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Ympäristöministeriö
Miljöministeriet
Ministry of the Environment

Ulkoministeriö
Utrikesministeriet

Sustainable Green Transition in the Barents Region

The webinar will start at 9 CET / 10 EET

Photo: Timo Jouttijärvi

Welcome to BAVIS final seminar!

Agenda of the day

9:30	Morning coffee
10:00	Welcome, *Timo Jouttijärvi, Syke*
	& Henna Haapala, Ministry of the Environment Finland
10:10	Battery value chain pre-study, *Kaj Forsius, Syke*
10:45	GIS methods in Cumulative Impact Assessment in Sápmi, *Bernardo Brandão Niebuhr, NINA & Aino Lipsanen, Syke*
11:15	Participation of Indigenous Peoples and local communities in the OECM processes in Finland, Sweden, and Norway, *Peter Kullberg & Anna Ott, Syke*
11:45	Discussion
12:00	End of seminar

Lunch will be served for onsite participants

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Photo: Emmi Vähä

Capacity building on battery value chain operations in Nordic Barents regions Prestudy

Timo Jouttijärvi, Emmi Vähä and Kaj Forsius

Syke

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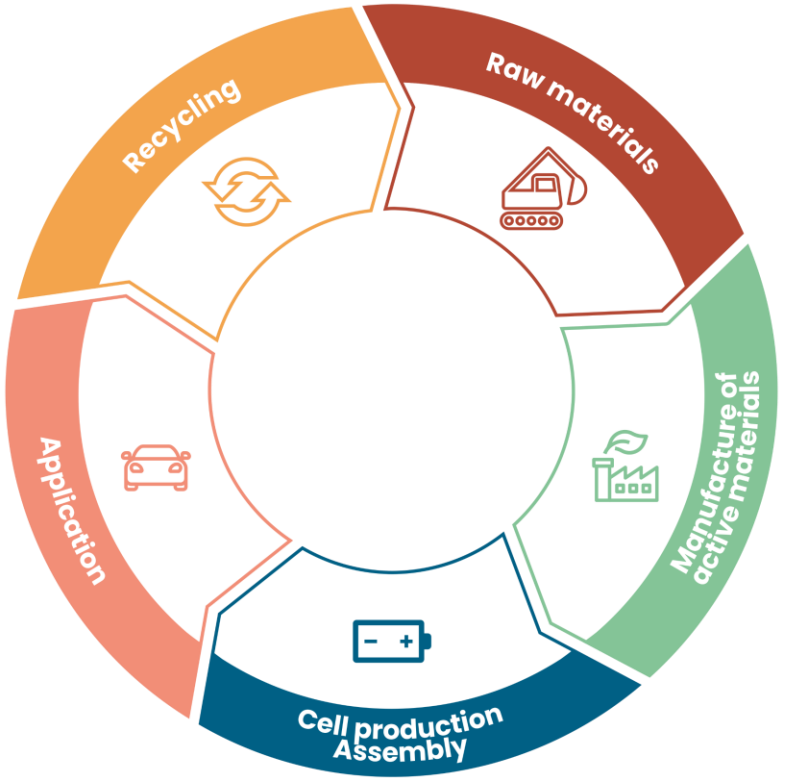
Objectives

- To exchange experiences and knowledge related to environmental issues connected to battery value chain operations and activities in the Barents area
- Improve practices of administrative processes
  - Most significant environmental issues connected to battery value chain.
  - Common understanding of the changing regulations
- To enhance Nordic co-operation for follow-up actions
  - Preparedness for joint input to EU processes
  - Shared view how to operate in changing regulatory environment as support to local authorities



Activities

- Site visits
  - Finland: November 2023, Terrafame
  - Sweden: May 2024, Northvolt & Boliden Rönnskärverket
  - Norway: November 2024, Hydrovolt
- Workshops in each country collecting information and changing experiences in connection with the site visits. The aim was to get overall picture of different value chain operations.
- Pre-study of the environmental challenges of the battery value chain in the Nordics.
- Development of joint Nordic follow-up project proposal

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Workshop in Kainuu

- November 2023 in Vuokatti
- Site visit to Terrafame mine and integrated battery chemicals factory
- Workshop discussed three themes:
  - Environmental challenges in the battery value chain
  - Integrated operations at mining sites
  - Manufacture of battery chemicals


Photo: Emmi Vähä

Workshop in Umeå May 2024

- Visits to Boliden Rönnskär smelter and Northvolt gigafactory in Skellefteå

- Themes discussed:
  - Permitting of battery factories
  - Recycling issues
  - Social acceptance

Photo: Emmi Vähä

Work shop in Oslo November 2024

- Visit to Hydrovolt in Fredrikstad
- Themes discussed
  - Recycling of batteries
  - Planning of follow-up project

Photo: Julia Loe

Key topics identified in the pre-study

1) Environmental impacts of different processes and stages of the battery value chain, including abatement techniques.
2) Recycling, reuse and repurposing practices of batteries and battery materials.
3) Management of chemical risks in different stages of the value chain.
4) Socio-cultural aspects related to just green transition and public participation in administrative procedures.
5) Harmonised implementation of EU legislation applicable to the different stages of the battery value chain.

Sustainability and social acceptance is pre-requisite for increased battery value chain activities.

Follow-up project BATCHAIN

Focus is on the environmental issues of the battery value chain operations and activities in the North

- Environmental and economic aspects of battery value chain activities
  - Analysis of environmental and economic aspects in selected stages of the battery value chain (mining, battery manufacture, recycling)
  - Assessment of cumulative effects of battery value chain operations on land-use.
- Socio-economic and cultural aspects of battery value chain operations
  - Identification of key social aspects involving Sámi rights holders in battery value chain
  - Demonstration of decision-making tool in impacted territories and its evaluation.
- Recommendations for harmonised practices in the Nordic Countries
  - Cross-border cooperation and stakeholder engagement
  - Policy briefs for decision-makers, guidance for authorities on stakeholder involvement in administrative procedures and recommendations for industry for good environmental practices.

Continues cross-border cooperation established in BAVIS.

