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Pilot study

Reindeer Herder Community indicators
sustainable forest management-
2025/26

1. Introduction

Nature, the reindeer and the indigenous Sámi people are all one entity and the reindeers' grazing land must be treated with respect and care. A respectful relationship with nature and the forest landscape is a prerequisite for the survival of the reindeer. A healthy, prosperous and vibrant nature is also a prerequisite for the Sámi traditional livelihood, where reindeer husbandry based on natural grazing is central and one of the cornerstones of Sámi culture.

The parallel land use of forestry and reindeer husbandry goes back a long way and has come to be characterised by the view that although these activities use the same areas, they can operate side by side. Over time, the idea of parallel land use has come to characterise Swedish policy concerning reindeer husbandry, but also competing land uses such as forestry, mineral extraction and energy extraction, etc. The parallel theory is based on the idea that competing land uses can live side by side and that they do not infringe on each other's basic and economic conditions. The reality today is a lot different. Reindeer husbandry land use is based on a traditional use of land and water for humans and reindeer. Reindeer husbandry is based on a natural grazing-based utilisation of the grazing resources in the traditional areas of each Sámi community. There are special provisions in the Forestry Act concerning forestry and reindeer husbandry. Section 20 of the Act holds that before felling takes place in the year-round reindeer herding areas, the Sámi village concerned must be given the opportunity for consultation.

In addition to legislation, there are certification standards that companies have undertaken to comply with. There are two systems in Sweden, where the FSC Forest Stewardship Council standard (<https://se.fsc.org/se-sv/regler/skogsbruksstandard>) is probably best known to the Sámi communities and reindeer husbandry. The other certification system is the PEFC Programme for the Endorsement of Forest Certification, (<https://pefc.se/vara-standarder/svenska-pefc-standarden>) which largely follows the provisions of the Swedish Forestry Act and is not as far-reaching as the FSC requirements. For examples, PEFC does not include any requirements on FPIC. The certification standards have been developed by each certification organisation. The incentive for companies to become certified is that it can help to improve marketing opportunities for forest products. Also, the Sámi communities and the reindeer husbandry have the opportunity to exercise control, monitoring and, to some extent, pressure on forestry within the framework of the certification standard, but still there is a gap especially when it comes to implementation of Free Prior and Informed Consent (FPIC).

In addition to certification standards, there are also various international standards which both state and private companies are subject to.

States and other actors must fully respect the rights to land and water of indigenous peoples that have been built up over time. They must also respect the status of indigenous peoples as actors in the national public life and thus the rights of indigenous peoples to participate, through their own representatives and institutions, in decision-making processes on issues that affect them.¹

A right to consultation exists for all projects that affect the way of life of indigenous peoples. The principle of FPIC, meaning free, prior and informed consent, must be applied in consultations with indigenous peoples. This principle requires consultations that give indigenous peoples a real opportunity to influence the outcome of decision-making processes. There is a gap between the principles securing Sámi rights and the processes used by the forest companies today. (Many downstream brands that source forest products grown in Sweden have Responsible Sourcing Policies to ensure that the raw materials in their products meet their environmental and social commitments, including respect for Indigenous People and Local Communities (IPLC) and implementation of FPIC.).

As a food resource, lichens are crucial for reindeer survival and therefore for the survival of all Sámi culture. The practice of reindeer husbandry, mainly during the winter grazing periods, is greatly dependant on lichen-rich lands, both hanging lichen and ground lichen.

The rights of the Sámi communities have a clear legal dimension that must be considered as forestry today has a major impact on reindeer husbandry. The rights of Sámi communities are not fully respected in national legislation nor by the forest companies.



¹Articles 5, 11, 18, 20 och 27 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), articles 2, 26 and 27 International Covenant on Civil and Political Rights (ICCPR), article 1 International Covenant on Economic, Social and Cultural Rights (ICESCR), article 8 International Labour Organization Convention nr. 169 (ILO 169).



