen from the above chart, it is possible to notice that freestyle snowboarders have been travelling to most countries and visited more countries with higher volumes. The top countries are Austria (49%), Sweden and Norway (both 41%), Switzerland (34%), France (33%) and Italy (26%). They have also travelled the most to smaller ski destination countries, such as Poland, Slovenia and Andorra, or countries on other continents, except Japan. It is also possible to notice that freeride snowboarders have been travelling the most to abroad, and there is a clear trend of travelling to most of the traditionally good ski destination countries in Europe and countries close to Finland. The country with most visited freestyle respondents was Austria (57%), following in order by Norway (56%), Sweden (50%), France (39%), Italy and Switzerland (both 29%), and Japan (25%). Instead, slope snowboarders have been travelling the least in abroad. The most visited country by slope snowboarders is also Austria (36%), and others are Italy (28%), Sweden (28%), France (26%), Norway (23%) and Switzerland (21%).

6.2 Aspects impacting travel choices

The next set of questions asked about the aspects impacting the respondents’ travel choices from climate change’s point of view. The baseline for these questions came from the theoretical part of this research. The questions handled the aspects affecting the choice process of the ski destination, ways of travel to and within the destination and how much ecological aspects influence on accommodation choice process. This part was conducted to find out Finnish snowboarders’ travel behaviour in relation to how much they already consider sustainability and climate change when planning and performing snowboard travel.
Generally Finnish snowboarders seem to value the natural snow conditions as the most important aspect, when choosing a ski destination. As the below figure shows that 80% of all the respondents answered that the natural snow conditions matter much or very much for them, for 17% it mattered some and for only for 3% of the respondents it mattered little or very little. Unlike man-made snow conditions, which mattered much or very much for 44% of the respondents, some for 29%, and little or very little for 27%.

![Figure 9. Natural snow matters the most in the choice process of ski destination (N=190) ![Figure 10. Places of performances matter more for Finnish snowboarders than off-piste possibilities (N=190)]](image)

The next important aspect was the conditions of places of performances, such as terrain park, half pipe or well-maintained slopes. For 59% of the respondents it mattered much or very much, for 24% it mattered some and for 17% little or very little. The third most influential aspect was off-piste and backcountry possibilities. 57% of the snowboarders responded it to matter much or very much, when choosing the destination. For 21% it mattered some, and for 22% little or very little. The comparison between these two aspects can be seen from the chart below.

![Figure 10. Places of performances matter more for Finnish snowboarders than off-piste possibilities (N=190) ![Figure 10. Places of performances matter more for Finnish snowboarders than off-piste possibilities (N=190)]](image)

The aspect influencing the least for Finnish snowboarders’ choices of ski destination was the altitude of the ski resort. It mattered little or very little for 47% respondents, some for 34% and much or very much for 19% of the respondents. Ecology of the ski destination and additional services mattered averagely between some or little, for most of the respondents. Only 3% of the respondents valued the ecology of the ski destinations as very
important aspect. The distribution of the least impacting aspects when choosing a destination is shown in the chart below.

![Bar chart showing the distribution of the least impacting aspects when choosing a destination.]

Figure 11. Third least influencing aspects of the destination choice process (N=190)

When cross tabulating with the sub-groups, freeride snowboarders apparently value the natural snow the most and man-made snow the least. For them the second important aspect was the off-piste possibilities. While freestyle snowboarders considered the places of performances as the most important aspect, following by natural snow conditions. For slope snowboarders, the most important aspect was also natural snow, but they also valued the man-made snow the most amongst all the sub-groups. Likewise, they cared the most about the additional services of the destinations. In addition, 35 to 44 years old snowboarders value the natural snow most, while 15 to 24 years old appreciate artificial snow the most.

The respondents were also asked about their most used transportation methods to and within the destinations. Finnish snowboarders seem to use most often cars as transportation methods for their snowboard trips. Flying was the second used transportation method and public transportation was the last. However, there was no major difference in between of the usage rates of flights and public transportation. The distribution of the transportation methods can be seen from the chart below.