Next steps in BATCHAIN

- Finetuning of application for funding
  - Application to Interreg Aurora
  - Dead line February/March 2026
- Project partners
  - Finnish Environment Institute Syke (lead)
  - Saami Councli
  - NordRegio
  - Swedish Envirinmental Protection Agency
- Establishment of connections to other Arctic regions (Canada)


Photo: Emmi Vähä

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Summary of Achievements

- Joint project proposal developed for battery value chain
- Established network in Finland, Sweden and Norway for battery value chain issues
    - Partners for project application Syke, SwEPA, NordRegio, Saami Council
    - Authority engagement
    - Contacts to universities Aalto and Luleå Technical University.
- Preparedness for joint input to EU BREF-processes
    - Extraction of metal ores (MIN BREF)
    - Production of batteries (PBG BREF).
- Contributes to follow-up of Barents region cross-border cooperation.

Thank you!

Kari, Helena, Hilma, Åke, Aida, Eirik, Gunn-Britt, Ailé, Vibeke, Julia, Daniel, Laura, Jaana, Tuija, Kukka-Maaria, Henna, Saija, Marjukka, Ben, Lena, Sara, Magnus, Isabel, Agneta and everybody else ☺

bat@syke.fi

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Photo: Emmi Vähä

GIS methods in Cumulative Impact Assessment in Sápmi

Bernardo Brandão Niebuhr, NINA (online) & Aino Lipsanen, Syke

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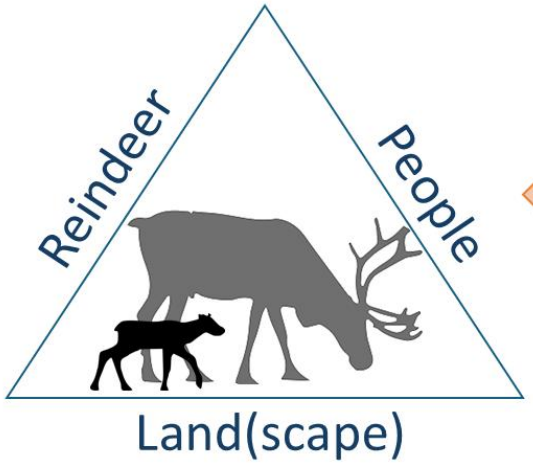
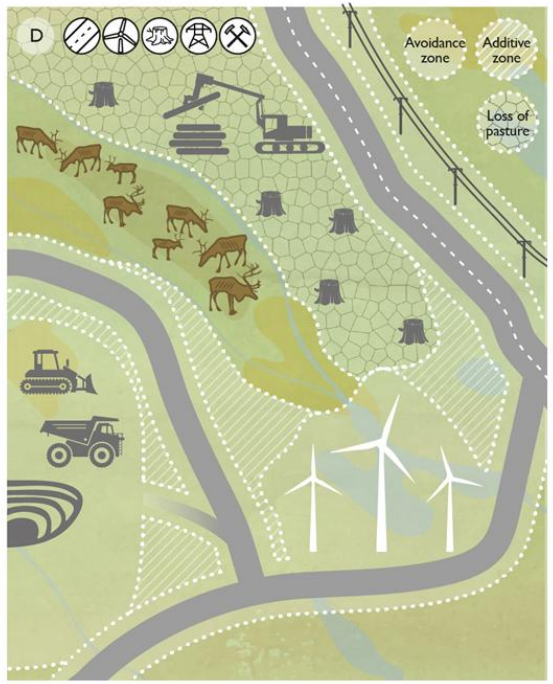
Towards Cumulative Impact Assessments in Sápmi: Concepts, Tools, and Needs for Collaboration

Workshop Report with Focus on Reindeer and Reindeer Herding





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Bernardo Brandão Niebuhr, Jan Saijets, Anna Skarin, Antti-Juhani Pekkarinen, Per Sandström, Mikaela Simmonds, Jouko Kumpula, Manuela Panzacchi, Bram van Moorter, Aino Lipsanen, Sven Adler, Léonie Duris, Martina Fjällberg, Sanna Hast, Tim Horstkotte, Mikko Jokinen, Eli Larsdotter, Knut Langeland, Kari Oinonen, Sirpa Rasmus, Heidi Rautiainen, Lars Rönnegård, Kimmo Syrjänen, Torkild Tveraa, Daniela Sant'Ana

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Context

- BAVIS project
  - Funded from the Ministry for Foreign Affairs of Finland
  - NINA contracted as the author following a tendering process
- Collaboration with ReinCIAnet – A NETwork to promote tools and practice on Cumulative Impact Assessment for REINdeer and reindeer husbandry in Fennoscandia
  - Joint funding received from the Nordic Committee of Agriculture and Food Research (NKJ)
  - Funds to support a network of researchers, reindeer herders, and practitioners to advance on cumulative impact science and their application

Summary of activities

- Background: discussions with Sámi advocates; formal FPIC from the Finnish Sámi Parliament received in late 2023.
- Aim: to promote the use of spatial data methods in assessing the cumulative impacts of land use, intensified by the green transition, on Sámi traditional livelihoods; to support the exchange of experiences and expertise within the Barents region.
- Final deliverable: Report, to be published as Rangifer Report in early 2026
- Includes synthesis on methods and data to assess cumulative impacts (CI) in Sápmi, literature review in cumulative impact assessment (CIA), examples of practical applications and identified needs for future collaboration
- Workshop "Cumulative impacts in Sápmi", held in Oslo in 13-14 August 2025
  - 25 people from Norway, Sweden, and Finland
  - Academics and experts from various fields, Sámi reindeer herders and representatives
  - Institutions: NINA, Univ. Oslo, SLU, Univ. Umeå, Sametinget – SE, Syke, Luke, Paliskuntain yhdistys, Univ. Lapland
  - Exchanging experiences in CI and CIA on reindeer and reindeer husbandry – gap exists regarding other traditional Sámi livelihoods

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Report content

1. Introduction: fragmentation of Sápmi and why we need CIA
2. Frameworks and data in CIA
3. CIA in practice: examples of CIA on reindeer and reindeer husbandry
4. Needs for the future: towards CIA in Sápmi

