Adaptation of reindeer husbandry to climate change – how to minimize the adverse effects? (CLIMINI; 2020-2022)

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Reindeer husbandry in changing climate

- Seasonal weather and herding environment determine the welfare of reindeer and the success of the reindeer husbandry as a livelihood

- High climate vulnerability and several weather/climate risks involved

- Climate change within the reindeer management area and climate impacts on the livelihood are studied a lot, but studies on adaptation are few
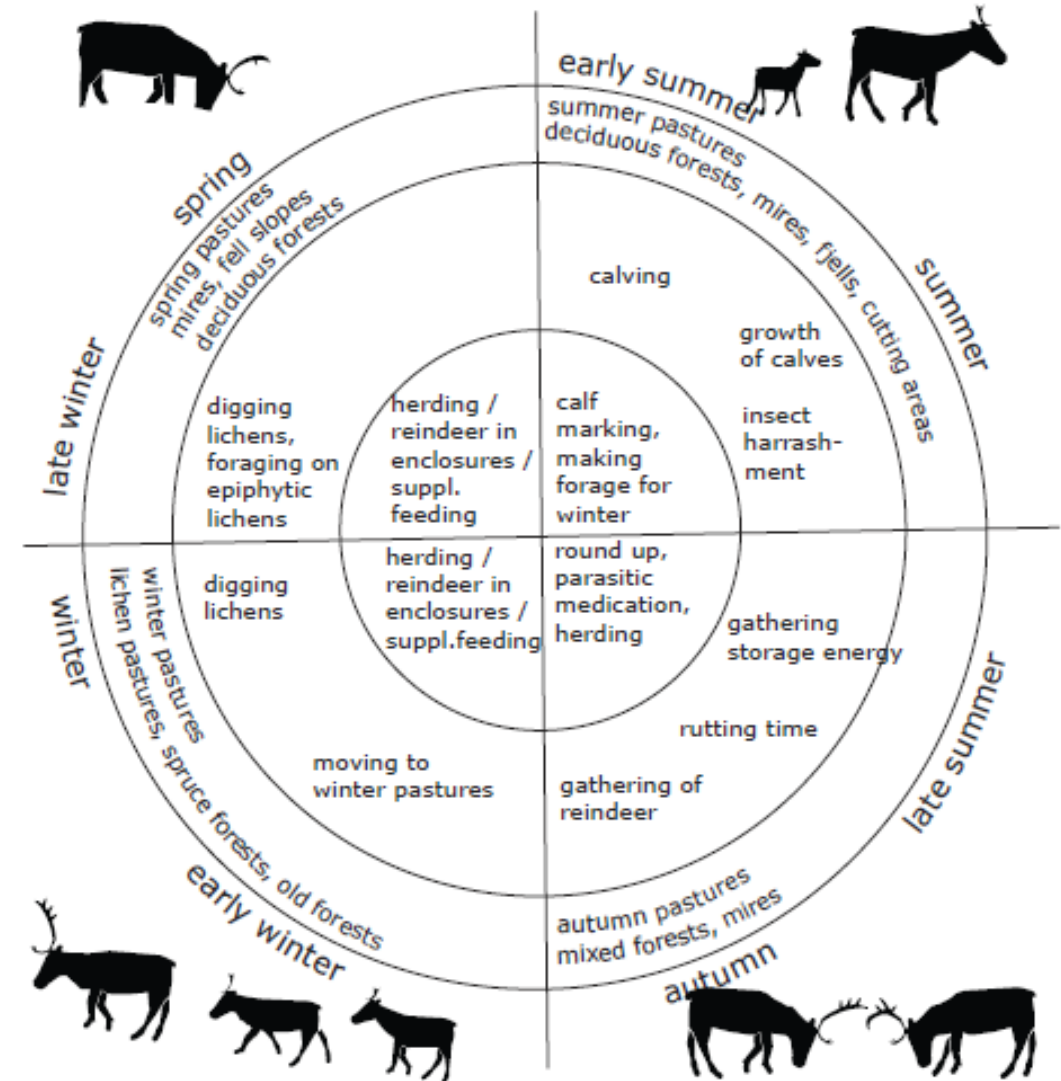
CLIMINI aims to

1) Produce a synthesis based on available knowledge about the impacts of climate change on reindeer husbandry of Finland, as well as its adaptation to climate change,

2) Give recommendations for measures for reindeer husbandry to minimize the harmful effects and utilize potential benefits of climate change, and

3) Root the operational models for adaptation ("Best practices") into the reindeer herding work through reindeer management plans of individual herding districts.

