

Adaptation to climate change among cross-country skiers and downhill skiing centres in Finland

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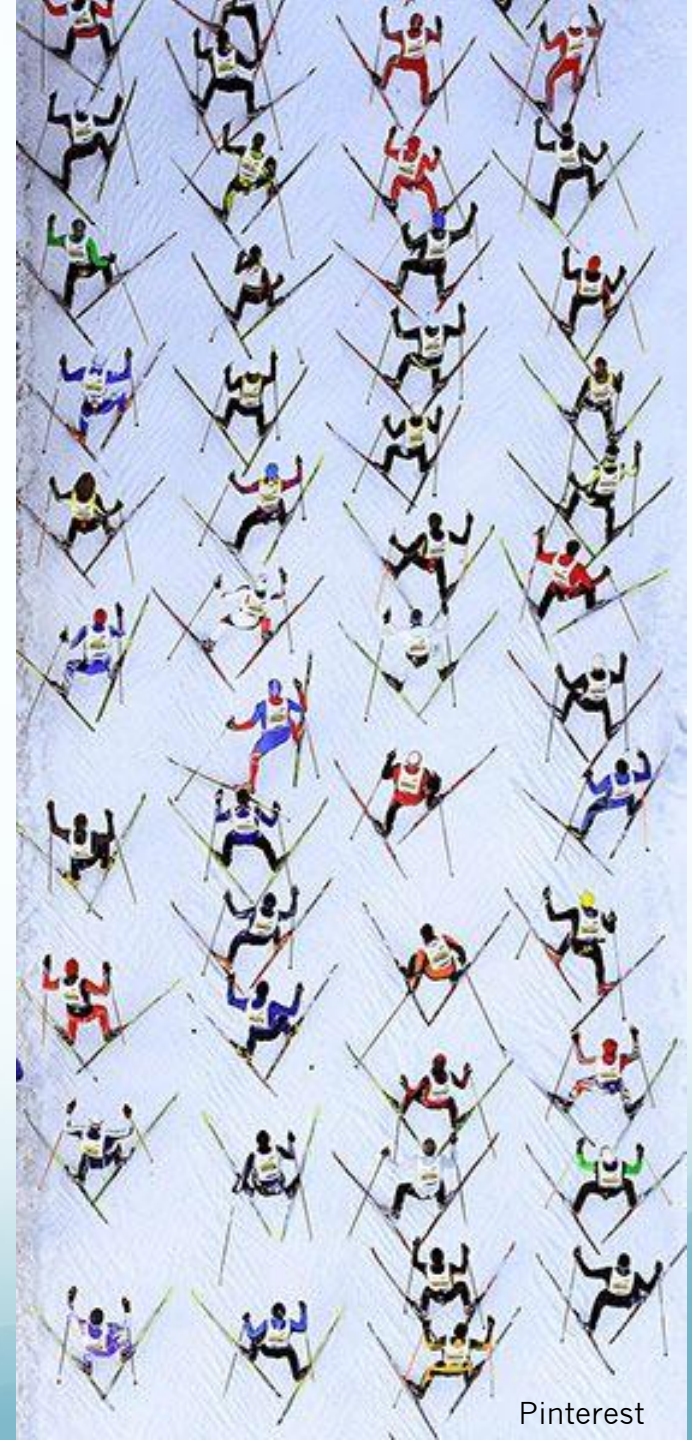


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Cross-country skiing survey

- A nature based outdoor activity
- "everyone's hobby"; about 98 % of adult population have skills in c.-c. skiing
- Outdoor recreation survey 2010*:
 - 769 respondents
 - 78 % agreed climate change is real
 - 85 % agreed restraining climate change is every ones' responsibility

* Sievänen, T., & Neuvonen, M. (Eds.) (2011). Luonnon virkistyskäyttö 2010. [Outdoor recreation 2010]. Working papers of the Finnish Forest Research Institute, 212.