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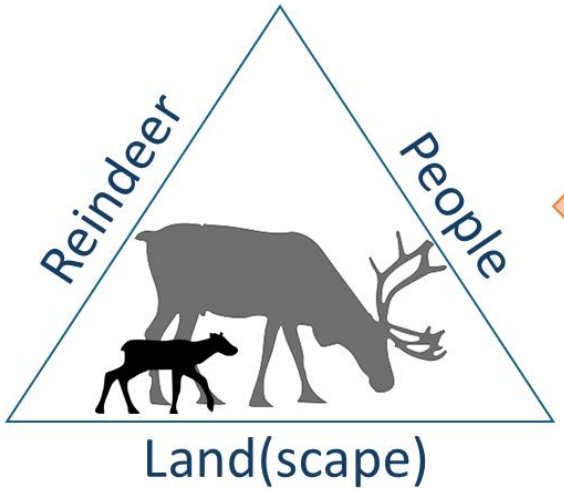
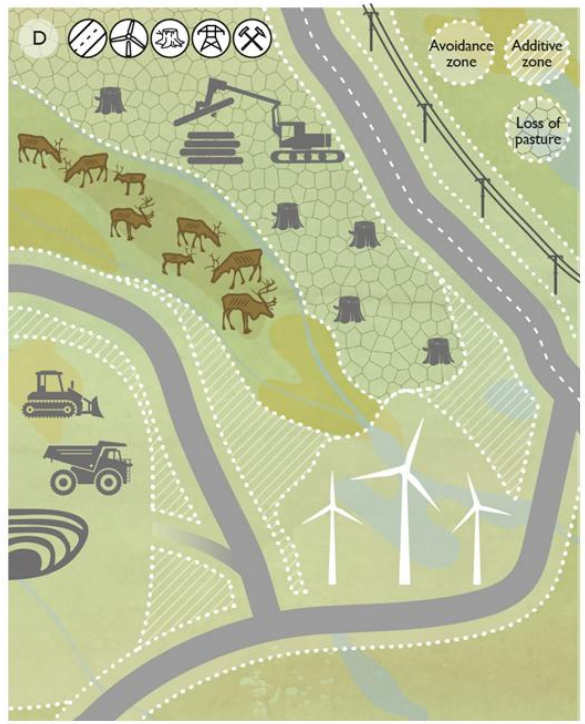
1. Introduction: fragmentation of Sápmi and why we need CIA

- What is reindeer husbandry and how has it been impacted by other land uses?
  - **Reindeer, people, and the landscape**
  - Piecemeal development
  - Piecemeal and fragmented impact assessments and land planning
    - Project-based
    - Single projects
    - Local
  - Lack of inclusion of reindeer husbandry knowledge and perspective





Adapted from Holand et al. (2022, 2024)

1. Introduction: fragmentation of Sápmi and why we need CIA

- What is reindeer husbandry and how has it been impacted by other land uses?
- What are cumulative impacts (CI)?
  - *Cumulative* refers to the synergistic, interactive, or unpredictable outcomes of multiple land-use practices or development projects that aggregate over time and space, and that result in significant consequences for people and the environment (Johnson 2016)
- CI in the reindeer husbandry context
  - Reindeer husbandry as a social-ecological system
  - Impacts on reindeer herding and the husbandry livelihoods
  - Reindeer herders are not only observers but experts, producers and part of the system
- Elements to contribute to minimum, basic criteria for CIA in Sápmi

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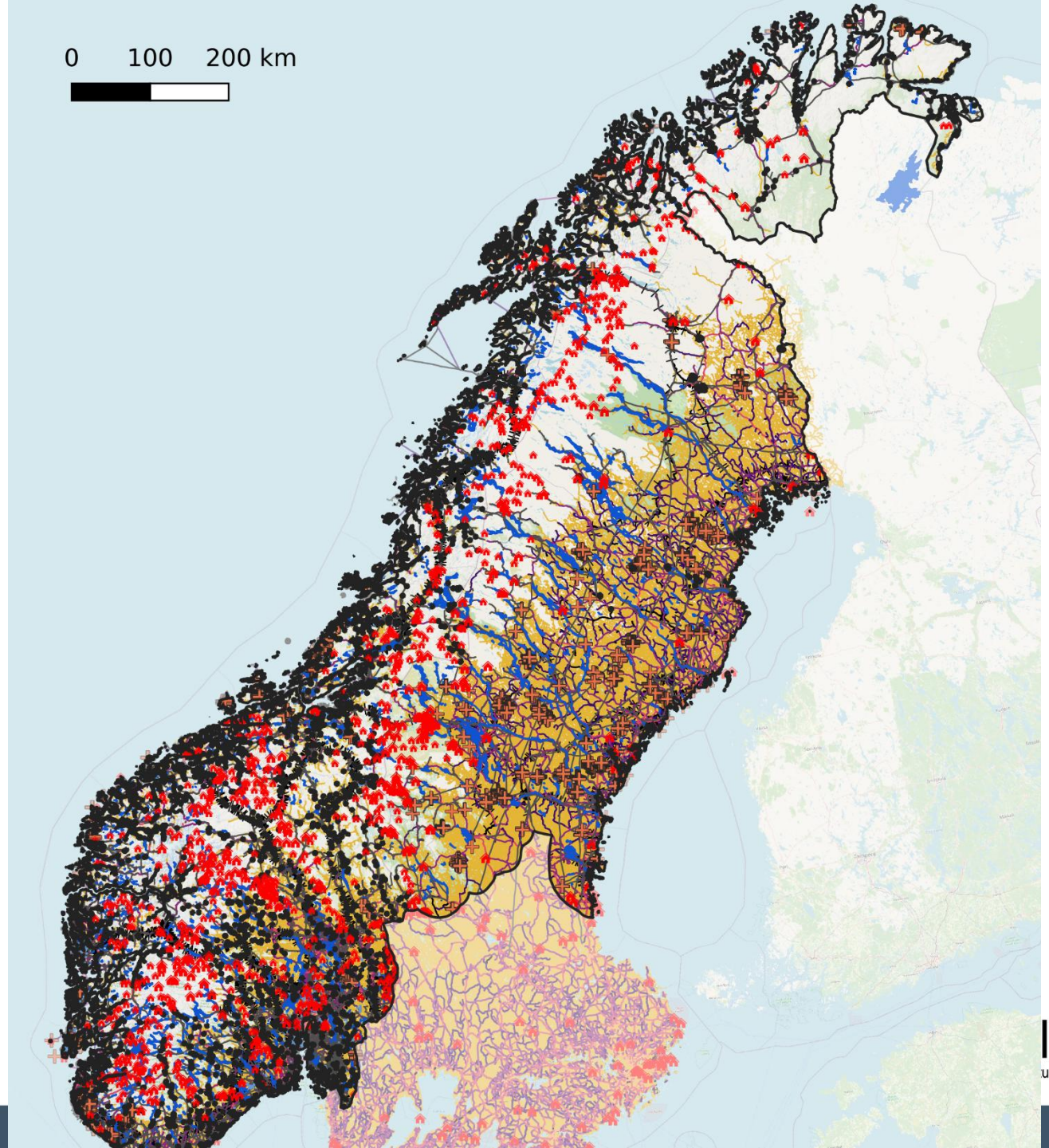
2. Frameworks and data in CIA