1.1 The pilot study background

Following the prioritisation of biodiversity and Sámi Reindeer Herding Communities (RHC) wellbeing metrics in the Healthy Forest Landscape (HFL) of Västerbotten County published in November 2023 (see Report), Sámiid Riikkasearvi (SSR) has together with Earthworm and SCA, with financial contribution from Nestlé, participated in the work of reviewing the possibility of developing indicators for the relationship between forestry and reindeer husbandry, the purpose of the work from SSR's side has been to find sustainable solutions that take into account the Sámi communities and the needs of reindeer herding. The work has been carried out in the form of the production of a report and the implementation of a workshop.

After completing the workshop with the SSR Forest Group in March 2024 (see Report), a need to carry out a pilot project was identified. Initially, both SSR and SCA were in favour of proceeding with a pilot project, with the goal to further develop the indicators, to support the co-planning process in FSC.

However, the situation changed, mainly in light of the fact that SCA at the time did not clarify their position on FSC and its requirements for FPIC and respect for indigenous rights. SSR saw the need and an opportunity to proceed with a pilot study.

The pilot project is based on Sámi traditional knowledge, reindeer herders' experience. The purpose with the pilot is to explore and develop a few indicators based on their

knowledge, with the purpose to generate a better understanding for how forestry affects reindeer herding. SSR believes that the work on the development of indicators will generate greater social added value, strengthen its own knowledge and knowledge transfer.

2. Participants

For the 2025 study to be possible to carry out, it was necessary to find participants who were willing to share their knowledge and who had the opportunity to actively spend time in the pilot study. Anders Baer, Vilhelmina Norra Sámi community, was asked and accepted. The choice of Sami community and location was anchored in SSR's forest group.

The project manager for the study has been Jenny Wik Karlsson together with Anders Nentzen, SSR. The Swedish University of Agricultural Sciences (SLU) was also contracted to conduct studies in the area, to complement the prioritised indicators and which has been published in a report, see appendix.

3. Advantages of introducing an indicator system from the perspective of the reindeer herding communities, an overview

Previous studies and SSR's own work have clearly pointed to the need to develop models/tools that can highlight the reindeer husbandry's perspective on the consequences of forest management, based on their own knowledge. In contrast, today's mechanisms and system are mainly based on business perspectives. This often leads to issues relating to human rights as well as indigenous peoples' rights not being fully considered when forest activities are planned.

In this study we tried to find indicators that will help to visualize the impact of forestry on reindeer husbandry, and which will help to better understand and manage the consequences in compliance with international principles and regulation and reduce areas of conflict between parties.



The project focused on three indicators, which will be described later in this report. The indicators.

1. Ground lichen trends: By monitoring and measuring different factors, trends can be identified and action taken to reverse negative developments in lichen abundance. Indicators can be used to monitor restoration efforts and assess their effectiveness.

2. (Economically sustainable reindeer husbandry: Measuring economic factors can ensure long-term sustainability.)
- Social indicator- measuring the time spent by a community on co-planning is of great importance as this is often given as an argument by the forest companies as being delayed by the communities.

3. The actual grazing days used in an area in comparison to the potential grazing days estimated for the same area.

4. Advantages of introducing an indicator system from a company perspective, an overview:

- Measurability from both sides: An indicator system makes it possible to measure and evaluate results and performance for both the reindeer herding community and other stakeholders.
- Efficiency and consideration: By using indicators, forest management measures can be made more efficient and different factors can be fully taken into account, noting that site-level and landscape-level commercial forestry objectives are highly quantified and modelled in planning processes, but equivalent quantifiable indicators for key reindeer herding objectives are not yet available for the co-planning process.
- Concrete planning: The indicator system provides concrete data that facilitates forward planning.
- Common understanding and starting points: All parties can benefit from a common basis for discussion and decision-making.
- Mutual learning: By sharing information and results, people can learn from each other.
- Communication: Indicators provide clear language to communicate about reindeer husbandry and forestry.
- Co-planning: The indicator system can be used to develop joint plans and strategies.
- Basis for management practices: Data from the indicator system can be used as a basis for developing and improving management practices.