82% of the participants' responded that they are using car as the main transportation method to the destinations often or very often, and only 8% rarely or very rarely. 37% fly to the destinations often or very often, 21% sometimes and 42% rarely. 30% of the respondents use public transportation, often or very often, 29% sometimes and 41% rarely or very rarely. 15 to 24 years old uses public transportation the most, maybe because not all have their own cars, or even driving licences. Whereas the 35-44 years old are flying the most, despite their knowledge about its' huge impacts to climate change.
Figure 12. Distribution of the usage of transportation methods when travelling to destinations (N=190)

The below figure shows the pattern of transportation methods used within the destinations that varies from the methods used to travel to the ski destinations. Most of the respondents use ski lifts or gondolas (83%), and walking (82%) as their main transportation. Private cars are the third used transportation method with 53% of the respondents using it often or very often, and 26% sometimes. The less used transportation method within the destinations was taxi services, 84 per cent used taxis rarely or very rarely, and only 3% often or very often. The division of public transportation was the most even. 34.5% of the respondents uses public transportation often or very often, and the same amount (34.5%) uses it rarely or very rarely, and the last 31% sometimes.

Figure 13. Ski lifts and walking are the most used transportation methods within the destinations (N=190)

Moreover, the respondents were asked about which aspects are the most influencing when choosing an accommodation. All the options were related to sustainability and the aim was to find out, how much snowboarders think about sustainability when choosing the accommodation. The most important aspect was the distance between the accommodation and the ski destination. 83% thought that the distance matter much or very much and
only 4% did not see the distance as an influencing aspect. Generally, all the other four aspects had quite similar answers among themselves.

![Figure 14. The distance of the accommodation from the ski destination matters the most when choosing an accommodation (N=190)](image)

As can be seen from the above chart, for 64% of the respondents’ accommodation’s recycling possibilities matter little or very little, when choosing accommodation for snowboard trip. Additionally, 63% thought that energy-efficient construction of the accommodation mattered little or very little, 59% thought the same for both eco-label of the tourist accommodation and usage of renewable energy sources.

### 6.3 Perceptions and attitudes towards climate change

The fourth part consisted questions that asked the perceptions and attitudes of Finnish snowboarders towards climate change using gap analysis technique. This part included two questions that asked snowboarders’ perceptions about how much different travel components are impacting to climate change and what they would be ready to change when planning their next snowboard trips.

In the first question of this section the respondents were asked to assess the impact of some tourist elements of snowboard travel on climate change, according to how much the elements generate CO2 emissions. The aim of this question was to find out the knowledge and the mind-sets of the respondents. The question consisted of eight (8) different elements from transportation methods, to accommodations’ main energy consumers and artificial snowmaking.

From the transportation methods to destinations flying was seen as the biggest CO2 producer, as 84% responded it to have large or very large impact on climate change, and
13% though it has moderate impact. Public transportation was seen as the most efficient with 62% respondents thinking it having the smallest impact from all the elements, and 33% responding it to have moderate impact. The usage of cars to and within the destination was seen having big or very big impact by 43% and 46% of the respondents. Although, 45% of the snowboarders though using cars as transportation to destinations having moderate impact, and the same number with transportation inside the destination was 38%. The chart below shows the perceived impacts of transportation methods on climate change.

![Figure 15. Perceived impacts of transportation methods, from which flying was seen as the largest polluter (N=190)](chart_15)

Two of the accommodations’ major CO2 contributors, heating and cooling (air condition), were seen having mostly moderate impact, by 48% and 40% of the respondents. As can be seen from the below chart, 37% responded air condition having big or very big impact on climate change, and 34% thought so from heating of the accommodations. 23% of the respondents thought that air condition, and 18% of heating, are having small or very small impact.