- Methods in CIA: from infrastructure to socioecological systems
  - Mapping (potential) **sources** of disturbance/stressors

Location of disturbances

Cumulative impact of infrastructure

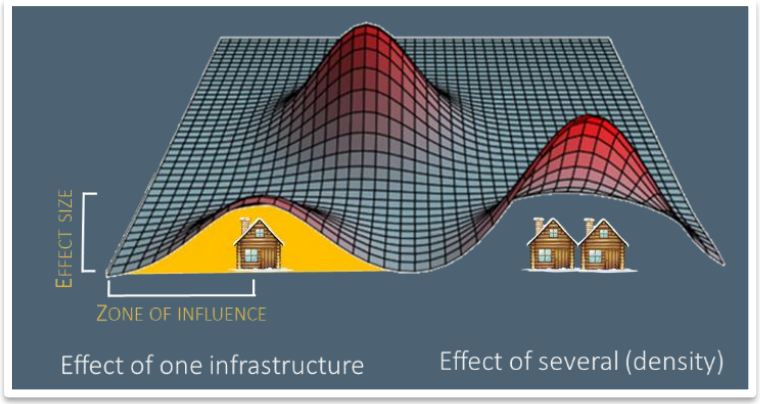
- Urban areas
- Main roads
- Railways
- Hydropower reservoirs
- Windpower
- Power lines
- Mining
- Minor roads
- Public cabins, mountain resorts
- Private cabins
- Trails, ski tracks, forestry…

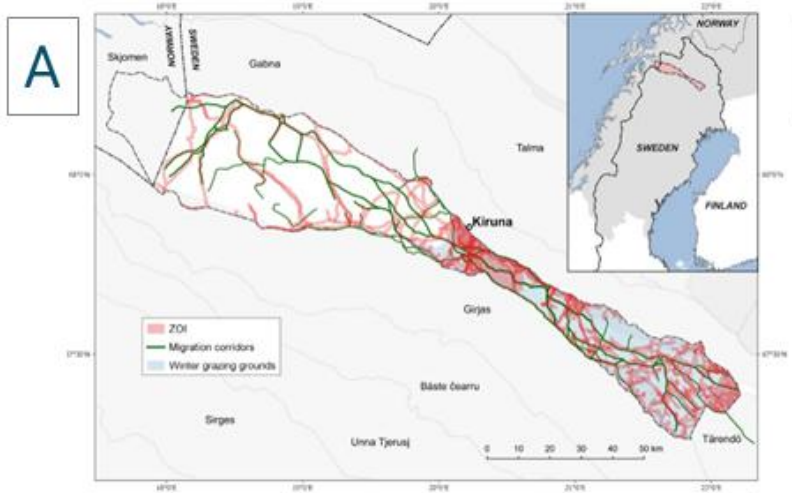


2. Frameworks and data in CIA

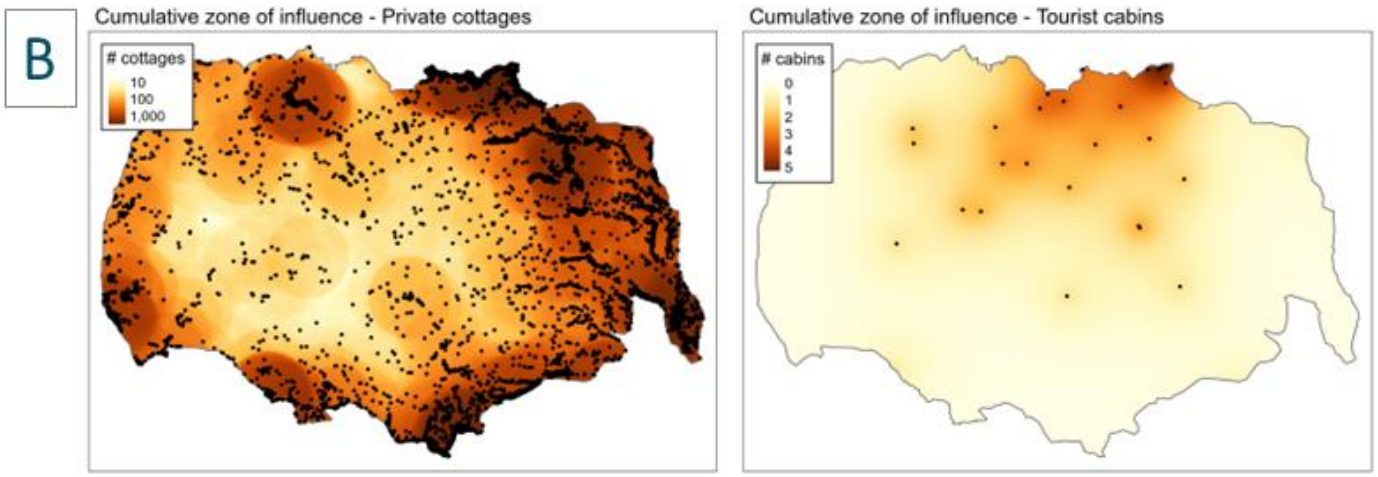
- Methods in CIA: from infrastructure to socioecological systems
  - Mapping (potential) sources of disturbance/stressors
  - Beyond the sources: accounting for **zones of influence** on species, ecosystems and people

