



Coping strategies of herders, knowledge gaps and long-term planning needs

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Arctic Rain on Snow Study



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SECRETS OF SNOW

CONTACT

Changing Grazing Regimes

Work Package 2 will construct future scenarios for key elements of Arctic grazing regimes using reindeer – vegetation interactions to understand how climate management regimes modify Arctic societies

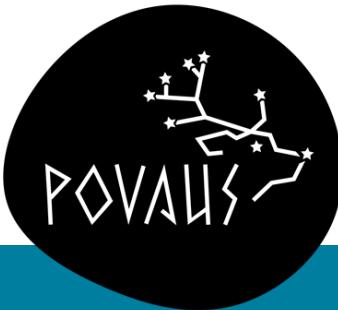


CLIMINI-kotisivu

Materiaalia ja linkkejä
ilmastonmuutoksesta ja
porotaloudesta

Hankkeessa tuottettu
materiaali

Adaptation of reindeer
management to climate
change (CLIMINI)



POVAUS: Poronhoidon varautuminen ja selviytymiskeinot
uusiin, äkillisiin ja poikkeuksellisiin olosuhteisiin



Porotalouden sopeutuminen ilmastonmuutokseen – miten ilmastonmuutoksen haitalliset vaikutukset voidaan minimoida?

Vipuvoimaa
EU:lta
2014–2020





Stroms, heat waves, weak ice, loss
of snow, too much snow, icy snow,
rain on snow...





Will to adapt

Capacity to adapt

Adaptation
measures/actions/strategies

- Diversity of the livelihood
- Flexible herding practices
- Suitable fences and other infrastructure
- Feed-independence
- Economic resources
- Enough herders, suitable gender and age distribution
- Emphasizing the work safety



Kuva: Minna Turunen

- Communication, trust, collaboration
- Flexibility, inventiveness
- Traditional knowledge
- Know-how, education
- Interest and curiosity
- Resilience, "sisu", stubbornness



Kuva: Minna Turunen



- Welfare of reindeer population
- Diverse and peaceful pastures
- Accessibility, mobility
- Old-growt forests with arboreal lichen
- Nature restoration