![Figure 16. Heating and air condition are seen having relatively equal impact on climate change (N=190)](chart_16)

Artificial snowmaking utilizing fossil fuel energy was seen the second largest CO2 emissary of all the elements. As the below chart shows, 80% think of it having big or very big
impact on climate change, and 16% thought of it having moderate impacts. On the contrary, artificial snowmaking utilizing renewable energy sources was seen to have moderate, or minor impact by the same amount of the respondents (42%), while 16% still thought it to have big or very big impact.

Figure 17. Perceived impacts of snowmaking with different energy sources (N=190)

The second question were asking from the respondents would they be ready to change some of their travel habits to more sustainable ones. They had five options from very unlikely to very likely, and a sixth one which was “I’m already doing this”. In this question, there were seven elements from transportation, accommodation, destination and overall winter travel.

Choosing the accommodation within walking distance from the ski destination received the most “I’m already doing this” responses, with 38%. 54% was also likely or very likely to consider this as a change for their next trips. As can be seen from the chart below, only 5% of the respondents would unlikely or very unlikely choose an accommodation within walking distance to the ski destination.

Figure 18. Over half of the respondents (54%) would likely choose an accommodation within walking distance from the ski resort and 38% already does so (N=190)
Additionally, 29% responded that they are already travelling with full car (4 to 5 persons) to ski destinations, and 45% was responding likely to do so in their next trip. Although, 17% responded that they would be unlikely or very unlikely going to change their existing behaviour. 21% stated that they are already using public transportation when travelling to the destinations. 52% were positive about the change of likely or very likely to utilize public transportation in their future trips. However, 20% responded that they would unlikely or very unlikely do this change. The perceptions of possible future changes to transportation methods are seen on the figure below.

![Figure 19](image)

Figure 19. More people would travel with fuller car to their next snowboard trip than choose public transportation (N=190)

64% of the respondents answered that they would likely or very likely lower the internal temperature of the accommodation, and choose an ecological accommodation. Although, as seen from the figure below, only 2% of the respondents are already using ecological accommodation services, but 10% of the respondents have been lowering the temperatures. And 15% are unlikely or very unlikely ready to do any changes with either of these matters.

![Figure 20](image)

Figure 20. Slightly more respondents would rather drop the temperature of the accommodation, than choose an ecological accommodation (N=190)

Furthermore, only 6% already prefer ski resorts that utilize energy from renewable sources with their snowmaking. But 60% would be likely or very likely ready to shift their habits and prefer these resorts in the future. 19% cannot say and 15% will unlikely do so.
In addition, 6% are already paying higher price for responsible produced services, yet 54% would be ready to do so in the future. 18% responded that they would unlikely or very unlikely do this change and 22% could not say.

There were no big differences between women and men with the aspects that are influencing to their travel choices. However, women would more likely choose public transportation for a transportation method to the destination, and choose an accommodation within walking distance of the resort. They also would more likely to favour resorts that use energy from renewable sources.

6.4 Open comments

For the last question, there was a box for optional comments. From the 190 respondents 38 left an additional comment concerning about the questionnaire or the subject of the study. Four categories, that were mostly concerning environmental issues and sustainability, rose from the comments: budget, marketing, transportation and food. Some respondents also thanked about the survey for arousing to think more environmentally friendly when planning and performing snowboard travel.

The most handled issue was money and budgets, which mostly prevent people from paying higher price for more sustainable options. And in many cases the money talks, when people do not have a lot of money they have to choose the cheapest options, usually at the expense of ecology. Ten respondents brought out that general price level, a lack of money, and budget are restricting their travel choices. Some also highlighted that it might even be cheaper to travel to some cheap destination in Alps than to Finnish Lapland for a week. Many comments rose also about transportation methods. Because the distances are rather long and there is mainly no convenient public transportation to most of the ski resorts, snowboarders are almost forced to use private cars and other transportation methods.