2. Frameworks and data in CIA





Laevas Reindeer Herding Community, Sweden
Fohringer et al. (2021)



Hardangervidda wild reindeer area, Norway
Niebuhr et al. (2023)

2. Frameworks and data in CIA

- Methods in CIA: from infrastructure to socioecological systems
  - Mapping (potential) sources of disturbance/stressors
  - Beyond the sources: accounting for zones of influence on species, ecosystems and people
  - Human footprint: computing spatial overlaps between stressors and ecosystems
  - Estimating impacts on animal behaviour and populations

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2. Frameworks and data in CIA

FOCUS ON INFRASTRUCTURE

- Methods in CIA: from infrastructure to socioecological systems
  - Mapping (potential) sources of disturbance/stressors
  - Beyond the sources: accounting for zones of influence on species, ecosystems and people
  - Human footprint: computing spatial overlaps between stressors and ecosystems
  - Estimating impacts on animal behaviour and populations
  - Co-production approaches to assess cumulative impacts
  - Counter-mapping, indigenous mapping, and other ways of mapping

FOCUS ON REINDEER HUSBANDRY AS A SOCIOECOLOGICAL SYSTEM

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2. Frameworks and data in CIA

- Methods in CIA: from infrastructure to systems
- Data in CIA
  - Environmental data
  - Reindeer and biological data
  - With consent: Indigenous Knowledge / in this context, Sámi traditional knowledge (Árbediehtu)

  - Importance of following CARE Principles for Indigenous Data Governance and the subsequent Principles of Sámi Ownership and Data Access (SODA)
    (CARE = Collective Benefit, Authority to Control, Responsibility, and Ethics)

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3. CIA in practice: examples of CIA in reindeer and reindeer husbandry across Sápmi

1. The Connected Habitat Approach: cumulative impacts of infrastructure on reindeer habitat and connectivity
2. Spatio-temporal cumulative impacts on reindeer herd sizes
3. Co-producing maps of reindeer resources, reindeer husbandry, and cumulative impacts
4. Cumulative impacts through collaboration between reindeer herders and researchers
5. From pasture inventories to economics of reindeer husbandry
6. Cumulative impacts in time

NORWAY

SWEDEN

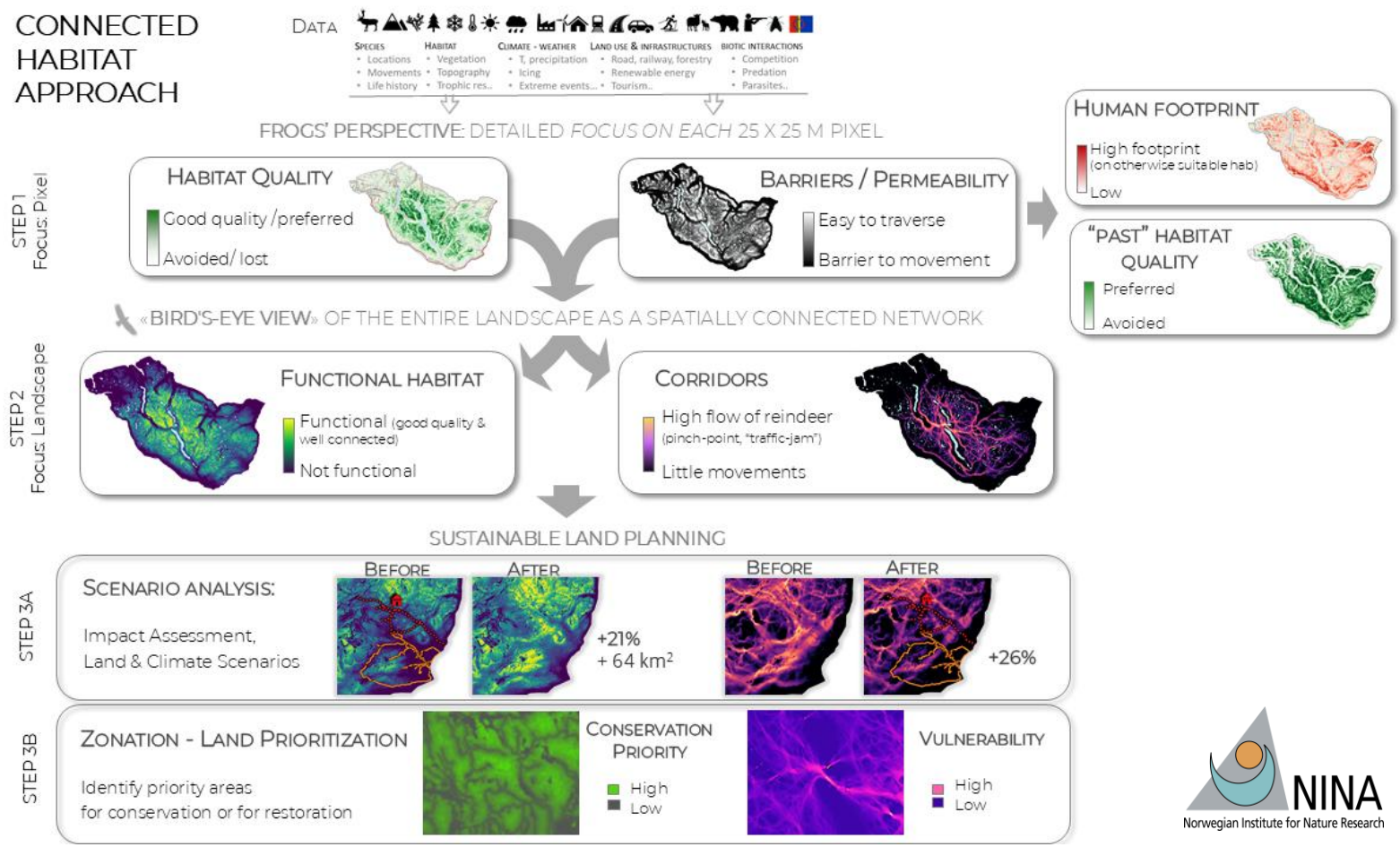
FINLAND

3. CIA in practice: examples of CIA in reindeer and reindeer husbandry

- For each case study:
  - Characteristics and main threats of the system/area
  - Overall vision and aim and how it includes CI
  - Input data
  - Steps
  - Output
  - Toolset, skills, and collaboration needs
  - Strengths and limitations