Indicators Tried in 2025

5. Ground Lichen indicator

By using traditional knowledge, reindeer herders know how long a herd can remain in an area before grazing becomes inaccessible. This knowledge has been used in meetings with forest and mining companies, wind power project developers, etc. However, this knowledge is often considered by the counterparty to be of little or no value. The counterparty often presents arguments in terms of cubic meters, megawatts, and Swedish crowns. They do not respect, or lack an understanding of, the traditional knowledge presented by a reindeer herder. There is therefore a need for an indicator that can quantify this knowledge and make it measurable. The indicator, together with traditional knowledge, can meet these arguments and help gain respect for the losses imposed on reindeer herding. The indicator aims to quantify the number of days a reindeer can remain and graze in an area, referred to as grazing days

A study (“Estimating ground lichen biomass and reindeer grazing days”) was carried out by Erik Cronvall and Sven Adler at the Department of Forest Resource Management at the Swedish University of Agricultural Sciences (SLU). Together with a representative of the Vilhelmina Norra Sámi Village. They developed the method for the estimations. They focused on an area called Betsarn, which is of great importance for the village and is used during the pre-winter period. The area has been used for generations and has ground lichen distributed throughout the 18,000 hectares that constitute Betsarn.

The method developed combines the use of ground lichen indicator maps. These maps are available on the public web-page (<https://sametinget.se/lavkartor>) of the Sametinget (the Sámi Parliament). The maps show the distribution of ground lichens important for reindeer grazing in the 1980s and the early 2020s, allowing broad comparisons of landscape-level changes over time. They are indicative and based on remote sensing and modelling and should be interpreted as showing general patterns rather than precise, site-specific conditions. By combining the maps with field visits, the data were calibrated for the Betsarn area.

The results showed that the potential grazing capacity of the area is just under 495,000 grazing days. It should be noted that this represents a theoretical maximum number of grazing days that would be achieved if all lichen could be eaten. In reality, much of the lichen will not be available to the reindeer. Weather conditions, changes in the area such as new infrastructure or clear-cuts, and other types of disturbances will affect the actual number of grazing days used. Even under perfect conditions, the full potential cannot be utilized. Therefore, traditional knowledge of available lichen is critical and must still be considered. Nevertheless, the indicator represents a significant step forward as a key metric in calculating available lichen. The value of the indicator being developed together with reindeer herders, and the fact that the Sámi people themselves own the initiative, cannot be emphasized enough. Future studies can better describe the relationship between total ground lichen and actual grazing days. However, even though these values are potential, the same applies to other values encountered by Sámi communities when discussing land use. Cubic meters, megawatts, and Swedish crowns are also potential values, and the full value may not necessarily be realized. We therefore look forward to taking this work to the next step.

In 2026, the intention is to apply the concept at the landscape scale in combination with the effects of forestry activities. Planned clear-fellings will result in a loss of grazing days. What measures can be taken by forest companies to compensate for this loss? Pre-commercial thinning and thinning aimed at creating less dense stands are examples of activities that have a positive effect on ground lichens. How many hectares of such activities are needed to achieve the same or a greater number of grazing days than those lost through clear-cutting? If we can



obtain quantitative answers to questions such as these, we will move closer to a more equal use of forest resources.

6. Time indicator

Something that is often pointed to by forest companies as a frustration is the time it takes for Sámi Reindeer Herding Communities to review material sent for co-planning. This is, however, also a frustration shared by SSR's members. The work of reviewing material is done on top of the full-time work of reindeer herding, consultations with other actors, and, of course, trying to find time for everyday family life.

Before getting into results and ways of assessing the time spent, it is worth pointing out some of the factors that affect the time required for a review. Whether you have 2,600 sites or 150 will naturally have a significant impact on the amount of time needed. This is, however, the reality—there are even examples of communities exceeding 3,000 sites. It is important to remember that these are annual numbers. The following year, there will be an additional three thousand or so sites to review. These are activities that will have a direct impact on grazing, migration routes, etc., and therefore not reviewing them is not an option. It is in every reindeer herder's interest that this work is carried out as thoroughly as possible.

Another aspect is the number of different forest companies involved. Some communities deal with one or perhaps two large companies. This makes communication easier, and it is possible to structure agendas around these actors. Others may deal with five different companies and need separate meetings with each one. This adds days of work, more material to review, and

meetings conducted according to different procedures. This increases complexity.

