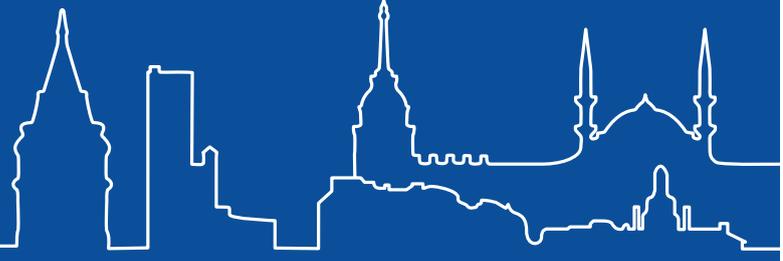


IPC-MERCATOR POLICY BRIEF



SKI COMMUNITY ACTIVISM ON THE MITIGATION OF CLIMATE CHANGE

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Credit: Ørjan Kongsvik Aall, Protect Our Winters Norge

August 2015

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The interpretations and conclusions made in this article belong solely to the authors and do not reflect IPC's official position.

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Executive Summary

Humans are both the cause and the victims of climate change, which has negative net effects on a global scale. Humans around the world are not only being affected in ill part because of climate change but also are fuelling the major driver of warming led change through an unprecedented increase in greenhouse gas (GHG) emissions that has been ongoing since the Industrial Revolution. Such self-destruction occurs to the detriment of the most exposed and the most sensitive economic sectors, appearing as the initial symptoms of climate change. In return, these sectors, the canaries of the coalmine, not only do their best to adapt to climate change but also more importantly call for urgent attention at the global level. However, their individual and/or collective efforts alone are not enough to combat the change in their designated environments. The ski tourism community and industry is one of such socioeconomic institutions where the immediate and high magnitude impacts of climate change are already being felt, and more impact is expected in the near future. Such a status has called the ski community and industry to rise beyond impact acknowledgment and adaptation by forming organizations that draw attention to the mitigation phase of climate change. These relatively young but swiftly globalizing initiatives are doing their best to invite the suppliers and the consumers of ski tourism to participate in climate friendly initiatives in a voluntary and financially reasonable manner; however, such efforts would remain limited should this friendliness not be turned into activism to foster the macro decisions of policymakers.

Introduction

The contemporary climate change phenomenon popularly known as “global warming” has had a greater effect on humans than any other period of climate change in history, both in terms of its causes and its impacts. Climate has been changing for millions of years, but the recent anthropogenic climate change is unique. As opposed to historical cycles such as the Medieval Warm Period and the Little Ice Age in which natural phenomena may be stated as the major drivers of climate change, human beings have managed to become the major force behind the most recent climate change, which began just two centuries ago with the Industrial Revolution. Today, it is a commonly accepted scientific fact that “human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history.”¹ In return, the human systems, together with the surrounding natural systems, are exposed to a negative net impact reflected in worsening food production, livelihoods, health, and economics. The tourism industry is among the most vulnerable sectors of the economy to climate change, with ski tourism depicted as the “canary in the coalmine”² that needs to signal the peak warning on warming.

The Ski Tourism Industry

The travel and tourism industry is one of the largest sectors of the global economy, accounting for 9.5% of the Gross World Product and one out of every 11 jobs in the world, which translates into \$7 trillion total revenue and 266 million jobs in absolute figures as of 2013.³ The ski industry is one of the most significant areas of travel and tourism activities, with around 400 million visits by some 120 million enthusiasts annually to the 6,000 ski areas in 80 countries. Despite the relatively large size of the industry, ski tourism can be characterized

by high spatial concentration of market origins, destinations, and flows to few countries in the Alps, North America, and East Asia. Activity takes place mostly within domestic borders but can also extend to intraregional networks through land travel within the immediate cross-border peripheries. Nonetheless, ski tourism can still play a vital role as an export factor in GDPs, such as in Austria and Andorra.⁴

A more prominent factor characterizing the ski tourism industry, besides spatial confinement, would be seasonality. As in every nature-based tourism sector, skiing and the like are highly dependent on physical resources: the existence of snow here being the major challenge.^{5,6,7} Thus, ski tourism is mostly limited to the season from late fall to early spring in many parts of the world. Its economic life is determined by the depth and the duration of snow cover. Undoubtedly, the negative effects of contemporary climate change on the cryosphere have and will continue to have an impact on snow sports and the related socioeconomic institutions.