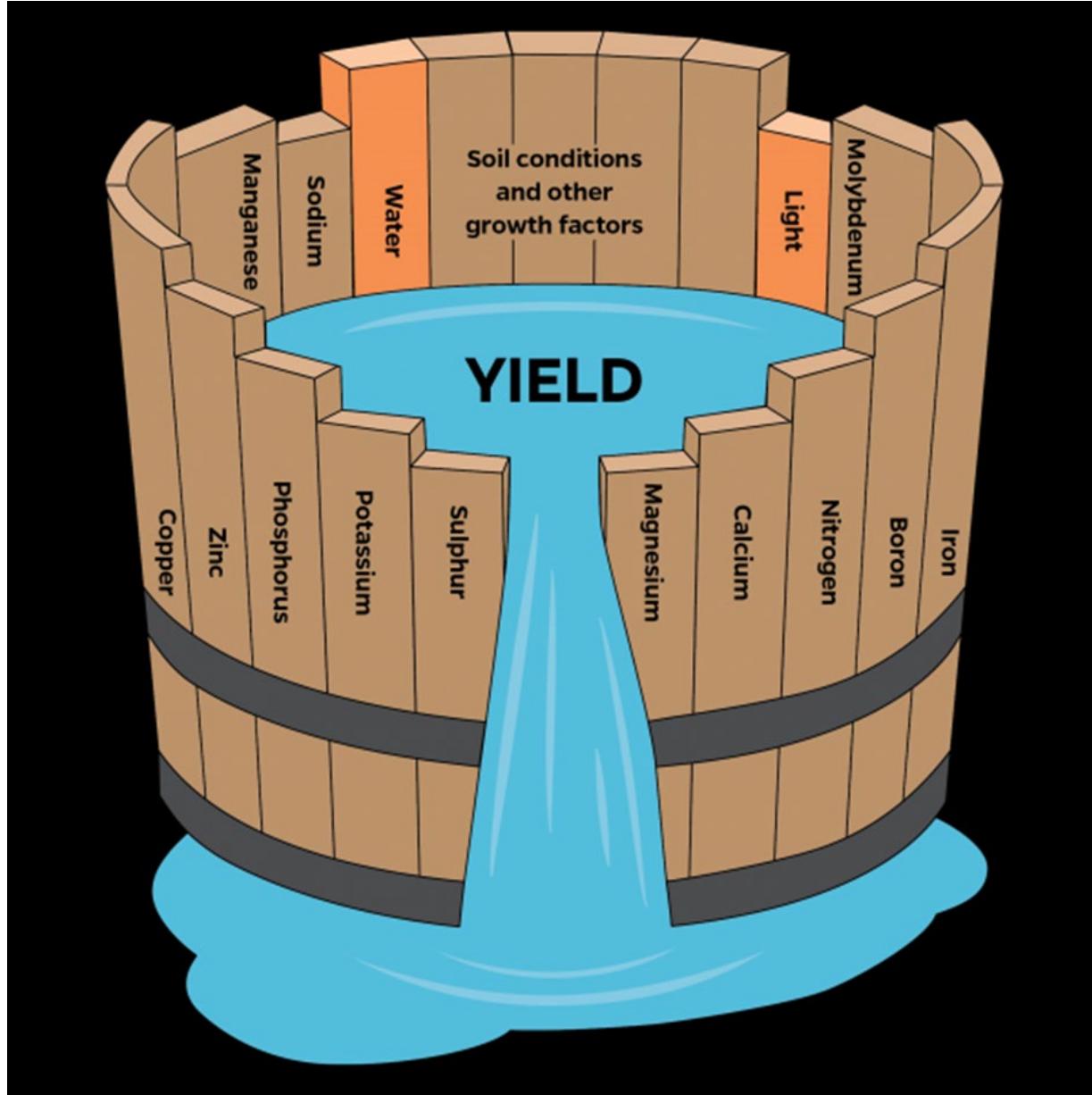


Kuva: Aino-Maaret Joona

- Understanding and trust towards the livelihood from the governance level
- Suitable subsidies and compensations
- Good relationships between livelihoods
- Possibility to have impact on land-use related decisions
- Suitable observations, data and monitoring on weather and the environment



Kuva: Jouko Kumpula



Liebig's Law of the Minimum (graafi: Acrosa)



Herder and community level adaptation:

- Practical coping strategies / adaptation actions in the everyday work
- Development of professional techniques and practices





- Changing the time of the calf marking, or not marking the calves in the summer
- Changing the timing of migration / moving from one seasonal pasture to other
- Changing the timing of / practices used in gathering and slaughter
- Supplementary feeding in natural pastures or in enclosures
- Better enclosures and developed feeding practices
- Parasite medication
- Using reserve pastures
- Developing work safety, etc. etc.

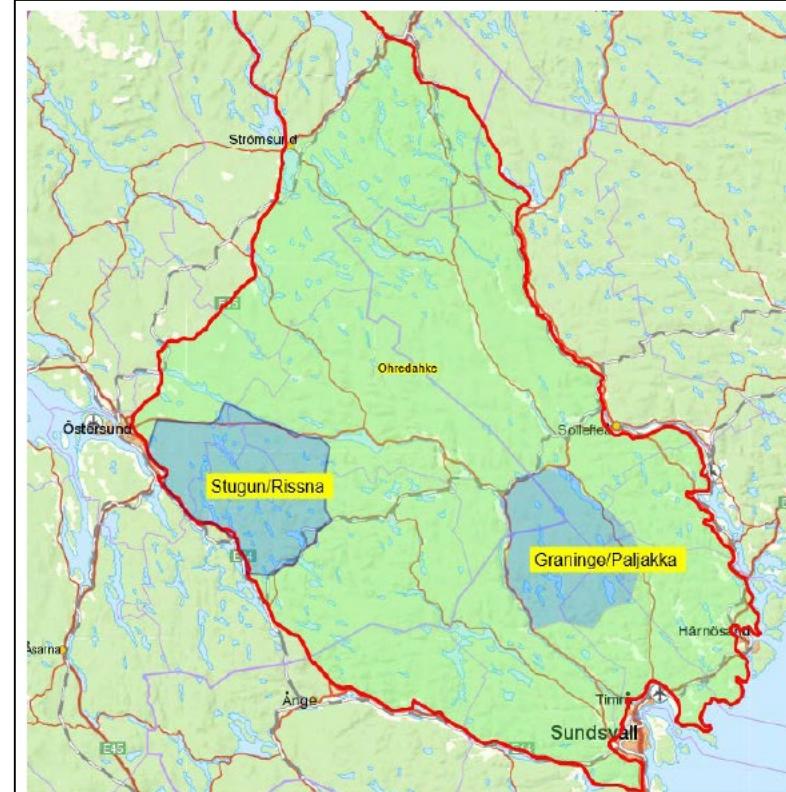


- Herding district level planning for the adaptation?
- Risk and vulnerability assessments?
- **Support received from the education, guidance and governance**



Example from Sweden:

- Climate and vulnerability analyses, and adaptation plans for Samebys Ohredahke, Ängeså, Sirges ja Rans
- Emphasis on critical winter pastures



(Kartbild 7. Översiktskarta utvisande Ohredahkes samlade vinterbetesområde (röda yttergränser, ljusgrönare skugga). Graninge/Paljakka och Stugun/Rissna vinterlanden syns utmärkta med blågrå skugga.)