Case study 1: The Connected Habitat Approach: cumulative impacts of infrastructure on reindeer habitat and connectivity

- Developed at NINA
- Applied in different areas in Norway and Sweden
- GPS and environmental data
- Large collaboration networks
- Focus on how impacts on habitat scales up to landscapes and connectivity
- Provide scenario analyses and land prioritization as tools for land planning



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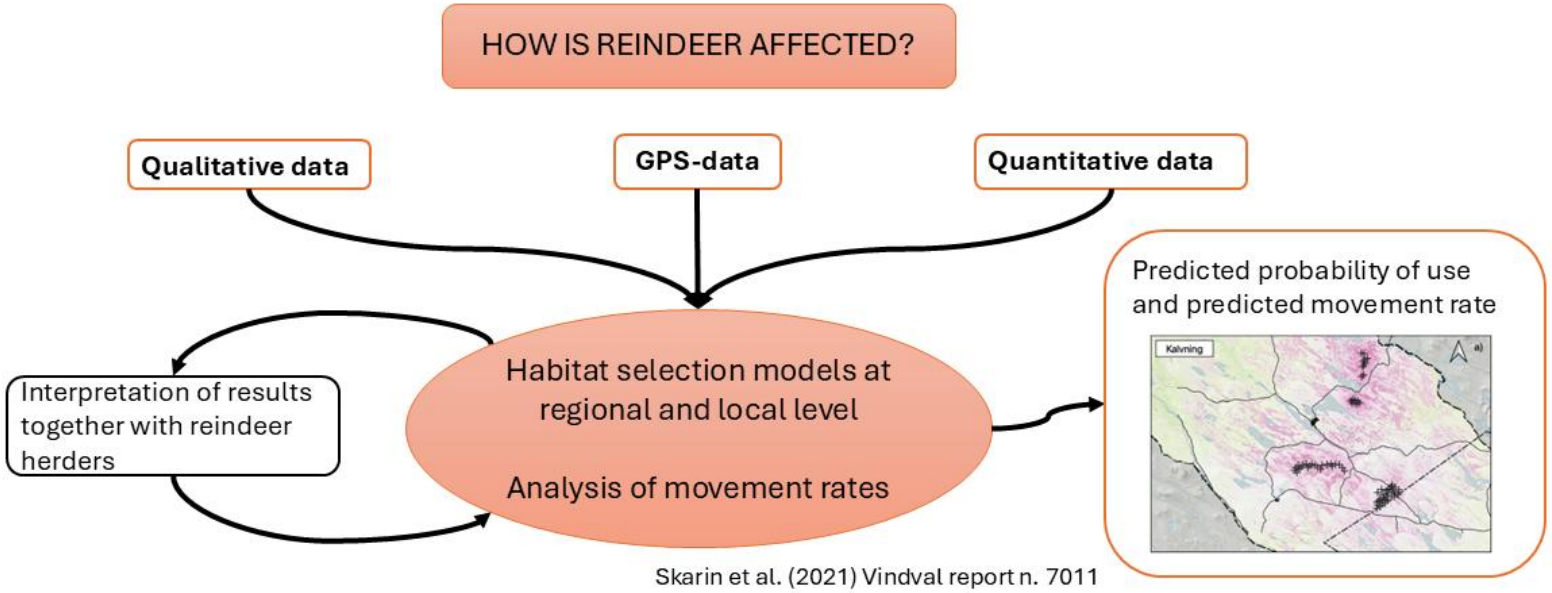
Case study 3: Cumulative impacts through collaboration between reindeer herders and researchers

- Developed at SLU
- Applied in different areas in Sweden
- Co-production approach

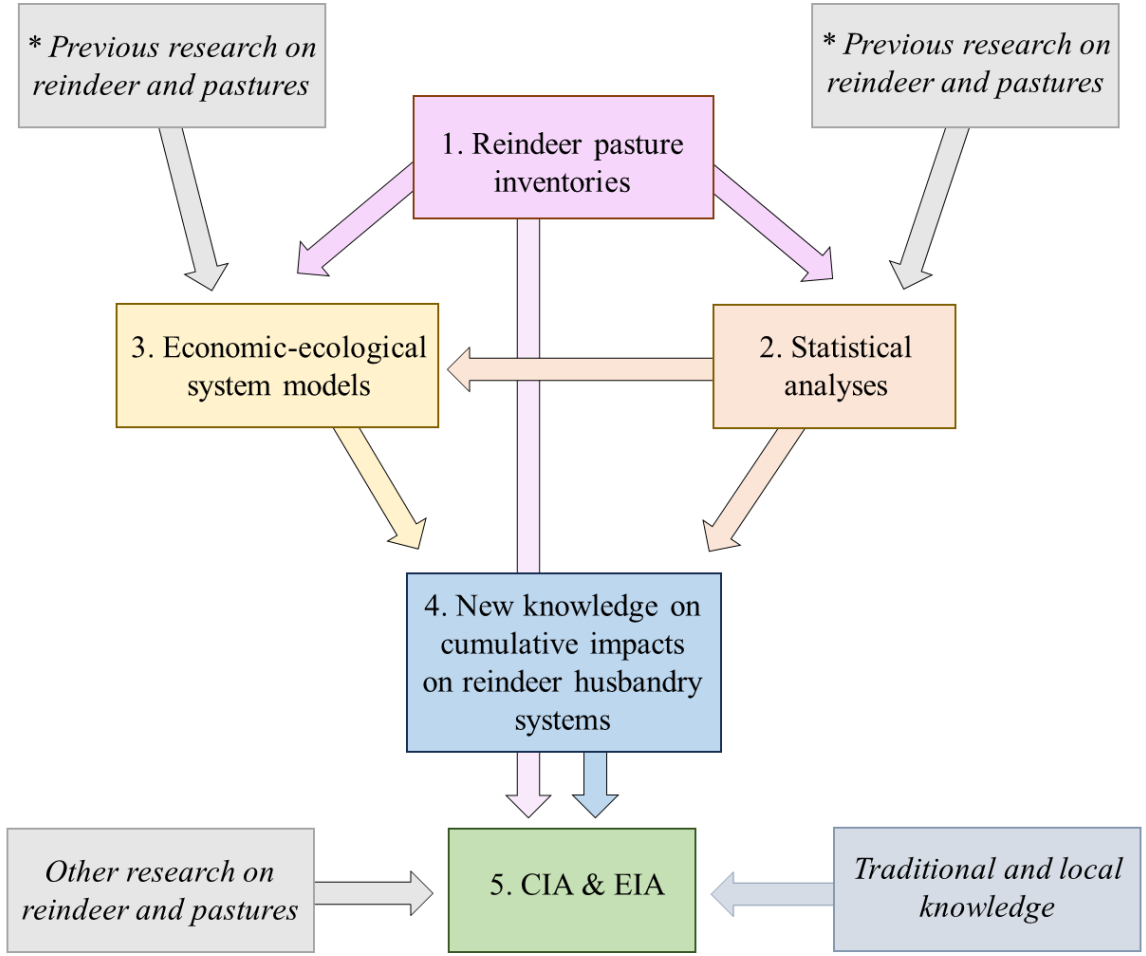
  GPS and environmental data
  +
  Traditional knowledge
- Includes qualitative and quantitative assessments
- Introduces context into data/statistical assessments



