



Preparing for consultation in Swedish forestry

Reindeer husbandry knowledge and landscape
planning

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Preparing for consultation in Swedish forestry: Reindeer husbandry knowledge and landscape planning

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Abstract

In northern Sweden, Sámi reindeer husbandry depends on large, connected, and seasonally variable grazing landscapes, while forestry planning is often organized through stand-based operations, production timelines, and fragmented ownership structures. Consultation (*samråd*) is intended to address interactions between forestry and reindeer husbandry, yet less attention has been paid to the preparatory planning procedures through which consultation cases are assembled, coordinated, and carried through forestry planning systems. This study examines how forestry representatives in Sweden organize consultation-related planning and what these practices reveal about the interpretation, translation, and use of reindeer husbandry knowledge within forest planning.

The study uses a qualitative research design based on eight semi-structured interviews with forestry and agency representatives involved in consultation preparation, planning, coordination, or advisory support, supplemented by document analysis. The thematic analysis examined planning routines, distributions of responsibility, use of GIS-based tools, interpretations of reindeer husbandry knowledge, and approaches to landscape-scale and cumulative impacts.

The findings show that consultation-related planning varied across institutional contexts, including centralized coordination, planner-led preparation, decentralized case-by-case preparation, and coordination- or support-based roles. Across these models, reindeer husbandry knowledge became most actionable when connected to mapped overlaps, repeated dialogue, field familiarity, previous agreements, or concrete operational adjustments. Broader concerns related to cumulative disturbance, seasonal grazing continuity, and landscape functionality were recognized but harder to retain within object-based forestry systems. The findings also show that maps and digital tools raise questions of knowledge control, while fragmented responsibility affects whether consultation outcomes are carried forward into operational planning.

By shifting attention from consultation as a formal meeting toward the planning procedures surrounding consultation, this study shows that the central challenge is not simply a lack of information, but how reindeer husbandry knowledge is translated, interpreted, governed, and acted upon within forestry systems. The findings suggest that improving consultation-related planning requires stronger procedural continuity, knowledge-accountable information-sharing, and mechanisms capable of addressing landscape-scale impacts before object-level forestry decisions become fixed.

Keywords: Landscape perspective, reindeer husbandry, forest landscape planning, Indigenous knowledge systems, Sámi knowledge, reindeer husbandry knowledge, Sámi consultation, forestry planning, landscape planning

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Abbreviations

Abbreviation	Description
SLU	Swedish University of Agricultural Sciences
FSC	Forest Stewardship Council
PEFC	Programme for the Endorsement of Forest Certification
OCAP	Ownership, Control, Access, and Possession
GIS	Geographic Information System

1. Introduction

Forestry and Sámi reindeer husbandry coexist across the same forested landscapes in northern Sweden. Reindeer husbandry depends on large, connected grazing areas and seasonal movement across extensive territories, with winter grazing resources being especially important within the forested part of the reindeer husbandry area (Harnesk et al., 2023; Horstkotte et al., 2023; Pape and Löffler, 2012). During winter, reindeer rely heavily on ground-growing and arboreal lichens, whose availability is shaped by forest structure, snow conditions, and the continuity of accessible grazing lands (Berg et al., 2008; Kivinen et al., 2010; Uboni et al., 2020). At the same time, no part of the reindeer husbandry area is reserved exclusively for reindeer husbandry; it is carried out alongside other land uses, including industrial forestry, across approximately half of Sweden's land base (Sandström, 2015; Sandström et al., 2023). Under the Swedish Reindeer Husbandry Act (SFS 1971:437), Sámi rights to use land and water for reindeer husbandry are based on immemorial use and exercised through consultation (Swedish: *samråd*), creating a long-standing situation of overlapping but asymmetrical land-use rights.