Outdoor recreation survey 2010

Skiers adaptation methods in poor snow conditions

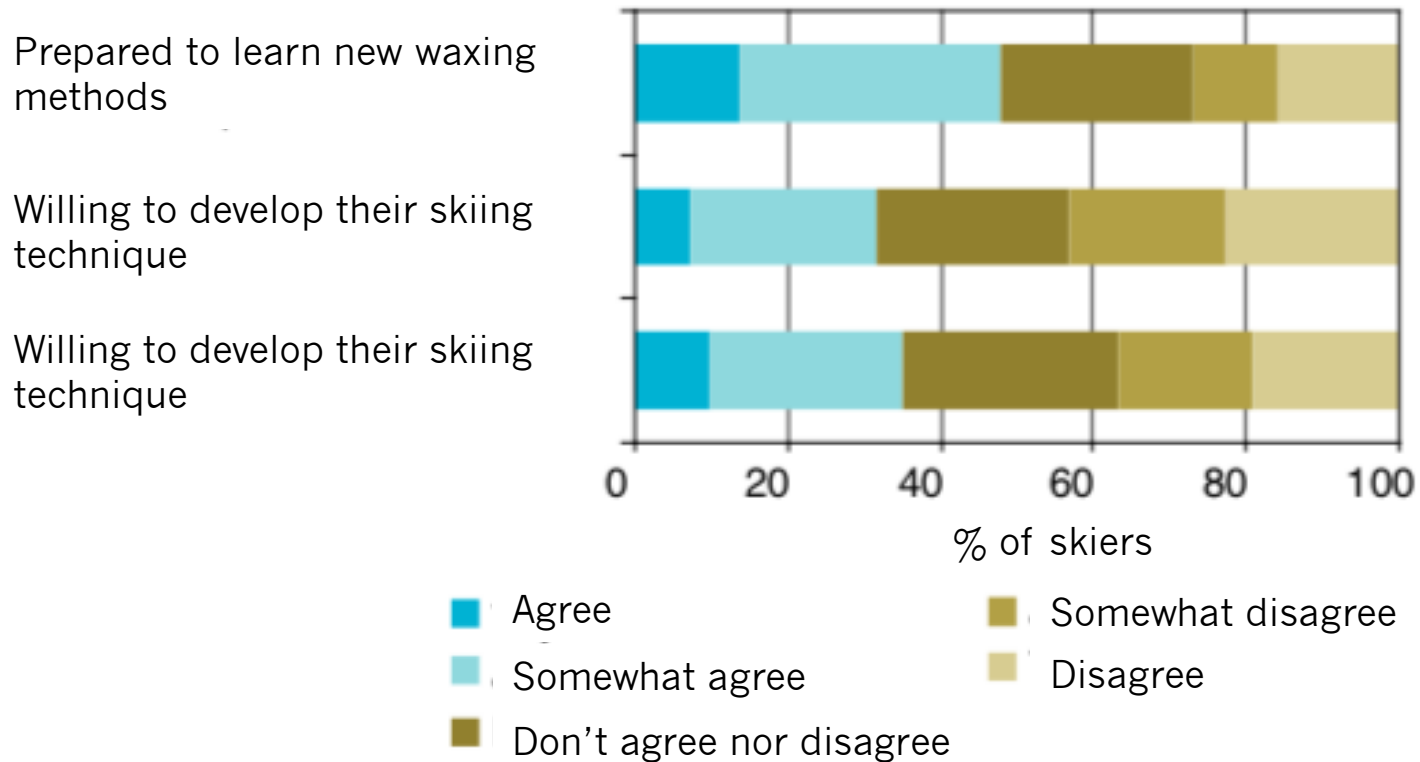


Image 5.2.9. Sievänen, T., & Neuvonen, M. (Eds.) (2011).
Luonnon virkistyskäyttö 2010. [Outdoor recreation 2010].
Working papers of the Finnish Forest Research Institute, 212.