Finally, the information received typically consists of sites planned for clear-cutting, including boundaries, planned regeneration, and perhaps some general considerations identified at the desk by the forest company (such as consideration for a creek). However, there is nothing addressing the needs of the community. Is there lichen on the ground or in the trees? Is the area of particular importance for the community, and if so, are there any suggested considerations for those values? None of this is captured or described by the forest companies. The sites have generally not been visited in the field prior to the community's review. Once a field visit is conducted, it may turn out that the stand is too young, non-productive, or has such high nature values that it will never be clear-felled.

At this stage, the community has already spent time reviewing the material, holding internal discussions, and deciding about the site in question. The decision is made with all other proposed activities in the landscape in mind, resulting in a balanced assessment. Having sites included that will never be harvested affects the time spent and can potentially influence the number of sites granted consent. It is therefore in the interest of both parties to focus discussions on sites that can realistically be harvested.

To assess the time spent, we used a template developed from experience in work with the mining industry. It compiles all steps taken, from receiving material for review to the formal decision by the community. It also accounts for additional resources, administrative work, and potential dispute resolution processes, all of which can be time-consuming but are not always initially considered. We asked communities to complete this template and then compiled the results. We also collected data on the number of sites and hectares included in co-planning.

The results show that, on average, communities spend approximately 5 minutes per hectare or 30–40 minutes per site. Spending around 30 minutes on a site that will affect both present and future generations is not a great deal of time. Considering that there is little to no information regarding community values or how these should be taken into account, this is, in our view, relatively efficient. While it may be possible in some cases to move quickly through sites, the intensity of forest harvesting—past and present—means that most areas hold some level of importance.

We consider these results to be very important for communicating the time spent. However, we aim to gather more data and have therefore reached out to additional communities in 2026. The results we currently have indicate that communities do not spend excessive time per site in the process. It is necessary to nuance the discussion by taking into account the number of sites, the information provided, and the number of actors

involved. When these factors are considered, the finding that only 30–40 minutes are spent per site is uncontroversial.

7. The actual grazing days used in an area in comparison to the potential grazing days estimated for the same area

As described in Section 5 of this report the grazing day indicator is essential. However, as this is a theoretical estimation the actual usage will be lower. As there is a risk that the indicator will be seen as evidence or proof of existing grazing days and may lead to the counter party stating, “well you have 300,000 grazing days meaning we don’t need to do any adaption”. Therefore, having a reference to the actual used days is crucial.

The actual used grazing days depends on a lot of things. The weather is one of the factors that are most correlated. If there is a layer of ice on the ground covering the ground lichen, the reindeer will not be able to identify it through the snow. If the snow is “wet” and heavy instead of being cold and dry, it might not be able for the reindeer to dig through the snow. These are some examples of how winter conditions play a role in how many days that will be used, even though being present in the area. It’s just not accessible.

Another factor is the forest conditions. If, for example, there has been a lot of harvesting or no pre-commercial thinning, the area might not be seen as suitable by the reindeer. The difference in age and density is not negative by default, on the contrary. When the snow conditions are poor in the old forest it might be better in the younger stands next to it. If there is this variation there are usually no problems. But often you will get nothing but younger stands and clear cuts in a large area, and you lose the variation.

Disturbance is another thing that will have an impact on if a herd chooses to leave an area. It can be snow mobiles not showing consideration, work from heavy machines etc. can make the herd move from an area.

Given all the factors that may affect a reindeer it is understandable that the estimated grazing days are just that, an estimation. The goal in 2025 was to summarize the actual grazing days used in the area used for estimations described in section 5. However, the conditions in the early winter were a bit tough with some forests not being suitable for grazing. This led to a neighboring communities reindeer coming into the area in question. The reindeer had to be gathered and then moved from the area. The number of reindeer in the area was therefore not possible to calculate, and the result is that we need to have another go at it in 2026.