Seven of the respondents considered about sustainability in marketing. In their opinion environmentally friendly options, in accommodations and destinations, should be marketed and highlighted more, for people to realise they exist. Many of the respondents did not had any information about sustainable accommodation choices, and some even revealed that they had never thought about it, because generally there is no enough proper information available. Furthermore, some of the respondents brought out comments about food's impact on climate change, and destinations’ restaurants’ lack of vegetarian or vegan options, which were intentionally left out of this survey for it not to expand too much.
7 Discussions and conclusions

This research attempted to examine Finnish Snowboarders’ attitudes and behaviours towards the relation of changing climatic conditions and snowboard travel. The thesis was supported by Protect Our Winters Finland, which will conceivably gain new information about the attitudes and travel behaviours of Finnish snowboarders. The research will also try to give new ideas about how more sustainable travel options could be implemented.

The objective of this research was to identify the mind-sets of Finnish snowboarders towards climate change and responsible travel, and to answer to the research questions of this thesis. The main research question was: how do Finnish snowboarders perceive climate change in relation to snowboard travel? And the sub-questions were: How are Finnish snowboarders choosing the destination when planning a trip? How do they travel to and within the destination? And, on what basis are the snowboarders choosing the accommodation services they will use? The results received gives answers to the research questions, and presents an idea about snowboarders’ attitudes of changing winter conditions and how likely they would change their travel habits towards more sustainable manners.

7.1 Conclusions and summary of the results

As the climate change is already impacting on environments across the globe, the winters are in danger and therefore the future of winter sports and activities will be threatened. Winter sport destinations rely almost completely on proper winter conditions and when the temperatures are rising and snow precipitations falling their profitability remains uncertain. The destinations must adapt and mitigate to the changes, but if the temperatures will rise too much in the long run, the resorts cannot for example make artificial snow anymore. Therefore, the amount of possible ski destinations will decrease drastically and snowboarders are forced to travel to higher altitudes and latitudes to find proper winter conditions, if they do not want to stop snowboarding.

The Internet survey received 190 responses in ten days, which was 40 people over the target of 150 responses. Most of the respondents were between 15 to 44 years, and the distribution between males and females was quite even with 100 male and 89 female respondents. The respondents were given an option to choose two snowboard sub-categories in which they would most likely place themselves. The largest sub group was freeride with 100 responses, additionally freestyle got 94 and slope snowboarders 61 responses. Over fifty per cent of the respondents have been snowboarding over 15 years.
As can be seen from the results, Finnish snowboarders are already doing quite a lot of snowboard trips. Almost all the respondents had done snowboard trips within Finland and 71% to abroad during the last five-year period. Although, most of the trips lasted relatively short time, 1-5 days in Finland and 6 to 9 days in abroad. Freestyle snowboarders travel rather evenly throughout the winter season, compared to freeride snowboarders who travel the most during mid-season, when the snow is assumable in the best condition, and to slope snowboarders who travel usually during the time when they can see snow in their backyards, approximately from Christmas season to Easter. This so-called “backyard syndrome” was discussed earlier in subchapter 4.1.2 “North America”, and it is widely recognized issue amongst many North American ski resorts.

Finnish snowboarders travel mostly to traditionally recognized ski destination countries in continental Europe and in Scandinavia. Approximately half of the respondents had done snowboard trips to Austria, Sweden and Norway. Quite many had travelled also to other countries in Alps, such as France, Switzerland, and Italy. Fewer had done trips to destinations in other continents. Even though Japan has allegedly the best powder snow in the World, only 16% had made snowboard trips there. It is however, the most visited country outside European destinations.

As discussed earlier in the page 12, ski industry in the European Alps, Eastern and Western North America, and Japan is very likely facing contractions, even with increased snowmaking. Also, as discussed in the page 19, climate change is evidently affecting more to winter temperatures and precipitations than in summer, northern parts are projected to warm most during winter. The impacts are similar to all, but will vary in destinations by magnitude and different time span. In the future, many lower altitude resorts may not be able to compensate the impacts of temperature increase by additional snowmaking, and the ski seasons will shorten from both ends.