This overlap is not simply a matter of two sectors using the same land, but of two land uses organized through fundamentally different spatial and temporal planning logics. Swedish industrial forestry is planned through a hierarchical process linking strategic objectives, tactical harvest scheduling, and stand-level operational decisions, with forest stand databases, GIS systems, and mapped treatment units forming the central basis for planning and implementation (Ulvdal et al., 2023). Reindeer husbandry, by contrast, depends on mobility across a broader pastoral landscape that shifts seasonally and annually according to grazing conditions, snow, disturbance, and herd movement (Kivinen et al., 2010; Skarin and Åhman, 2014). As a result, the effects of forestry are not experienced by reindeer husbandry only at the level of individual cut blocks or roads. Rather, they accumulate over time through repeated harvesting, scarification, road construction, and other land-use changes that together alter lichen availability, forest structure, migration routes, and the spatial connectivity of grazing areas (Berg et al., 2008; Harnesk et al., 2023; Korosuo et al., 2014; Sandström et al., 2006; Uboni et al., 2020).

Research on reindeer disturbance further shows that impacts from human activity and infrastructure are often expressed across broader spatial and temporal scales than the immediate footprint of a single operation. Skarin and Åhman (2014) found that avoidance responses may occur several kilometres from infrastructure or human activity and that these effects become most visible when studied at regional and seasonal scales rather than only at local scales. Other studies similarly show that disturbance interacts with environmental and biotic

pressures, producing complex movement responses rather than simple isolated reactions to single developments (Valente et al., 2020). The planned consultation object in forestry, such as a felling site or road, does not necessarily correspond to the broader ecological scale at which reindeer husbandry experiences cumulative impact. This creates a mismatch between the operational scale at which forestry consultation is often organized and the landscape scale at which reindeer husbandry is affected, a relationship illustrated conceptually in Figure 5.

Consultation has become one of the main institutional mechanisms through which conflicts between forestry actors and affected Sámi reindeer herding communities¹ are addressed. Under Swedish forestry legislation and voluntary certification systems, forestry actors are expected to take reindeer husbandry into account and, in specified cases, provide affected reindeer herding communities with the opportunity for consultation before planned forestry measures are carried out (Forest Stewardship Council, 2023; SFS 1979:429). Yet previous research shows that consultation has not resolved the deeper tensions between the two land uses. Studies have repeatedly identified unequal influence, weak requirements, vague expectations, and asymmetrical authority over final land-use decisions, leaving reindeer husbandry with limited power to shape outcomes despite being formally included in dialogue (Roos et al., 2022; Sandström and Widmark, 2007; Widmark, 2006).

This creates an important unresolved issue. Existing scholarship has examined the ecological sensitivity of reindeer husbandry to cumulative land-use change, the historical asymmetries shaping forestry–reindeer husbandry relations, and the institutional limitations of consultation as a governance mechanism (Berg et al. 2008; Brännlund and Axelsson, 2011; Harnesk et al., 2023; Roos et al., 2022; Sandström et al., 2006; Widmark, 2006). It has also shown that meaningful land-use dialogue is often hindered by inadequate use of available knowledge and by planning systems that continue to treat forestry operations as discrete cases rather than components of broader cumulative landscape change (Sandström, 2015; Österlin and Raitio, 2020). However, scholarship has largely evaluated consultation as a formal governance arrangement, while the internal preparatory work through which forestry actors assemble, interpret, and define consultation cases before dialogue occurs has remained comparatively underexamined.

Focusing on consultation-related planning makes it possible to examine this underexplored procedural dimension of forestry–reindeer husbandry relations. Before consultation takes place, forestry representatives gather maps, review stands, assess planned measures, consult internal planning systems, document agreements, and determine how reindeer husbandry concerns are interpreted and carried forward. What becomes actionable within consultation is therefore already

¹ A Sámi reindeer herding community is both a geographical reindeer herding area and an administrative and financial organization for Sámi reindeer herding enterprises (Sandström, 2015).

shaped by organizational routines, planning tools, documentation systems, and prior interpretations of what counts as a manageable planning issue. This perspective reveals how landscape concerns, Sámi reindeer husbandry knowledge, and institutional responsibilities are translated into forms that can be recognized within the staged and GIS-mediated routines of forestry planning. In this study, a landscape perspective means examining the functionality of the reindeer grazing landscape beyond individual forestry objects, including cumulative impacts, spatial connectivity, seasonal grazing access, and interactions among multiple forest stands, ownerships, and land uses over time (Sandström et al., 2006; Kivinen et al., 2010; Österlin and Raitio, 2020; Horstkotte et al., 2023).