8. Recommendation

Based on the results that have emerged during the work on the development of indicators, we see that there are good conditions for developing a tool that can be used by Sami communities, forest companies and customers. However, the feasibility study shows that continued deepening and development for a more standardised approach is required. Based on this, we recommend the following for 2026 activities:

- To continue work on deepening and developing the indicators in a more standardised and systematise way to collect, analyse and present the data to help show progress and impact
- To review how all actors can implement the indicators in their work as part of the co-planning process to help improve the trust in the coplanning process
- Seek alignment and standardise definitions of “adaptive” forest management to be applied in prioritised areas and collect data to determine reestablishment of lichen over these areas
- Identify any additional components that may be needed e.g through ongoing research with SLU
- Engage other downstream brands
- Communicate about the project through increased visibility of the landscape and Sami people from a Sami perspective

In order for the above to be possible, we see a need for the feasibility study to be transferred to a new project.

9. Final conclusions

The indicators set out for 2025 are all seen as relevant. We hear other actors working on the same topic, trying to get measurements for areas of importance to communities. We see a great risk if others take it upon themselves to set these indicators and define thresholds that need to be passed to be classified as important. The work done so far is a great step forward and we feel that we are heading in the right direction. Grazing days, even if being an estimation of the potential maximum days available, is still a great tool in meetings with forest companies and others with activities on our lands. To be able to quantify what a planned activity means to a community with a systematic and science-based approach gives the communities a tool to be added to their traditional knowledge. Traditional knowledge is unfortunately not given the respect it should be and having the indicator will therefore strengthen this knowledge.

Appendix

Advantages of introducing an indicator system from the perspective of the reindeer herding communities, based on the results from the workshop:

- Reverse negative lichen trends: By monitoring and measuring different factors, trends can be identified and action taken to reverse negative developments in lichen abundance.
 - Providing more people with locally produced food: An indicator system can help increase national and local self-sufficiency.
 - Visualising the impact of forestry on reindeer husbandry: Including the impact of forestry in the system helps to better understand and manage the consequences.
 - Restoring pastures (restoration measures): Indicators can be used to monitor restoration efforts and assess their effectiveness.
 - Economically sustainable reindeer husbandry: Measuring economic factors can ensure long-term sustainability.
 - Measurable targets and hopefully higher target fulfilment: An indicator system allows for setting clear targets and monitoring results.
 - Reindeer as an indicator of a functioning ecosystem: Reindeer are sensitive to changes in the environment and can therefore serve as an indicator of ecosystem health.
 - Maintenance of natural pasture-based reindeer husbandry: Measuring natural pasture-based reindeer husbandry can ensure that traditional practices are maintained.
 - Increased reindeer survival and animal welfare (preventing starvation): Indicators can be used to monitor reindeer health and welfare.
 - Increase reindeer welfare: A healthy reindeer herd is an important part of the future of the Sámi communities.
 - Identify and clarify problems: An indicator system provides the opportunity to identify and solve problems.
 - Strengthen arguments: With measurable data, you can better argue in favour of your positions.
 - Reduce areas of conflict between parties: A common indicator system can promote cohesion and reduce conflict.
- Benefits of implementing an indicator system from the perspective of Companies and consumers:
- Responsible sourcing - IPLC and FPIC: By following responsible sourcing principles such as IPLC (Indigenous and Local Communities) and FPIC (Free, Prior, and Informed Consent), Companies can ensure that their sourcing is ethical and sustainable.
 - Brand credibility: A strong brand is built on credibility and trust. Companies should act responsibly to maintain its credibility.
 - Engage the supply chain and be proactive: By engaging with suppliers and being proactive, Companies can positively impact the entire supply chain.
 - Protect and restore - transformation: Nestlé should work to protect the environment and restore any damage through sustainable measures.
 - Communicate - transparency and monitoring process: Open communication and clear monitoring are important to demonstrate transparency and responsibility.
 - A tool for Due Dilligence reports

1. Migration routes:

Annex – See Report & Key Indicators from Workshop w2024

- Measure deviations from the route and evaluate the functionality of the route. This can help improve the efficiency and safety of reindeer husbandry.