Impacts of Climate Change on the Ski Tourism Industry

Leading experts name the ski industry as the tourism subsector that is “the most directly and the most immediately affected” by climate change.⁸ For this reason, the subject of climate change and ski tourism has drawn much attention from academics, yielding some 101 peer-reviewed articles from 1986 to 2013, the number of which are increasing exponentially as the visibility of the negative impacts of climate change become clearer in ski areas.^{9,10}

According to the latest findings of the Intergovernmental Panel on Climate Change (IPCC),¹¹ the combined global land and ocean temperature has risen by 0.85°C from 1880 to 2012, resulting in an annual global glacier mass loss of 226 billion tons between 1971 and 2009, and a significant decadal Northern Hemisphere spring snow cover loss of 1.7 million km² between 1967 and 2012. The IPCC also concludes that a further increase of global surface temperature is expected within the range of 0.3 to 4.8°C by the end of the 21st century, with respect to the 1986-2005 average (Fig. 1). Such change would result in the loss of glaciers for good and the dissipation of another quarter of Northern Hemisphere snow cover in the worst-case scenario (Fig. 2). In both figures, the “representative concentration pathways (RCP)” refer to the amount of increase in radiative forcing, i.e. global heat balance, with a range of 2.6 to 8.5 w/m² by the year 2100 depending upon the expected greenhouse gas emissions. As the emissions increase, so do the radiative forcing and the temperature, leading to a correlated decrease in snow cover extent.

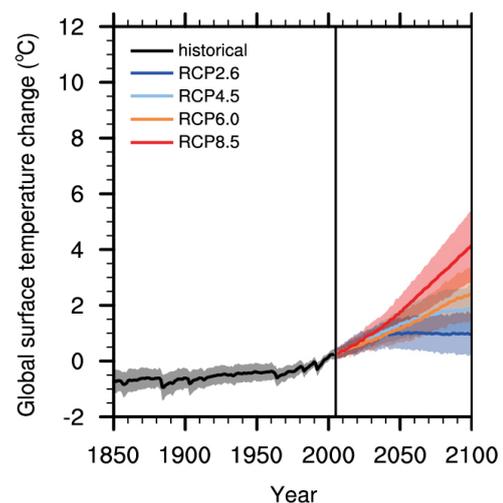


Figure 1: Global Annual Mean Surface Air Temperature Anomaly Projections Relative to 1986-2005¹¹

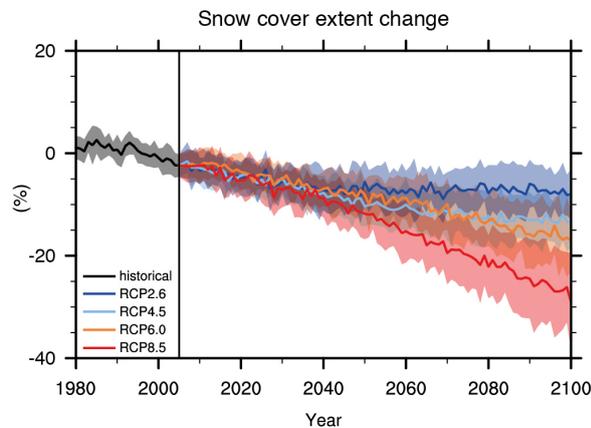


Figure 2: Northern Hemisphere March-April Snow Cover Extent Change Projections Relative to 1986-2005¹¹

The spatiotemporal shrinkage of snow cover is more prominent at the lowest latitudes and/or altitudes of the cryosphere, such as the Anatolian mountains and the Tyrolean valleys, where many of the world's ski resorts exist. An earlier study by the OECD¹² reveals that the number of naturally snow reliable ski areas in the Alps could decrease from a current total of 666 to 500 should the temperature regionally increase by just 1°C, whilst a 4°C warming would leave the Alps with only 202 naturally snow reliable areas. However, a much grimmer fate for the ski industry is seen in a recent study¹³ on 310 ski areas in the eastern Alps that shows today only 188 ski areas are naturally snow reliable, i.e. suffice with a minimum snow depth of 30 cm for at least 100 days in a year; the other 122 areas remain only technically snow reliable as their reliability is restored by snowmaking for the time being. Further, the same study also shows that all naturally snow reliable areas would become only technically reliable if a regional warming of 4°C occurs, and the number of these technically snow reliable areas would be reduced to 130. Therefore, all ski areas will be erased from the map should the snowmaking technologies not support the snow cover. Likewise, similar results are also expected for other parts of the global ski tourism supply, such as

in the northeast United States where a reduction of technically snow reliable ski areas is projected to be made from 103 to only 30 by the end of the century.¹⁴