Outdoor recreation survey 2010

Skiers adaptation methods during a snowless season

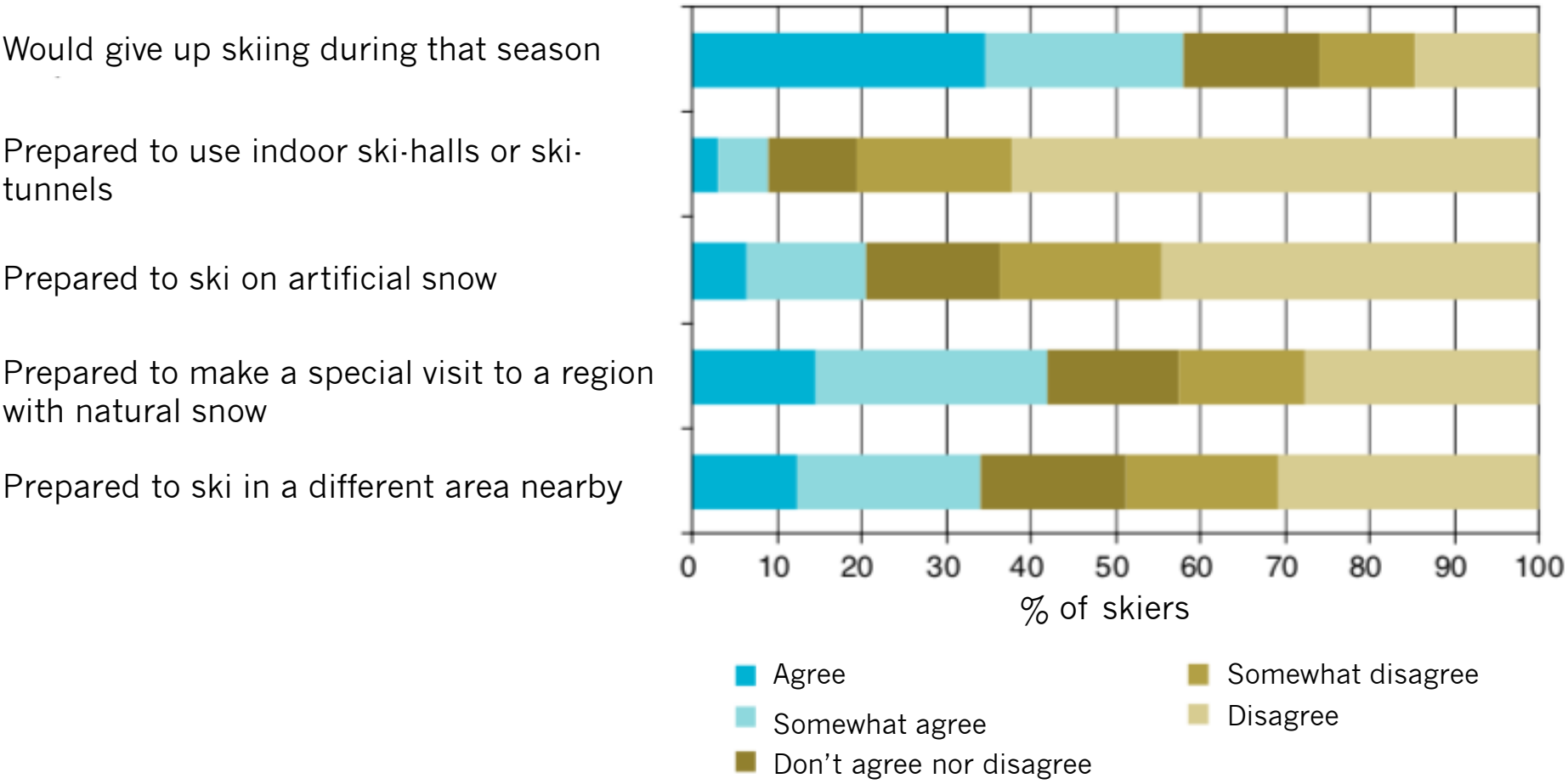


Image 5.2.10. Sievänen, T., & Neuvonen, M. (Eds.) (2011). Luonnon virkistyskäyttö 2010. [Outdoor recreation 2010]. Working papers of the Finnish Forest Research Institute, 212.

User help

Mapped examples

Example 6

Clear all maps and menu selections

Exposure [E] and sensitivity [S]

Climate scenario for 2010-2039

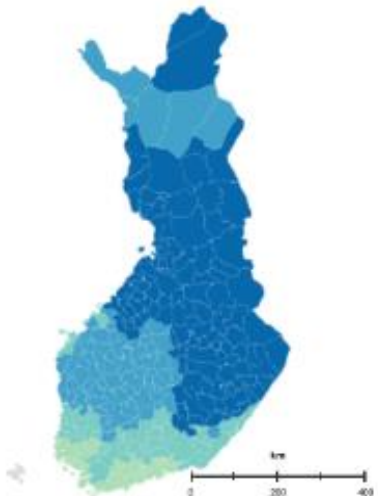
Ensemble average / SRES A1B

Sensitive population

2009-2010 survey

Press here to choose indicators

Clear



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low Contribution to potential impact high



no data

Normalised index

- Change in mean duration of period with > 20 cm snow depth weight: 1 50 %
- Participation in cross-country skiing weight: 1 50 %

Set to default direction and weight

Adaptive capacity [A]

Scenario

Anticipated behaviour

Press here to choose indicators

Clear



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high Contribution to adaptive capacity low



no data

Original data

- Proportion of skiers who would give up skiing if snow conditions deteriorate(%)

Set to default direction and weight

Vulnerability [V] = f(E, S, A)



Index-based



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low Relative vulnerability high



no data

Normalised index

Downhill skiing in Finland

- Infrastructural requirements
- More location-based compared to downhill skiing
- Research in Finland mainly focused on skiing entrepreneurs *
- Vulnerability survey on downhill skiing suppliers
 - 44 respondents**/61 working downhill skiing resorts***