Skarin et al. (2021) Vindval report n. 7011

Case study 5: From pasture inventories to economics of reindeer husbandry

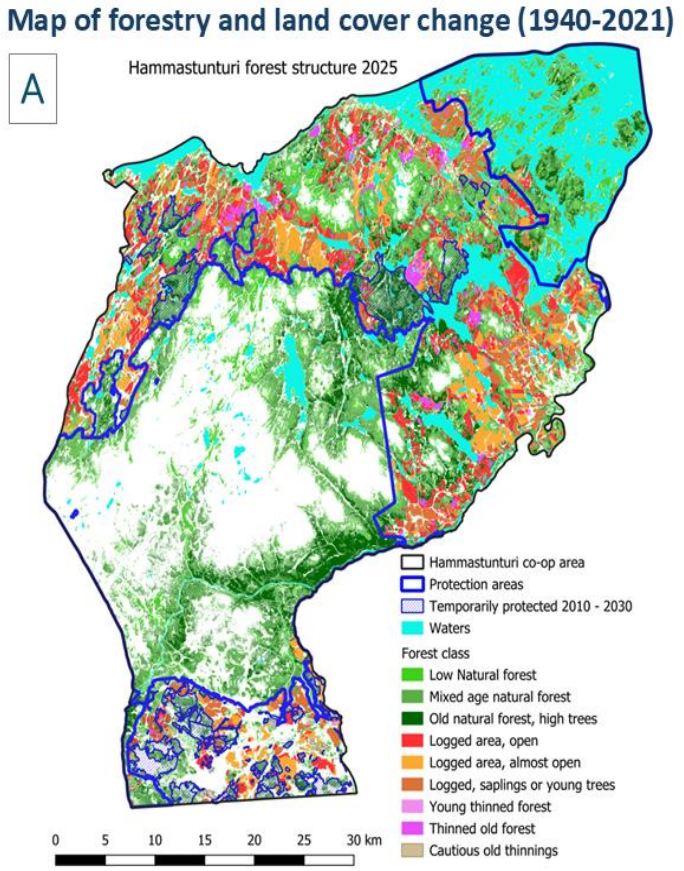
- Developed at LUKE
- Accounts for the impacts of climate and weathers, predators, other land uses, legislation, and economic relations
- Goes from pasture inventories to lichen modelling and mapping and to the economics of reindeer husbandry



Luke
NATURAL RESOURCES INSTITUTE FINLAND

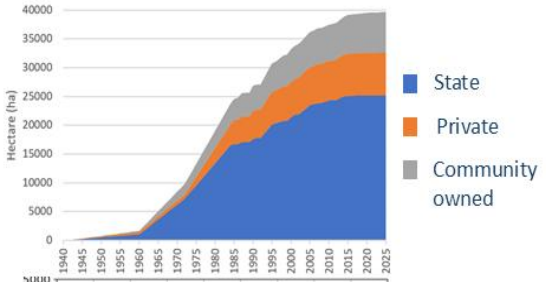
Case study 5: From pasture inventories to economics of reindeer husbandry

- Has been applied to different reindeer herding cooperatives in Finland
- When linked to remote sensing, can show how impacts accumulate through time



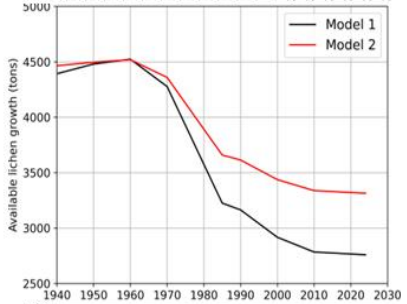
B

Cumulative area logged



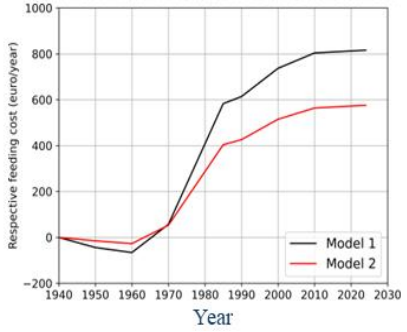
C

Area of lichen available



D

Economic loss for reindeer husbandry



4. Needs for the future: towards CIA in Sápmi

- **Need for further practical collaboration**
  - Between researchers from natural and social sciences, reindeer herding communities and Sámi rightsholders
  - Across borders in Sápmi in Finland, Sweden and Norway
- **Identification of several needs for further development of methods, data and approaches**
  - Not only data and maps, but models and ways of collaborating
  - E.g.: CIA research and applications on other Sámi traditional livelihoods than reindeer husbandry is missing
- **Ultimately, common guidelines for CIA in Sápmi, in line with international law and the rights of Indigenous Peoples**
  - Including the best knowledge, data, and methods available
  - Ensuring full ownership of data and maps by Sámi to avoid misuse
  - Under the leadership of Sámi rightsholders

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Giitu!
Kiitos!
Tusen takk!
Tack så mycket!
Thank you!
Obrigado!

