THE IMPACT OF SHORTER WINTERS ON CANADIAN SPORT

THE PROBLEM

In 2019, Canada's national issues report on climate change revealed that the country is warming **twice as fast** as others, and a **national climate emergency** was declared. Canadians are experiencing less extreme cold and less snow overall. Moreover, the snow that does accumulate melts earlier, making the winter season much shorter than usual.

THE IMPACT ON SPORT

Winter sports like skating, cross-country and downhill skiing that are reliant on natural resources like snow and ice are most at risk of facing obstacles from warming temperatures. Snowstorms and rainstorms can be dangerous for participants due to limited visibility and icy conditions**.** These conditions can increase the likelihood of sport-related injuries and deter people from participating in winter sports.

OUTDOOR SKATING

The number of possible skating days on outdoor rinks is projected to decline across Canada. In addition, the first day of outdoor skating is likely to be delayed until later in the season. **By the end of the 21st century** under high greenhouse gas emissions, the skating season is projected to decline:

- From 61 to 40 days in **Toronto** (↓19)
- From 65 to 43 days in **Montreal** (↓22)
- From 86 to 70 days in **Calgary** (↓16)

The Rideau Canal in Ottawa, Canada, the world's largest outdoor ice-skating surface, did not open in 2023 for the first time since 1971 due to higher-than-average temperatures.

Research indicates that the number of skating days on Ottawa's Rideau Canal, the world's largest outdoor skating surface, could decline to 15 days per season by 2090.

-Brammer et al., 2015

CROSS-COUNTRY SKIING

Research that explored data from cross-country skiing demonstrated that with the current snow projections, participation rate and days could decline up to 39% between 2050-2080 if high greenhouse gas emissions continue.

DID YOU KNOW?

In 2011-2012, Ontario experienced a record warm winter. During this winter season, researchers saw that early season snowmaking increased by 300% and overall decreases in:

- days of good snow quality (↓46%)
- snowmaking days (↓18%)
- ski season length (↓17%)
- overall skier visits (↓10%)
- skiable terrain (↓9%)

For more information, please contact the SIRC team at info@sirc.ca.

DOWNHILL SKIING

The alpine ski industry is experiencing increased snowmaking requirements and associated costs, shortened and more variable seasons, a reduction in the number of operating ski areas, and altered competitiveness within and across ski markets.

The intensity and rate at which these impacts have been felt have differed based on the size and location of the ski resort with lower elevations and smaller resorts at greatest risk. It is predicted that ski resorts in Ontario, and some in Quebec, are likely to face winters too short to sustain themselves within 50-60 years. If greenhouse gas emissions can be significantly reduced, season length losses in the 2050s can be limited to between 8-16% by 2050.

The amount of snow required for ski areas to remain operational under current climate conditions is projected to increase for ski areas, but especially for those in the lower lying areas. The cost of snowmaking is substantial and not feasible or sustainable for resorts.

In Norway, smaller, low-lying ski resorts have adapted to climate change by leaning on community support and implementing innovative efforts to diversify income. Increased snow production costs may make these resorts unviable as early as the 2030s.

-Dannevig et al., 2021

THE IMPACT ON SPORT BEHAVIOURS

In general, natural snow could cause demand losses of up to 19% for resorts despite good conditions with man-made snow. Outdoor sport participants are already altering their winter sport activity and behaviours due to climate change by:

Travelling to a different location that has better conditions

Modifying the frequency of participation or time of season

Switching to another sport or physical activity

Changes to sport participation results in a shift in ski demand patterns. This influences resort capacity, visitor experience (for example, crowding, full parking lots, lift lines), and the surrounding ski area businesses and communities.

If resorts are open fewer days in the year, they may have to charge more on the days they are open to compensate for the financial loss—making it more challenging to be involved or get involved in outdoor sports.

IMPACT ON WINTER GAMES

Environmental threats from warming temperatures also extend to major games hosting. Research suggests that upcoming host communities for the major games of the next decade may not be able to provide adequate environmental conditions for sport. The location and timing of the Winter Olympic and Paralympic Games and other large-scale winter sport events will likely have to change.

Research shows that if high emissions continue, only 4 locations will be able to reliably host the winter Olympic and Paralympic Games by 2050. That number could be reduced to 1 location by the end of the century.

-Scott et al., 2022

NEXT STEPS: WHAT CAN ORGANIZATIONS DO?

THE SMALL STEPS

- **Identify and learn about the hazards of warming temperatures and create policies around them.** For example, weather policies that identify safe thresholds for sport participation and have actions for adaptations when conditions are unsafe.
- **Build awareness about climate risks among staff.** For example, hazards should be regularly discussed at board meetings and staff should be encouraged to stay informed about current climate events and projected climate-related changes.
- **Schedule activities at high-altitude resorts** where the likelihood of bad snow is reduced.
- **Consider 4-season opportunities and activities** to reduce the dependence on season-specific activities.

THE BIG STEPS

- **Upgrade facilities** to include storm-proofed buildings, roof cover, irrigation to prevent flooding, and snowmaking equipment.
- **Develop onsite renewable energy production** to offset grid emissions at resorts.
- **Construct or adapt existing stadiums to be environmentally and structurally resilient** to climate-related threats.
- Require cities to include a more **intensive analysis of the probability of unsafe conditions in addition to strategies to minimize or diminish** them in bids for Games hosting.

For more information, please contact the SIRC team at info@sirc.ca.

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