CLIMINI will

- Synthesize existing knowledge on climate impacts and adaptation needs

- Analyze the existing policy documents and legislation, in relation to climate change adaptation of reindeer husbandry in Finland

- Work with reindeer husbandry professionals (herders, meat processors, feed producers, reindeer tourism entrepreneurs...) and map existing coping strategies / adaptation measures, as well as planned or needed adaptation measures and the related possibilities and barriers

- Work with the governance (e.g. MAF new working group "Future of reindeer husbandry in Finland"), guidance (Paliskuntain yhdistys) and education (Saamelaisalueen koulutuskeskus, Lapin AMK) to support long-term adaptation planning

Dialogue, participatory workshops, knowledge co-creation

- IPCC (2019): "Learning is needed to relate different knowledge sets, as through this process new and relevant understanding for improved decisions and solutions can be created."

- Regional workshops (autumn 2021, 2022), interviews and focus group meetings

- Special attention is paid to sustainability and climate-friendly adaptation measures and discussions on "good adaptation"
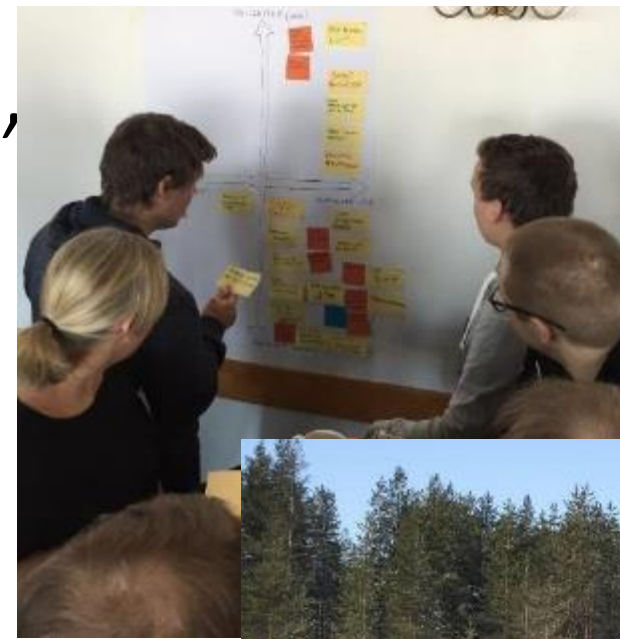
Co-production of knowledge needed to fill the gaps

- Formation of ice layers in the snow cover
- Formation of mold below the snow cover
- Wild mushroom yield
- Insect harrassment

➢Weather-related phenomena
➢Very important for reindeer and for herders
➢Changes expected in a changing climate
➢Observations few, forecasting/simulation skills poor

Example: icing of pastures

- Annual management reports of herding districts available from 1948 in Finland
- For example ice formation events and other descriptions of seasonal weather and adverse conditions can be found

- "Winter grazing was bad, because wet snow fell in the autumn and froze together with lichen during the following freezing weather." (Vätsäri district, 1955-1956)

- "A strong heat wave in November that turned snow to watery slush, which then froze and prevented reindeer from foraging." (Alakylä district, 1971-1972)

- "Rain at the end of November hardened the snow. Pastures like skating rinks." (Pyhä-Kallio district, 2007-2008)

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Coping or long-term adaptation?

- Herders have developed coping strategies agains harmful weather events but it is not common to plan for long-term climate change adaptation

- Governance, guidance and education of reindeer husbandry supports coping, but adaptation strategy / plan is missing

- Herding year 2019/2020 is an illustrative example: rare weather and snow conditions since autumn until spring caused problems and reindeer losses
  - These kind of conditions are probably more common in the future (high temperature and precipitation during the winter)
  - Clear needs were noticed for developing sustainable adaptation measures of herders, and support from governance, guidance and education

Interesting questions:

• What makes adaptive capacity?

• What is good adaptation?

• How to take regional characteristics into account, when planning adaptation?

• What about local knowledge?

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