Adaptation of the Ski Tourism Industry to Climate Change

Climate change adaptation has been an ongoing issue for the ski tourism industry, which sooner or later needed to build resilience against climate change. In this respect, the demand side is much more elastic, with time and money being the two major limits, as many tourists or recreationists could easily substitute their conventional ski holidays temporally by choosing to ski in colder periods, spatially by visiting more snow reliable destinations, or functionally by opting to engage in other activities. Ski tourism suppliers, on the other hand, are not capable of such elasticity as their product is based mostly on fixed assets founded in challenging landscapes. Therefore, many ski businesses tend to survive where they are, with few costly options to expand or extend higher and/or polewards. Among the many technical, operational, and political strategies,^{15, 16} snowmaking is the most common solution to combat the immediate impacts of climate change.

The Common Challenge of the Ski Community towards Climate Change Mitigation

The ski industry needs to acknowledge that climate change is real and start adapting to it, because it will be too costly for trial and error methods at a later stage. However, a growing awareness and adaptation will only clear the symptoms not the problem itself, which, with regards to the ski tourism industry, is clearly identified by the IPCC¹⁷:

It is likely that there has been an anthropogenic contribution to observed reductions in Northern Hemisphere spring snow cover since 1970.

The said anthropogenic cause is the aforementioned emissions of greenhouse gases, mainly CO₂, that have led to the increase in radiative forcing (Fig. 3) and, consequently, decreased snow cover (Fig. 2). Therefore, it is important for the ski tourism industry to be climate friendly by reducing its carbon footprint towards neutrality. However, the sole climate friendliness of ski tourism itself may not suffice to build global resilience since the heated atmosphere recognizes no industrial or national borders and spills warming effects unjustly, neglecting the actual GHG balances of those causing climate change and the victims. This is foremost why the ski community as a whole should position itself as a mitigation activist in addition to being climate adaptive and friendly, especially wherever it claims itself as the climate change victim despite a negative GHG balance.^{17,18}

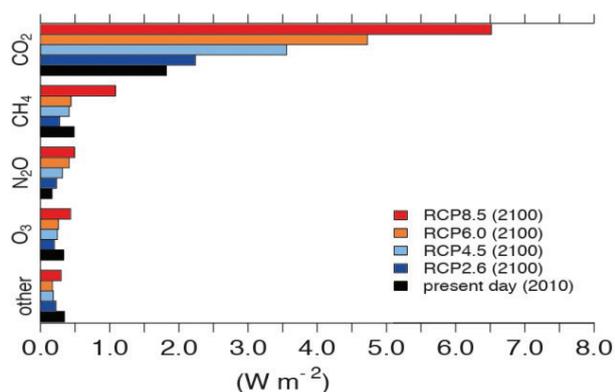


Figure 3: Projected Contributions of Greenhouse Gas (GHG) Concentrations to Radiative Forcing by the Year 2100¹⁹

Mitigation of GHG emissions is an issue that needs to be addressed and resolved at the top international level as consumption and production related footprints could be better neutralized through macro decisions. Therefore, the UN has

been a leading actor in laying the ground for intergovernmental negotiations, starting with the inauguration of the UN Framework Convention on Climate Change (UNFCCC) in 1992 and following up with 20 Conferences of the Parties (COPs) till now. On the other hand, climate change is a much too sensitive issue to be left alone to the politicians. Therefore, many NGOs have also directly, partly, or indirectly been engaged in climate change mitigation activism to raise awareness and put pressure on the decision makers who still have not managed to reach an agreement for the common good of the Earth and its people.

Global climate activism by grassroots organizations and NGOs became more visible after 2005, when the Kyoto Protocol entered into force.¹⁹ Starting with the Montreal Climate Conference (COP 11) that same year, grassroots groups organized global climate action days formed around simultaneous mobilizations. Some dramatic climate related disasters such as Hurricane Katrina contributed to this awareness. In 2009 before the Copenhagen Climate Conference (COP 15), climate activism was at its peak thanks to the hopeful expectations from the summit that a new and ambitious climate agreement would have been accepted. A new movement called 350.org organized remarkable actions all over the world before the summit, and more than one hundred thousand people marched in Copenhagen. But the failure of the conference demotivated people and NGOs. A new period has started ahead of the highly anticipated conference in 2015 in Paris (COP21). Not only mass mobilizations for the international negotiations but also bottom-up solutions for decarbonization of the economy and different campaigns such as divestment from the fossil fuel industry have been going on for quite some time. Also, local environmental movements, such as those against coalmines, thermal coal power plants, or deforestation, have been forming

a network as a part of the global climate movement.

