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### **OECD warns climate change is threatening Europe's skiing trade**

Many regions in the Alps had the warmest November on record, delaying the arrival of snow by several weeks and worrying ski operators. As the first flurries are coating Alpine slopes, questions arise: was this balmy autumn an exception or a harbinger of the effects of climate change? How sensitive are the Alps to climate change?

Tourism in the Alps is a key contributor to the economy of Alpine countries. There are 60 – 80 million tourists and some 160 million 'skier days' in France, Austria, Switzerland and Germany each year. New OECD analysis - the first systematic cross-country study of ski areas in the Alpine arc - warns that climate change poses serious risks to the snow reliability of Alpine ski areas, and consequently to the regional economies that depend upon winter tourism.

The Alps are particularly sensitive to climate change and recent warming there has been roughly three times the global average. The years 1994, 2000, 2002, and 2003 were the warmest on record in the Alps in the last 500 years (according to high resolution reconstructions of the climate in the region since 1500AD). Climate model projections show even greater changes in the coming decades, with less snow at low altitudes and receding glaciers and melting permafrost higher up.

Presently 90% - 599 out of the 666 medium to large Alpine ski areas - normally have adequate snow cover for at least 100 days per year. The remaining 10% are already operating under marginal conditions. Future climate change could mean a drop in the number of 'snow-reliable' ski areas with a 1°C increase in temperature dropping the number to 500, 2°C to 400, and 4 °C to 200.

Of the countries studied, Germany is most at risk, with the 1°C warming scenario leading to a 60% decrease in the number of naturally snow-reliable ski areas. Austria (where half the tourism income, or 4.5% of the national economy, is from winter tourism) is slightly more sensitive than the average. France is about average, Italy slightly above average, and Switzerland would suffer the least though even there a 1°C increase would reduce natural snow by 10% and +4°C would halve the number of snow-reliable slopes.

There will also be "winners" and "losers", both in terms of regions – for example Alpes Maritimes, Steiermark/Styria, and Friuli-Venezia-Giulia are considerably more vulnerable than Grisons, Valais, and Savoie – and in terms of the ski areas themselves, with low-lying ski areas being considerably more vulnerable than areas with high altitudinal range.

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Ski operators are already adapting to rising snow lines and shorter winter seasons, though most are using technology rather than changing behaviour patterns. Artificial snow may be cost effective for ski operators but consumes a lot of water and energy and affects the landscape and ecology. Furthermore snow-making costs will increase considerably as temperatures warm and making snow will no longer be a viable option if temperatures increase above a certain threshold. Plastic sheeting can protect glaciers, but will not prevent the eventual loss of glaciers if warming trends continue. Changing the terrain by grading the slopes and rerouting natural streams carries risks to the natural environment and increases chances of flash floods and rockfalls. Overall, market forces are driving adaptation with more emphasis on *status quo* than transitions that might be economically and politically expensive in the short term.

The full report, *Climate Change in the European Alps: Adapting Winter Tourism and Natural Hazard Management*, will be available in February 2007. For further information, journalists are invited to contact Shardul Agrawala, OECD's Environment directorate ([Shardul.Agrawala@oecd.org](mailto:Shardul.Agrawala@oecd.org) or tel. + 331 45 24 16 65).

Further information and short country summaries are available at [www.oecd.org/env/cc/alps](http://www.oecd.org/env/cc/alps)