8. Ohredahkes vision

På sikt har Ohredahke sameby utvecklats i följande riktning.
Samebyn har ett par ytterligare renskötselföretag.

Examples from Norway:

- Climate adaptation plans for fisheries
- "Crisis manuals" for herding communities

Climatic Change (2021) 164:62
<https://doi.org/10.1007/s10584-021-03041-z>

 Check for updates

Guidelines for co-creating climate adaptation plans for fisheries and aquaculture

Thuy Thi Thanh Pham¹  · Ragnhildur Friðriksdóttir² · Charlotte T. Weber^{1,3} · Jónas R. Viðarsson² · Nikos Papandroulakis⁴ · Alan R. Baudron⁵ · Petter Olsen⁶ · Juliana A. Hansen⁷ · Unn Laksá⁷ · Paul G. Fernandes⁵ · Tarub Bahri⁸ · Sigurður Ö. Ragnarsson² · Michaela Aschan¹

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Abstract
Climate change is having a significant impact on the biology and ecology of fish stocks and aquaculture species and will affect the productivity within seafood supply chains in the future. The challenges are further amplified when actors within the fisheries and aquaculture sectors have very different ideas and assumptions about climate change and

Workshop
Avtale

SN-CWA 17518:2020

Publisert: 2020-06-05
Språk: Engelsk

Anbefalinger for god praksis
for utarbeidelse av planer for
klimatilpasning for fiskeri og akvakultur

Good practice recommendations for making Climate
Adaptation Plans for fisheries and aquaculture

Kun for kompetansearbeid

Referansenummer:
SN-CWA 17518:2020 (en)

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Examples from Finland:

Climate change road-maps for agriculture and forest industry



<https://www.ilmastoviisasi.fi/hanke/aliasivu/>

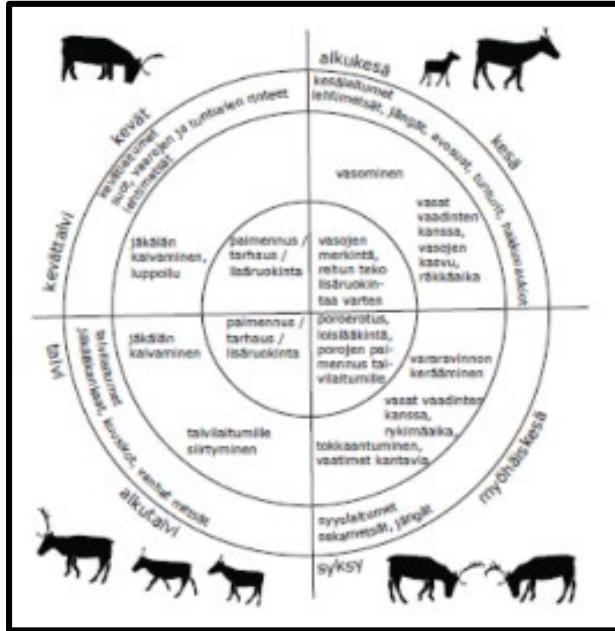
<https://www.metsakeskus.fi/fi/hankkeet/kestavaa-metsataloutta-muuttuvassa-ilmastossa>

SPRING

- Late snow melt
- Late start of the growing season

WINTER

- Rain and long mild periods
- Thick ice layers in the snow cover (surface, mid, basal ice)
- *On the other hand* very deep and soft snow
- *On the other hand* long periods of very low temperatures



SUMMER

- Long hot and dry periods
- Early and severe insect harrassment
- *On the other hand* cold and continuously wet conditions