Snowboarders seem to choose their destinations mainly according to the natural snow conditions, places of performance and off-piste possibilities. Additional snowmaking is seen important by most of the snowboarders, but it does not influence greatly to the choice process of a destination. The altitude of the resort, its ecology or additional services neither did not seem to have too much of an influence on snowboarders. With the changing climate and warming winter temperatures, the ski resorts must adapt and mitigate to the changes in order to remain profitable. As can be seen from the page 12, ski resorts in higher altitudes are more likely to adapt to the predicted impacts of climate change. And therefore, in the future snowboarders may need to choose destinations from
higher altitudes in order to find good snow conditions.

When choosing a transportation method to get to the destination, snowboarders seem to value the ease and the price the most. Therefore, most of the respondents seem to travel with a car to the ski destinations. In the destination, the significance of a private car is smaller, if the accommodation is located within a walking distance from the resort. Walking and ski lifts or gondolas were the most common modes of transportation in the destination. As discussed in the sub-chapter 3.3.1 “Transportation”, if travelling by own car, person’s driving behaviour determinates the large extent of the emissions and fuel efficiency of the trip. “Restrained driving” compared to “aggressive driving” could decrease fuel consumption of the trip by 30%. Also, the type of a car has a major influence on the emissions that it produces.

The most important aspect of an accommodation decision-making was the distance to the resort and the price. Only little attention was paid to the ecological aspects, and most did not even seem to know that ecological accommodation options could exists. Even though the accommodation sector generates only approximately 20% of the GHG emissions from tourism activities, there is a huge potential to improve its carbon efficiency. The largest portion of overall accommodation energy consumption comes from heating and cooling of the spaces. Accommodation operators could reduce their energy emissions even by 30-40% by existing technologies and practices and thus reduce the overall impacts of accommodation sector. This was discussed earlier in the page 16.

Finnish snowboarders seem to know relatively well of the impacts of individual factors of tourism on climate change, though some respondents had not realised the impacts of their own actions with snowboard travel. Relatively few of the respondents knew how little the additional snowmaking is producing carbon dioxide, if renewable energy is utilized in the resort. As discussed in sub-chapter 3.3.3 “Destination activities”, while the activities generate approximately only 4% of the tourism’s CO2 emissions, the concern of ski resorts’ energy use is valid. Because, technically speaking, with the use of renewable energy snowmaking does not contribute more to climate change.

Of the more environmentally friendly options, snowboarders seemed to be readier to implement the easier and cheaper options, such as choosing an accommodation within a walking distance to a resort or travelling with a fuller car. Quite many indicated also the possibility of using public transportation more often in the future. The budget seemed to be a problem for many with more ecological options, because the price level, especially in Finland, is already quite high. By extensive marketing different operators from ski industry
could raise the knowledge of more sustainable options. Only by bringing up information about ecological travel options could different tourism operators raise the knowledge of ecological options amongst ski tourists and thus remove the responsibility from ski tourists, to find more responsible alternatives.

7.2 Future suggestions and development ideas

Conducting a quantitative survey, which would compare perceptions and mind-sets of Finnish skiers with the results of this research, could continue this research. It would give a deeper understanding of the perceptions of Finnish ski-resort users towards climate change and its impacts on winters and ski travel. Also, a comparative research could be re-implemented later with the same target group, to see if the perceptions and mind-sets have changed during the time.