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KUVA: ADOBE STOCK

Participation in OECM processes in Finland, Sweden, and Norway

Anna Ott & Peter Kullberg

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Pidä kiinni hyvästä · Bevara det goda · Cherish the good
Syke 30

Nature conservation and green transition

- Focus on **terrestrial** other effective area-based conservation measures (OECMs) and participation of local and indigenous communities
- Aims:
  - Compile a report of the terrestrial OECM areas in northern Finland, Sweden and Norway with focus on participation and conflict resolution
  - Support national OECM area work by networking of experts
  - Discuss needs and possibilities for cooperation between the neighboring countries on the OECM area work
- *Participation in OECM processes in Finland, Sweden, and Norway* report will be published in Syke reports early 2026
- Work is based on workshops and conversations with experts and reports on OECMs

Other effective area based conservation measures (OECMs)

- “(…) a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio–economic, and other locally relevant values.”
(CBD/COP/DEC/14/8, 2018)

Kuva: Esa Nikunen

Other effective area based conservation measures

- A new tool in the conservation toolbox for increasing protected area coverage and halting biodiversity loss
  - EU Biodiversity Strategy: protect at least 30% of land and sea, of which 10% strictly
  - The Global Biodiversity Framework under the Convention on Biological Diversity sets a 30×30 target
- Guidelines and definitions for identifying, establishing, and reporting OECMs are available from the CBD, IUCN, and the EU.
- The purpose of OECMs is not to replace or diminish the importance of strictly protected areas, rather the two complement each other.
- OECMs may have biodiversity conservation as a primary, secondary or ancillary objective.

OECM – why?

- Different role, same goal: safeguarding biodiversity
- OECMs are not just a new category or statistic into which an area is placed — they provide a new lens for identifying where biodiversity is being maintained outside protected areas.
- How can biodiversity be safeguarded as part of other land-use objectives, or in areas where establishing a protected area is not an option?
- Granting OECM status makes the biodiversity work carried out by landowners visible.
- It enables municipalities, communities, and private actors to participate in biodiversity conservation in a more diverse and visible way.
- It can encourage the development of existing regional conservation measures so that they meet the criteria for an area that supports biodiversity leading to improved conservation outcomes.

Status of OECM work in Finland, Sweden and Norway

- **All three countries see OECMs as an important tool to expand conservation coverage and support biodiversity goals.**
- All countries have done initial screening of potential sites. Sweden and Finland have reported OECMs, with additional sites expected.
- Sectoral laws (forestry, fisheries), company decisions (set aside forests), or specific agreements provide the foundation for OECM recognition.
- No national laws identifying and specifying OECMs
- Work is guided by CBD/IUCN/EU definitions, but national interpretations and practices (e.g. governance, monitoring, permanence, area size) are still evolving.

Not a silver bullet

- Work mainly builds on Government-led screening of potential sites that already meet OECM criteria, followed by formal recognition and reporting
- ...but a good tool for recognizing important conservation work outside protected areas and supporting developing new solutions in the future

Kuva: Riku Lumiaro

Participation in the OECM processes

- Assessment of Sámi participation against IUCN guidance on OECMs, national consultation requirements, and academic literature
- Sámi and other local actors have so far not been widely involved
  - FPIC to assessing, identifying, and reporting OECMs in Sápmi has not been obtained
  - National consultation requirements have not been fully met
  - Consultations with the Sámi Parliament have begun in Sweden and Finland
- OECMs remain relatively unknown among local actors
- There is limited trust that OECMs can provide long-term protection for nature and Sámi culture

➢ Need for active communication and for enshrining OECMs in law

Recommendations

- Establishment of new protected areas or OECMs on land that currently lacks any form of legal protection
- Establishment of institutional mechanisms that facilitate effective and meaningful participation of the Sámi and local communities

- ➢ Strengthen the management framework for OECMs
- ➢ Ensure effective participation of the Sámi in the OECM work
- ➢ Empower local actors to take an active role in developing and proposing OECMs

Strengthen the management framework for OECMs

- Develop and clarify management practices and regulations related to OECMs to build trust in their effectiveness for conserving biodiversity and reducing pressures from industrial land uses.
- Establish clear guidelines for OECM management specifying which activities are permitted and which are restricted.
- Define transparent regulations for the potential degazettement of OECMs so that the conditions under which an area may lose its OECM status are clearly understood by all stakeholders.

Ensure effective participation of the Sámi in the OECM work

- Guarantee the effective participation of the Sámi in the identification, assessment, reporting, and management of OECMs that are initiated by government agencies, companies, or other external actors in Sápmi.
- Ensure that national legislation on Sámi participation, existing participation models in each country and IUCN guidelines on obtaining Free, Prior, and Informed Consent (FPIC) from affected Sámi communities are fully applied in national OECM processes.
- Develop and promote co-management frameworks that support shared decision-making between authorities and Sámi representatives.
- Communicate proactively and transparently from the earliest planning stages to enable timely and informed Sámi participation.

Empower local actors to take an active role in developing and proposing OECMs (1)

- Communicate clearly and actively about the OECM concept to strengthen understanding, trust, and capacity among local and Sámi communities.
- Establish accessible mechanisms or platforms through which Sámi communities and local actors can propose areas for consideration as OECMs.
- Enable meaningful participation of communities proposing OECMs in site management by developing co-management structures that facilitate shared decision-making between authorities, Sámi representatives, and other local communities.

Empower local actors to take an active role in developing and proposing OECMs (2)

- Develop mechanisms through which private landowners and Sámi and local communities can apply for support to develop and maintain management practices consistent with OECM criteria.
- Develop and share positive examples of successfully co-managed and community-initiated OECMs to demonstrate good practice and encourage broader participation.

Thank you to everyone who contributed!

Thank you to the other co-authors, Ilona Aalto, Sigrid Engen, Noora Huusari, Olle Höjer, and Anna Kuhmonen.

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Kuva: Jussi Leppänen

Thank you!

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