AUTUMN

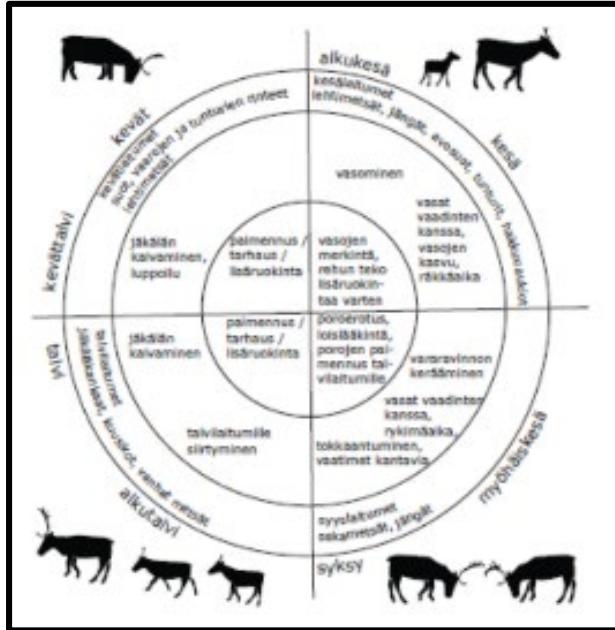
- No mushroom
- Snow arrives early, on non-frozen ground - molds
- Varying, unpredictable weather: cold and warm, snow and rain
- Icing of pastures

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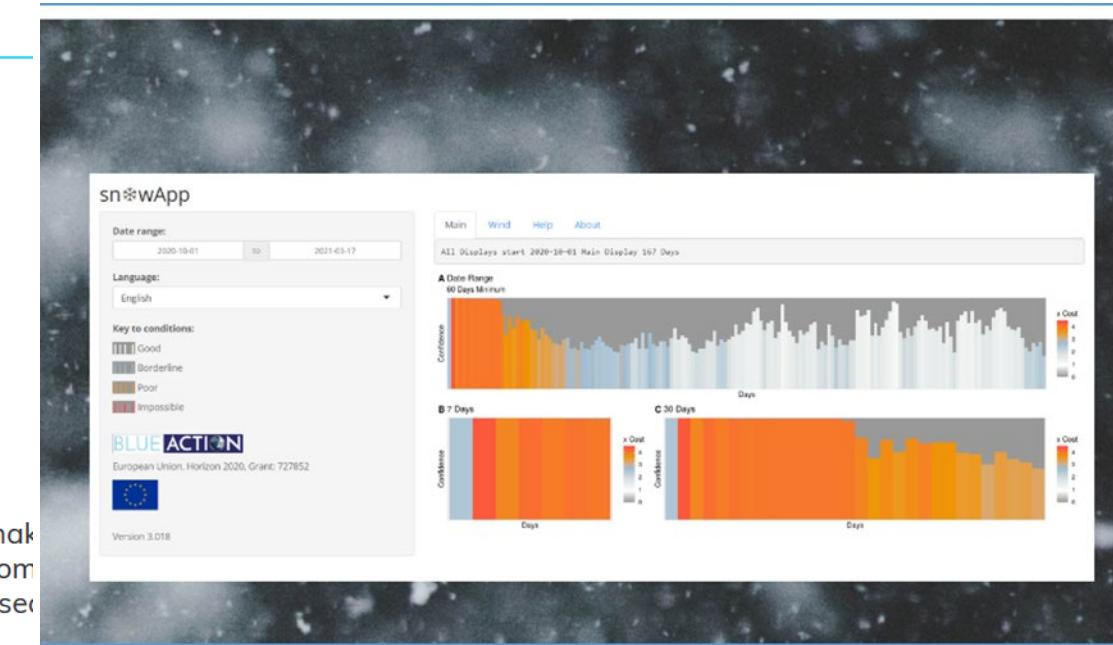
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- Snow arrives early, on non-frozen ground - **molds**
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Climate services for reindeer husbandry? "Pasture forecast"? "Reindeer weather"?



Reliable 4-week
forecast from the
SnowApp climate
service

Our case study focused on
exploring how short- and medium-
term predictions of weather and



Maaseudun tulevaisuus 8.4.2022; <https://blue-action.eu/clusters/climate-services-cluster>

MAASEUDUN TULEVAISUUS

Etusivu MT Metsä MT Hevoset Maatalous Ruoka Uutiset Lehdet



Juuri nyt: Susi juoksi koirien perään Huittisissa

Lukemisto: Birkkalan tilan koirat viettävät joulua jo loppukesällä – herkkusuut saa joko kuuluu suomalaisten suosituimpiin valmisaterioihin

**Varautuminen säiden aiheuttamiin
tuohioihin paranee uudenlaisilla
ennusteilla**

Esimerkiksi maastopaloihin tai tuuleen liittyvien
vahingontorjuntatehtävien määärää voidaan arvioida
vuorokausia ennen vaarallisen säätilanteen alkamista.

Jaa

Kuuntele





Are the present day weather and snow observations suitable, and adequate?