Ski resorts usually have many different operators, that all should implement more sustainable options to their operations, which would minimize their effects on climate. The ski resorts itself should utilize renewable energy sources more and ensure water availability for additional snowmaking, that does not cause harm to the surrounding environment. In this way, they could technically minimize their effects, of snowmaking and running of ski lifts on climate change, to almost none. Many different accommodation operators would also have a room to improve their energy efficiency. It could be done with existing practices and technologies. Reducing energy use, applying renewable energy sources, documenting the energy use and taking action into improved energy-efficiency are the ways for tourism’s accommodation sector to become more energy efficient. Restaurant operators could reduce their energy usage with the same methods than accommodation sector. They also should consider a wider usage of organic, locally produced and vegetable based food, which would not have that big impact on environment. A better public transportation to different ski resorts could promote more sustainable options and ease of it, as a travel option. As nowadays, at least in Finland, there are not many resorts that can be reached easily with a public transportation.

Not all of these changes regard big investments, but some will, and as most of the ski resorts are not usually making huge profit, they would need to get the money for the investments from somewhere. Some of the costs could be transferred straight to the prices of ski lift tickets or to the price of an accommodation. Also, some of the money could also be saved from the more sustainable operations. For example, optimising energy usage could save a lot of money from the energy bill. There should not be an additional cost for a customer to choose on whether they want to buy more sustainable option or not. But the
costs of a more responsible option should be included in the price already and then mar-
ket it as a sustainable service to customers.

Many of the snowboarders did not seem to be aware of sustainable accommodation op-
tions. Marketing more eco-friendly products is really important in order for customers to
become aware of their existence, and thus remove the consumer’s responsibility to find
sustainable alternatives. In summary, improvements in marketing of sustainable ski tour-
ism services are in need. POW Finland could for example organise a joint campaign with
different ski resorts to market their sustainable services.

7.3 Trustworthiness of the research

Reliability and validity together determine the overall trustworthiness of a research. When
the survey sample represents the whole population and as few random errors as possible
occur when measuring, the trustworthiness of the research is good. (Vilkka 2007, 152.)

Reliability of a research is its ability to provide non-random results. It means that the re-
sults should be similar despite the time or circumstances of the implementation, or regard-
less of the researcher. So basically, reliability evaluates the persistence of results from
one measurement to another. The reliability should be assessed already during the re-
search, although issues related to it can also be considered after the study. A research is
reliable and accurate, when a repeated measurement gives exact same results. (Vilkka
2007, 149.)

In other hand, validity refers to a study’s ability to measure what the study’s measurement
tool (i.e. questionnaire) was supposed to measure. It means that how well the researcher
has been able to transfer theoretical concepts to a common language and how clear the
questionnaire is for the respondents. A research’s validity is good when a survey makes
sense and there are no systematic errors. (Vilkka 2007, 150.)

In this research, the number of respondents is adequate for a research of this size. 190
respondents represented a good sample size of Finnish snowboarders, although the re-
search could have covered also the younger generation, less than 18 years old, more
broadly. Otherwise the sample represented well different sub-groups and the main age
groups of Finnish snowboarders. As a result, the research gives a general idea of the per-
ceptions of the target group.
The topic of this research was delimited well enough and the questionnaire’s length was good with 17 questions. Most of the questions were clear and easy to follow, although there were some errors with two questions. Question number 10 attempted to measure the countries where Finnish snowboarders have done snowboard trips. Finland was amongst other countries in the list and assumable not all respondents understood the question right. As in this question only 86% responded that they have done snowboard trips in Finland, albeit in earlier question 97% had responded they had done snowboard trips in Finland within the last five years. Also question number 15 got feedback from few respondents that its layout was not clear enough. However, the questionnaire was designed in a way that it could be repeated with the same, of different target group regardless of the researcher.

One could argue with the validity of the used UNWTO’s basic researches of tourism’s climatic effects. These researches are nearly 10 years old, but newer researches have not been made. Besides, presumably the effects would unlikely change much with newer studies. Also, the study of tourism’s CO2 contribution is from 2005, but it is the first and only research made about the issue. However, it may be assumed that the ratios have likely remained at comparable levels.