2. lichen land/fields:

- Evaluate the quality of information on lichen fields. Can a better map layer be produced, for example with satellite data?
- Analyse the lichen map to take measures and management actions.
- Measure the evolution of lichen cover over time and consider other forest management practices.
- Focus on competing ground vegetation and the presence of hanging lichens.
- Consider restoring grazing measures and increasing lichen cover.
- Measure in grazing days: The number of grazing days per number of reindeer provides insight into how well natural grazing works.

3. Design of the grazing area:

- Evaluate the possibility to keep the reindeer herd together by analysing fragmentation, number of obstacles, interventions and felling.
- Work with positive measures to increase the number of grazing days and enable flexibility.
- Ensure that grazing areas are functional and coherent for orderly reindeer husbandry.

4. Co-planning:

- Measure objectively how co-planning works and evaluate satisfaction with co-planning.
- Use the principles of Free, Prior, Informed Consent (FPIC) to ensure compliance and consent.
- Consider the time aspect and compensate the communities for the time spent.

5. SSR forest policy:

- Continue work on the SSR Forest Policy and consider how it can be integrated into the indicator system.
- Identify next steps and bring it to the Forest Group for further discussion.
- Take advantage of existing data and analyse the basal area of lichen fields/light penetration to understand changes over time.

6. Process and concretisation:

- Clarify what will be measured and monitored over time.
- Grazing days are an important indicator for reindeer husbandry and should be included in the system.

ANNEX X: Indicators from HFL Reports

Overarching indicator	Suggested indicator	Potential measurement	Available?
THE REINDEER HERD FOUNDATION EXPLAINED BY THE SBIM FOUNDATION	Reproduction rate	Calf survival e.g. portion of calves at the autumn.	Yes, but private data
	Nutrition status	Average slaughter weight for the various age and sex categories.	Yes, but via slaughterhouses
	Herd structure	Sex, age and size of herd	Yes, but private data
	Diseases/illness/injuries	Occurrence and documentation (Ongoing research)	Yes, but via slaughterhouses / TBD
	Loss of reindeers due to predation	Occurrence of large carnivores/loss of reindeers (management tool for keeping the damage caused by large predators at a level of tolerance acceptable to the reindeer husbandry)	Yes, via CAB
	Behavioural change	Occurrence of emergency feeding	Yes via the Sami parliament
THE FOUNDATION OF LANDCAPPING/FOUNDERING/ADAPTIVE SIIM FOUNDATION	Size	An account of the state of grazing land and operational conditions. Restoration of lichen areas.	Via RHP TBD
	Disturbance zones (e.g., due to infrastructure)	Avoidance effect (mining; windmills; power grids etc.) Difficulties to keep the herd together	Via RHP but TBD TEK
	Shape of pasture	Difficult passages, fragmented pastures	Via RHP
	Quality of Pastures and resting places/ betesro.	Ex. presence of lichens (%). Aerial photos/lidar of overgrown fellings, forests as corridors, or creeping effects to facilitate herding (to not mix the herd with other herds) Information on conforto plantatiner.	Via The Swedish National Forest Inventory The forest agency
	Productivity of grazing land	Regrowth of lichens Manipulation of vegetation with for example ditching. fertilization with negative effects on lichen	TBD TBD TBD
	Balance between summer /winter pastures	Summer may provide the basis for a larger herd while the winter pastures become the bottleneck.	Via RHP and GPS
	Predictability	Lack of predictability due to loss of pasture. The reindeer spread ex. to another RHC which includes more work.	TBD
	Infrastructure	Predatory pressure in other places than normal The reindeer's natural roaming is disturbed so they remain on winter pasture. Tourism / snowmobiling creates land changes Traffic-killed reindeer (see above) Road network Railway, fence splits land, no fence = dead reindeer Packed snow due to forestry (clearcutting)	Via RHP Via CAB? Hotspots? Some of these are available
	Climate change (long-term)	Average temperature Length of snow season Drought Rivers / lakes freeze later or not at all, no longer function as borders. Melting snow	Yes?
	Weather effects (seasonal)	Icey, late spring, long summer / autumn Windy to a greater extent Packed snow due to forest fellings, the forest does not slow down the wind Midnight sun	TBD

Project Management