*Ross Powers (Olympic Snowboarder):*²¹

"I love snow and winter and I want to protect the powder. We all need to do what we can to fight global warming. We owe it to ourselves and, of course, to nature."

Today, climate change activism is not only made visible by the primarily environmentalist NGOs but is also emerging within the ski community through specific examples from industrial, political, or consumer initiatives. For instance, the National Ski Areas Association (NSAA), the trade association of 325 ski resorts in North America, has adopted a climate change policy as an annex to its revised environmental charter,¹⁸ which is currently endorsed by its 204 members. The policy clearly indicates a voluntary commitment to raise awareness and encourage both the industry and others to reduce GHG emissions by education of public and guests, communication with policy makers, advocacy for national legislation and regulation, and support for science-based solutions such as renewable energy. Actions related to such commitment were firstly embodied through the "Keep Winter Cool" campaign²⁰ launched in 2003 in collaboration with the Natural Resources Defense Council (NRDC), where ski resorts have demonstrated their reduction efforts through improved energy efficiency and provision or promotion of car pooling or mass transport for guests and employees. During the campaign, pro athletes have also been approached to speak about the fight against climate change.²¹ The initiative has been one of the first acts on climate change mitigation tailored by the ski industry, becoming a model for other regions such as Australia.²² Later in 2011, NSAA introduced the "Climate Challenge" program,²³ once again aiming to bring the industry together towards climate change mitigation by

engaging the participating ski resorts to develop GHG inventories, target certain carbon reduction limits, and implement strategies to achieve these aims. The NSAA reports the participation of eight, eighteen, nineteen, and thirty ski resorts in 2011, 2012, 2013, and 2014, respectively, and an overall reduction of 1,015 metric tons of CO₂ equivalent (MTCO₂e) GHG emissions from a total inventory of 106,000 MTCO₂e in 2013 as the early achievements of this young program. The ultimate aim for 2020 is to reduce emissions by 44% from 2013 levels.²⁴



Figure 4: "Climate Challenge" Program²²

Although not one of the most frequent destinations for ski tourism due to its relatively warmer climate and flat terrain, the UK is definitely one of the top international tourist generators for ski tourism.⁴ In this respect, British snow sports enthusiasts and organizations such as the Ski Club of Great Britain (SCGB) have for many decades been a major driver in shaping the economic geography of ski tourism. Today the SCGB and its 30,000 registered members have taken on another important mission: to assess 231 ski resorts in terms of their green characters, with an emphasis on climate policies,²⁵ and to educate its members and interested parties on how to plan more climate friendly ski trips.²⁶ For the latter action, the organization launched the "Respect the Mountain" campaign in 2004. The

campaign encompasses a member financed fund to support climate friendly and activist projects in the ski community, as well as an awareness platform for providing knowledge on ski travel carbon footprints via a special report on the UK ski travel patterns.²⁷ Likewise, the campaign was a benchmark for another small supplier but huge demander of ski tourism, the Netherlands, where environment and climate friendly ski travel practices are shared within the community, which follows a seven step approach similar to that of the SCGB.^{28,29}

The Alps are the busiest venue for ski tourism, with 176 million annual visits and 19 million domestic skiers.⁴ Here the International Commission for the Protection of the Alps (Commission Internationale pour la Protection des Alpes – CIPRA), an organization that advocates and promotes sustainable development within the Alps since 1952, is one of the leading actors in climate change awareness and activism for the sake of ski tourism and environment. In this regard, CIPRA has launched the projects Alpstar³⁰ and cc.alps,³¹ with the latter focusing on adaptation and adaptation consequences, including maladaptation, of namely climate measures. The Alpstar project, on the other hand, has been centered on carbon neutralization efforts and given birth to a pilot climate friendly ski resort by increasing its energy efficiency and introducing renewable energy options.³² Such examples are becoming a model for competitors in the region, where the French government has even introduced a law that forces ski resorts to track the carbon footprints of lifts.³³