All in all, this research had some issues with reliability and validity therefore the overall trustworthiness of this research was not completely good. The sample size of the research was relatively good, but if repeated the results could vary according to the time when re-implemented. As the perceptions of people towards climate change can change as time passes, and when gaining more knowledge. Moreover, the survey does provide answers to all survey questions, and the few errors of the questionnaire does not influence greatly to the overall results. Therefore, it can be said that the validity of this research is not very high, but it gives an overall picture.

7.4 Self-evaluation and evaluation of the thesis process

Bachelor’s thesis is a big learning process where one can achieve academic learning and professional development. Scheduling your own work is in large part, when conducting a study of this size. Additionally, when developing the theoretical background there was a lot to learn from the topic, as climate change and its effects on tourism have only been discussed during the first few years. Of course, this has also been influenced by my own course choices. However, the subject of the research came from my own interest in snowboarding and the effects of climate change to it.
The thesis is the first and most difficult research or task this size, during the studies, and it was set for quite a tight deadline. Although, the timetable was tight and despite some limitations and changes in timing, the thesis remained in time throughout the whole process and it was completed on time. This was largely due to the fact that the thesis process was reserved to have time from the beginning of September to almost the end of November, and no other studies or work had been scheduled for this time.

Creating the basic structure of the survey felt relatively easy, but a little more time and effort could have been targeted to it, to reduce the number of the few errors. Some of the questions could have had better explanatory explanations and questions measuring opinions should have been implemented with numbers in answers options, for them to be adapted to the Liker’s scale. Analysis of the results first seemed difficult, but in the end proved to be relatively easy and found to be interesting.

The interest of the Finnish snowboard scene about this research is also illustrated by the fact that the research commissioner has asked for a blog text about the thesis and its results to their own websites. Also, the previously discussed Rodeo Snowboarding, the only Finnish media and magazine focusing only on snowboarding, has asked for an article to their once-a-year published paper magazine, which is usually published during February and March.
References


Lindström, T. 2012. Freestyle-lumilautailun sukupuoli. University of Lapland. Rovaniemi. URL: 


Hei,


Kiitos jo etukäteen vastauksestasi!

Terveisin
Jenni Viitanen

Taustatiedot
1. Sukupuoli *
   ○ Nainen  ○ Mies  ○ Muu / En halua vastata

2. Ikä *
   ○ alle 15 v.  ○ 15-24 v.  ○ 25-34 v.  ○ 35-44 v.  ○ 45-55 v.  ○ yli 55 v.
3. Kuinka kauan olet lumilautailut? *
   - 1-2 vuotta
   - 3-5 vuotta
   - 6-9 vuotta
   - 10-14 vuotta
   - yli 15 vuotta

4. Millaisena lumilautailijana mieluiten pidät itseäsi? *
   - Freestyle
   - Freeride
   - Rinnelaskija

5. Kuinka monta laskumatkaa olet tehnyt keskimäärin vuodessa Suomessa, viimeisen viiden vuoden aikana? *
   - 0
   - 1-2
   - 3-5
   - 6-9
   - 10-14
   - yli 15

6. Kuinka pitkiä laskureissusi yleensä ovat Suomessa? *
   - En matkusta/ole matkustanut laskureissuille Suomessa
   - 1-2 päivää
   - 3-5 päivää
   - 6-9 päivää
   - 10-14 päivää
   - 15-20 päivää
   - yli 21 päivää

7. Kuinka monta laskumatkaa olet tehnyt keskimäärin vuodessa ulkomaille, viimeisen viiden vuoden aikana? *
   - 0
   - 1-2
   - 3-4
   - 6-9
   - 10-14
   - yli 15

8. Kuinka pitkiä laskureissusi yleensä ovat ulkomaille matkustaessasi? *
   - En matkusta/ole matkustanut laskureissuille ulkomaille
   - 1-2 päivää
   - 3-5 päivää
   - 6-9 päivää
   - 10-14 päivää
   - 15-20 päivää
9. Mihin aikaan vuodesta yleensä teet laskumatkoja? *