By examining consultation preparation as a practical planning process, this study can be useful for forestry organizations, forest planners, certification bodies, agencies, and others involved in forestry–reindeer husbandry consultation. The findings identify where reindeer husbandry concerns may be strengthened or weakened before, during, and after consultation, and therefore point to practical improvements in timing, documentation, responsibility, use of maps, and follow-through. The study also contributes to the wider field of forest landscape planning by showing how landscape-scale and Indigenous knowledge concerns are translated into operational planning systems, and where existing planning procedures limit their practical application.

This thesis examines how forestry representatives in Sweden prepare for consultation with Sámi reindeer husbandry. It focuses on the planning work through which forestry actors identify relevant areas, prepare consultation material, use maps and previous documentation, interpret reindeer husbandry knowledge, and carry consultation outcomes into later planning.

The study draws on qualitative interviews with forestry representatives involved in consultation processes and analyses how consultation preparation is organized across different forestry contexts. It asks how preparation shapes the way reindeer husbandry concerns become visible, legible, and actionable within forestry planning systems, with particular attention to responsibility, continuity, GIS-based tools, ownership structures, and landscape-scale concerns. By focusing on preparation rather than only the consultation meeting itself, the thesis contributes to research on forestry–reindeer husbandry relations by examining consultation as a planning process shaped by institutional routines, knowledge translation, and decision-making authority.

2. Background

2.1 Legal, historical, and ecological context of forestry-reindeer husbandry relations

The relationship between forestry and Sámi reindeer husbandry in northern Sweden is shaped by overlapping land-use rights, historical asymmetries, and different understandings of how forest landscapes should be used. Under the Swedish Reindeer Husbandry Act (SFS 1971:437) and the Forestry Act (SFS 1979:429), reindeer husbandry rights are based on immemorial use and are exercised through membership in a reindeer herding community. These rights include the use of land and water for grazing, migration, and associated herding activities across designated year-round and winter grazing areas. However, these rights do not entail exclusive control over land. Reindeer husbandry is therefore practiced across landscapes that are also owned, planned, and managed by other actors, including private forest owners, state actors, and large forest companies. The spatial overlap between reindeer husbandry and forest landscapes is shown in Figure 1. The figure locates reindeer herding pasturelands in Sweden and indicates forest land within the reindeer herding area, winter pasturelands, and general winter migration direction. This makes visible the broad geographic context in which forestry planning and reindeer husbandry consultation take place. The overlap is important because consultation does not occur in isolated forest stands alone, but within a wider landscape where reindeer herding communities depend on connected seasonal grazing areas, migration routes, and winter pasturelands.

This legal overlap is embedded in a longer history of Sámi land use, state regulation, colonization, and industrial resource development. Reindeer husbandry has developed through changing relations among Sámi communities, reindeer, land access, and competing resource uses, rather than as a static livelihood system (Bjørklund, 2013; Horstkotte et al., 2023; Pape and Löffler, 2012). Historical research shows that flexible access to pasture has long been a central adaptation strategy in Sámi reindeer management, while colonization, externally imposed regulation, and the strengthening of state and industrial authority over northern lands have constrained that flexibility (Brännlund and Axelsson, 2011). Forestry and reindeer husbandry have therefore developed as overlapping land uses under unequal ownership and usufructuary rights, with consultation emerging as one institutional attempt to manage unresolved conflict (Widmark, 2006).

A Reindeer herding areas in Sweden



Figure 1. Reindeer husbandry area and forest land in Sweden. Source: Harnesk et al. (2022).

The conflict is legal, historical, and ecological. Modern forestry has substantially altered the forest conditions on which winter grazing depends. Clearcutting, soil scarification, shortened rotations, denser young stands, and the loss of older lichen-rich forests have reduced the availability and accessibility of ground-growing and arboreal lichens, which are key winter forage resources for reindeer (Berg et al., 2008; Kivinen et al., 2010; Sandström et al., 2006; Uboni et al., 2020). These impacts are cumulative because individual forestry operations interact over time with roads, regeneration practices, changing forest age structures, climate-related snow conditions, and other land-use pressures (Harnesk et al., 2023; Österlin and Raitio, 2020). As a result, the effects of forestry on reindeer husbandry cannot be understood only through individual stands or single planned measures.

