

## **Visitors' attitude towards climate change adaptation strategies for ski tourism areas in a German low mountain range – Results from a visitor survey in Oberwiesenthal, Erzgebirge**

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Current climate change models project great changes for European mountain areas in the coming decades (IPCC 2007). Adaptation to the expected climate change and impacts is essential for future planning concepts as winter tourism is highly vulnerable to global warming. The expected scenarios for European mountain regions predict a reduction in snow cover, changes in temperature, and occurrence of precipitation extremes (Nicholls 2006). Less snow, a shorter ski season and less income for regional tourism industry is expected to be the negative impacts of these changes. Snow cover in the lower parts of Alps and low mountain ranges is already decreasing in the last years. A sufficient amount of snow is a key element in the tourism industry (Elsasser & Bürki 2002). Ski areas in Germany are most sensitive, for example with only a 1 °C warming leading to a 60% decrease (relative to present) in the number of naturally snow-reliable ski areas in the Alps (OECD 2007). Actual predictions show that winter sport in low mountain ranges in Germany could be impossible within the next 20 years. While snow reliability in German low mountain ranges is constantly on a decrease, potential reactions of visitors remain unknown by tourism managers.

Climate change and related negative impacts have been recognised by managers as a threat for winter sport tourism. The winter tourism industry has responded to the implications of observed changes, and a range of technological, spatial and behavioural adaptation measures have been put into practice. On one hand, in most areas artificial snow production remains the key adaptation strategy to rising temperatures. On the other hand, construction of artificial snow-making facilities are characterised by high construction and operation costs and negative ecological impacts on vegetation, soil, and the aquatic ecosystem (Teich et al. 2007).

In recent years a series of papers have addressed the impacts of snow deficient winters on the tourism industry and their dependence on the duration of snow cover (König & Abegg 1997, Elsasser & Bürki 2002). However, studies examining the demand-side in the case of reductions in the snow cover are rare. Studies in the Black forest indicate that reliable snow conditions are important for visitors in the choice of a holiday destination. Our study analyses the current visitors' perceptions of climate change impacts in Erzgebirge, and if personal attitudes and expectations to their winter holiday are both affected by climate change. The study area is a low mountain range in Saxony in the south-east of Germany. It is a popular destination for winter sports and attracts around 950,000 visitors annually. Skiing areas in Oberwiesenthal as the main tourist spot for winter tourism in the Erzgebirge extend from 900 to 1,215 m altitude. Cross-country and downhill skiing are the main winter sport opportunities.

The basis for the analysis is an on-site survey that was conducted in January 2010. All in all, 347 visitors of the ski areas in Oberwiesenthal were surveyed to gather data about their perception of adaptation strategies and to what degree they support those measures. They were asked about their knowledge of climate change and their reaction towards possible changes within the area. Also, the importance of factors like snow reliability for the choice of winter holiday destination was included in the questionnaire. Results showed that 73% of respondents believe that global warming will threaten winter sport opportunities in general. Respondents expressed that snow reliability and

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attractive winter sport opportunities were the main criteria in choosing destination. Only a minority would visit the Erzgebirge if snow reliability is not ensured. We found that the application of snow cannons and cooperation with Czech ski resorts were rated as important adaptation strategies. Study results provided data about demand sides' attitude towards technical adaptation strategies, demand for snow-independent offers and possible displacement effects due to climate change impacts and will be helpful for a future-oriented management of the ski resort.

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