☐ Alkukausi (loka-, marras-, tai joulukuun alku)
☐ Joulu - Uusi vuosi
☐ Tammikuu - helmikuu
☐ Hiihtoloma
☐ Helmikuu - maaliskuu
☐ Pääsiäinen
☐ Huhtikuu - toukokuu
☐ Vappu
  Muu, mikä?
☐ __________________________________________

10. Missä kaikkialla olet käynyt laskureissulla? *

☐ Australia
☐ Argentina
☐ Chile
☐ Italia
☐ Itävalta
☐ Japani
☐ Kanada
☐ Norja
☐ Ranska
☐ Ruotsi
☐ Saksa
☐ Suomi
☐ Sveitsi
☐ USA
☐ Uusi-Seelanti
Muu, mikä?
☐

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Matkaan vaikuttavat asiat

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<th>Joskus</th>
<th>Usein</th>
<th>Erittäin usein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yksityisaauto</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Julkinen liikenne</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lentokone</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

13. Kuinka usein käytät seuraavia matkustusmuotoja kuluiessasi laskukohteen sisällä? *

<table>
<thead>
<tr>
<th></th>
<th>Erittäin harvoin</th>
<th>Harvoin</th>
<th>Joskus</th>
<th>Usein</th>
<th>Erittäin usein</th>
</tr>
</thead>
</table>
14. Miten seuraavat osatekijät vaikuttavat majoituksesi valintaan? *

<table>
<thead>
<tr>
<th>Osatekijä</th>
<th>Erittäin vähän</th>
<th>Vähän verran</th>
<th>Jonkin verran</th>
<th>Paljon</th>
<th>Erittäin paljon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Majoituksen etäisyys laskukohteesta</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Majoituksen ympäristömerkintä</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Kierrätysmahdollisuudet</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Uusiuutuvien energianlähteiden hyödyntäminen</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Energiatehokas rakentaminen</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

Näkemykset

15. Arvioi seuraavien osatekijöiden vaikutus ilmastonmuutokseen. *

(Kuinka paljon toiminto tuottaa kasvihuonekaasupäästöjä)

<table>
<thead>
<tr>
<th>Osatekijä</th>
<th>Erittäin pieni vaikutus</th>
<th>Pieni vaikutus</th>
<th>Kohtalainen vaikutus</th>
<th>Suuri vaikutus</th>
<th>Erittäin suuri vaikutus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autolla matkustaminen kohteeseen</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Julkisella liikenteellä matkustaminen kohteeseen</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Lentäen matkustaminen</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
kohteeseen

Yksityisauton/taksin käytäminen kohteessa  

Lämmitys majoituksessa  

Ilmastointi majoituksessa  

Lumetus - uusiutuvia energianlähteitä hyödyntäen  

Lumetus - fossiilisia energianlähteitä hyödyntäen  

16. Minkälaisia muutoksia olisit valmis tekemään seuraavien laskumatkojesi suhteen? *  

<table>
<thead>
<tr>
<th>Erittäin epätodennäköis esti</th>
<th>Epätodennäköis esti</th>
<th>Todennäköis esti</th>
<th>Erittäin todennäköis esti</th>
<th>Toimin jo näin</th>
</tr>
</thead>
</table>
| Vain täydellä autolla matkustaminen (4-5 henkilöä kyydissä)  
| Julkisen liikenteen hyödyntäminen  
| Majoituksen valinta kävelymatkan päässä keskustesta  |
Ekologisen majoituksen valinta

Majoituksen sisälämpötilan lasku 1-2 astetta

Ekologista sähköä luometuksessa käyttävien keskusten suosiminen

Korkeaman hinnan maksaminen vastuullisesti tuote- tuista palveluista


________________________________________________________________
________________________________________________________________
________________________________________________________________

Kiitos paljon vastauksestasi ja hyviä laskureissuja alkavalle talvelle!