- ...to observe detrimental conditions for herding...
- ...to produce data bases to monitor climate change and the long-term impacts?



Kuvat: Santeri Happonen

Finnish Environment Institute SYKE; citizen observations on snow:

https://wwi.ymparisto.fi/citobs/havaitsemaan_lumen_ominaisuksia.html

Lumipeitteensä ominaisuuksien ilmoittaminen: Esimerkiksi lumipeitteessä olevat kovat kerrokset ja lumen väri

Mahdolliset havainnot lunta oranssinkelkaiseksi värijäävästä Saharan pölystä

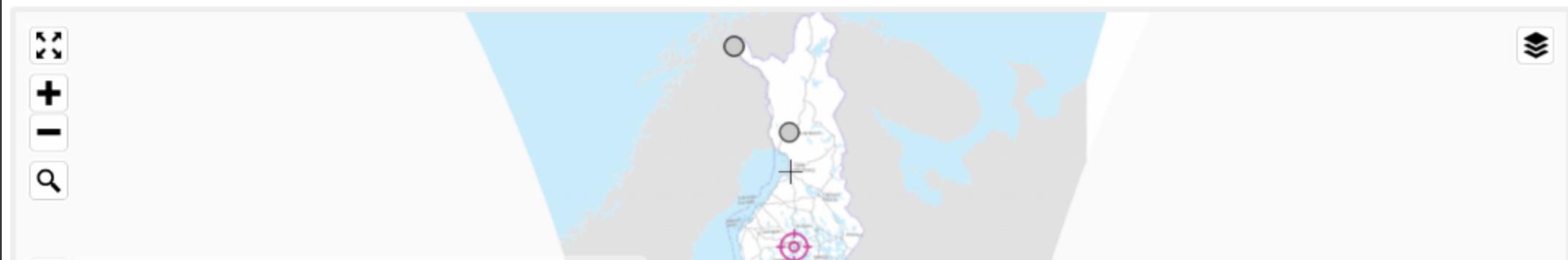
[Ohjeet Saharan pölyn värijäämän lumen ilmoittamisesta](#)

Alla oleva lomake on ilmoituspalvelun tällä hetkellä käytössä oleva paras ilmoituskarttalomake tälle aiheelle. Läheta sähköpostilla palautetta jatkuvasti kehitettävän palvelun kehittäjille tästä linkistä:

havaitsemaan@syke.fi

Lumipeitten ja sen kerrosten ominaisuudet

Lumipeitten ja sen kerrosten ominaisuudet maan tai jäätä päälle kertyneessä lumessa: Onko peltineissä lumessa jääkuori pinnalla? Kovan yksittäisen kerroksen yläpinnan syvyys ja kerroksen paksuus lumipeitten sisällä? Onko lumipeitteessä erikoinen väri? Tai jos olet jäätyneen vesistön jäällä, millainen on lumikerroksen pohja? Ilmoita erilaisia lumesta paikan päältä ja mahdollisesti lumipeitettä kaivamalla havainnoitavia asioita. Monien paikan päällä havaittujen tietojen avulla satelliittikuvien tulkinnotmahdolisuudet paranevat huomattavasti. Voit ilmoittaa samalta paikalta tiedot kerran, ja kuvata silloin pintakerroksen ominaisuudet, värin jne. Jos olet tutkinut useampien kerrosten ominaisuuksia lähetä lumen eri kerroksia koskevat tiedot erikseen omista ilmoituksistaan samalle paikalle karttaan merkityinä.



"If we do not begin to follow the conditions now, then after ten years, again, we have no idea what is normal and what is exceptional"



Kuva J. Kumpula

Future –aspect in adaptation planning

Short-term:
Preparedness
Precautionary,
preventive actions

Longer term:
Desired futures



"According to the governance research, the most challenging thing is to face a new crisis when just recovering from the previous one. In the reality of chronic crises, we are continuously "just recovering". Crises preparedness means that we continuously update our views about how the decisions made now affect our abilities to cope during the future crises."



“Preparing for the risks is a difficult thing to do. It is always done too early... except when it is done too late”



(Mauno Koivisto, former president of Finland)

“Preparing for the risks is a difficult thing to do. It is always done too early... except when it is done too late”



“Generally speaking, it is wise to trust that everything goes well in life. Often the threats and risks materialize just because people prepare for them”

(Mauno Koivisto, former president of Finland)

Thank you!

<https://www.arcticcentre.org/FI/climini>

Climate guide: <https://www.climateguide.fi/frontpage/>

Saami –project report:
<https://julkaisut.valtioneuvosto.fi/handle/10024/162205>