The cradle of skiing, Nordic Europe, has also witnessed a rise of activist initiatives favoring immediate mitigation actions. For instance, the Save Our Snow organization based in Sweden calls on lift operators, equipment producers,

media, and the fellow skiers and snowboarders to raise awareness and contribute towards efforts to reduce the overall carbon footprint.³⁴ In neighboring Norway, such an initiative has been in effect since 2008 on an even larger scale. The Norwegian Ski and Biathlon Federations and the Ski Association ran the program “Hvit Vinter (White Winter)” for four years in order to communicate their guidelines³⁵ for environment and climate friendliness directly with their 216,000 members registered in some 1,200 clubs. However, the most recent bottom-up activist organizations in Nordic Europe are today formed as extensions of the U.S. based Protect Our Winters (POW) Foundation, reflecting the globalization of ski community activism on the mitigation of climate change, as currently exemplified in Norway³⁶ and Finland.³⁷ The parent POW foundation, on the other hand, is probably the most active of all, raising awareness and taking action mainly in the United States since 2007. Among its numerous actions, POW supports the education of children and resort communities, raises awareness on the negative climatic consequences of coal production on snow cover, puts pressure on policymakers, and engages world renowned pro athletes in the climate fight.³⁸ As of June 2015, the organization had 65,000 followers on social media.³⁹



Figure 5: “Save Our Snow” Climate Network³³

Conclusions and Suggestions

Activism in the ski community to mitigate climate change is a relatively young but growing affair. Enthusiasts, businesses, and locals of snow sports destinations are already directly affected by the negative impacts of climate change. Therefore, their responses towards adaptation to and mitigation of the change are visibly observed, compared to the reluctance of those parties who are less directly affected for the time being. Perception of greater risk leads to greater involvement.⁴⁰

The question of who should be the first to be pushing for mitigation has a straightforward answer, since the supply side would put its whole business at risk whilst the demand side would lose only an entertainment activity. However, it is clear that even within the well-organized U.S. ski industry mitigation efforts and campaigns are based only on voluntarism. Moreover, there is more will towards technical adaptation by snowmaking—but then this common adaptation measure itself could become a major emitter should its high energy needs not be substituted by renewable sources. Therefore, it is vital for suppliers to acknowledge the climate change threat and act to prevent the problem rather than fix the symptom by “greenwashing” as criticized by some.⁴¹

It is also worth mentioning that a complete decarbonization of the supply side onsite will not help mitigation efforts as much as having contributions from the demand side will. Some carbon accounting studies show that 50% to 95% of ski tourism related CO₂ emissions result from the actual return trips of the visitors.^{26, 42} Therefore, it is even more important to carry out the mitigation efforts collaboratively, whereby relatively more sustainable modes of travel such as shuttle services, trains, carpooling, etc. are provided and promoted to the visitors.

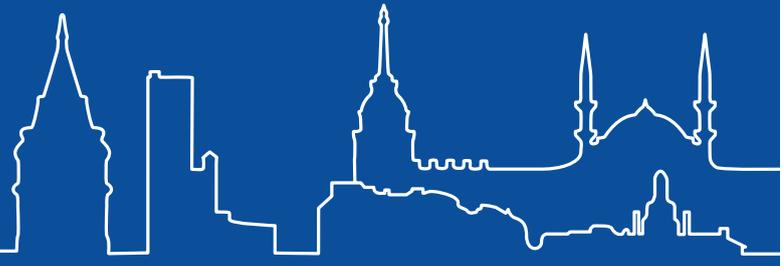
A third point central to the prosperity of this climate change mitigation activism is globalizing these efforts by putting pressure on local, national, and international policymakers. Ski resorts would be willing to become climate friendly as long as there is a financial return throughout their investment cycles. Skiers would be willing to become climate friendly as long as they can afford saving snow throughout their lifetime. However, neither an investment cycle nor the span of a human life is a sufficient time period in which one can develop a sustainable climate friendliness that would otherwise be interested in the future of the next generations. Moreover, neither the individual nor the collective efforts of the ski community would be sufficient for mitigation as long as external industries and households keep up their current level of emissions. Therefore, the inclusion of macro decisions in the climate fight is an initial must, especially for countries like China and Turkey, where giant budgets are planned for ski tourism development but no strong argument supports climate change mitigation and even counterproductive practices exist.

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