* Tervo 2008; Tervo-Kankare 2011; Haanpää et al. 2014

** Ihanamäki 2017

*** Suomen Hiihtokeskusliitto ry (SHKY)



Adaptation methods among Downhill skiing entrepreneurs in poor snow conditions *

Adaptation method	% of centres using method during survey (2017)*
Artificial snow	89 %
Smoothing ski slopes	50 %
Ticket discounts on uncertain snow seasons	30 %
Cooperation with other ski centres	21 %
Storing snow	11 %
Offering alternative attractions	7 %
Other	11 %
Offering indoor skiing	0
Artificial skiing surface	0
Quit offering skiing activities	0

Respondents
44/69

* Ihanamäki 2017, in resemblance with Tervo 2008; Tervo-Kaarina 2011; Haanpää et al. 2014

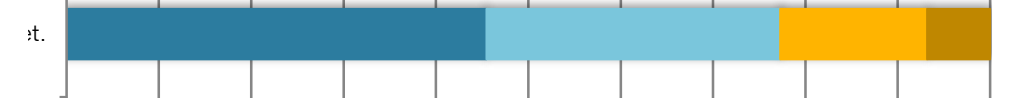
Downhill skier's view on climate change and adaptation *

■ Agree
 ■ Somewhat agree
 ■ Neutral
 ■ Somewhat disagree
 ■ Disagree

Climate change is a global phenomenon which should be paid attention to



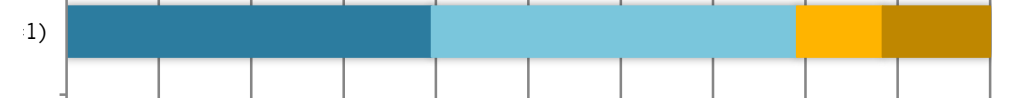
I understand the basics of climate change



I know what kind of effects climate change may cause for winters in Finland



I believe we need to adapt to deteriorating snow conditions in my skiing centre



I believe climate change is a threat to Finnish downhill skiing industry



I need concrete examples on how to adapt in downhill skiing industry



I believe climate change can be useful to Finnish downhill skiing industry e.g. more tourists will come to ski



I know concrete ways to adapt in downhill skiing industry

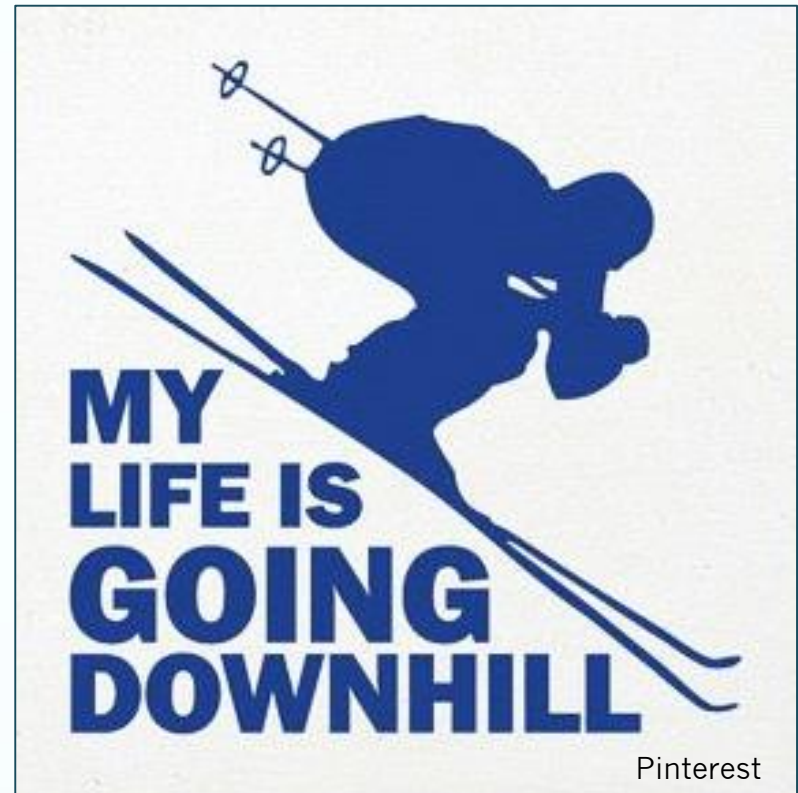


0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

* Ihanamäki 2017, in resemblance with Tervo 2008; Tervo-Kaarina 2011; Haanpää et al. 2014

CONCLUSIONS

- Cross-country skiers are likely to quit skiing if it's not possible to ski outside
- Downhill skiing can be aided with artificial snow but there is need for other methods as well



References

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Suomen Hiihtokeskusliitto ry. www.ski.fi

Climate Guide. www.ilmasto-opas.fi/en/datat