These changes are visible in selected historical indicators for northern Sweden where forest conditions relevant to reindeer winter grazing have declined over time (Figure 2). Harnesk (2022) reports declines in lichen-rich forest plots and older forest age classes, both of which are important for reindeer winter grazing resources. These indicators do not measure the full usefulness of forests for reindeer husbandry, but they illustrate how forestry-driven changes in lichen availability and forest age structure have reduced important winter grazing conditions.

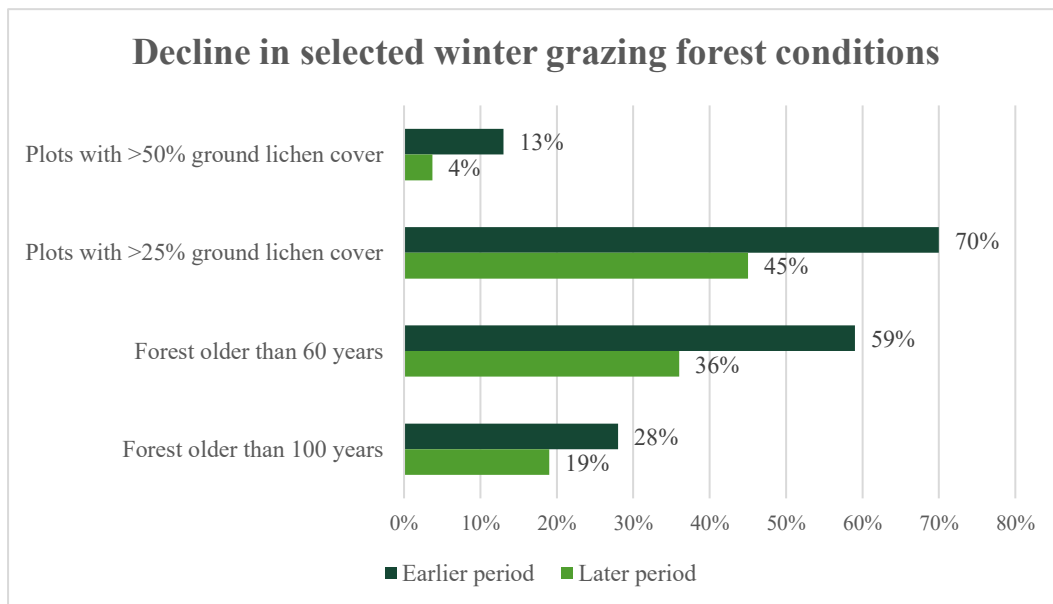


Figure 2. Decline in selected forest conditions relevant to reindeer winter grazing in northern Sweden. The figure compares historical and later indicators of lichen-rich forest plots and older forest age classes. Time periods differ by indicator: lichen cover values compare the 1950s/1980s with the 2010s, while forest age values compare 1955 with 2017. Author-created figure based on Harnesk (2022).

This historical decline helps explain why consultation over individual forestry measures is often connected to broader concerns about cumulative impacts, grazing continuity, and the remaining functionality of winter pasture landscapes.

2.2 Institutional context of consultation and forestry planning

Consultation preparation in Swedish forestry is shaped by overlapping institutional requirements, including the Swedish Forestry Act, the Reindeer Husbandry Act, and voluntary forest certification standards such as FSC and PEFC (SFS 1971:437; SFS 1979:429; FSC Sweden, 2020; PEFC Sweden, 2024). These frameworks do not place identical demands on all actors, and forestry

representatives are positioned differently depending on land ownership structure, certification status, organizational capacity, and decision-making authority.

Legal requirements establish a procedural baseline for consideration toward reindeer husbandry and consultation in specific forestry contexts, while FSC-certified forestry may involve broader expectations concerning early engagement, Indigenous rights, traditional knowledge, documentation, and landscape-oriented dialogue (FSC Sweden, 2020). PEFC standards also address consideration toward reindeer husbandry but are more commonly associated with family forestry and owner-based certification structures in Sweden (PEFC Sweden, 2024). These differences contribute to variation in how consultation preparation is organized and implemented across ownership contexts.

Consultation obligations and certification-based procedures are unevenly distributed across Swedish forest ownership structures even though consultation is often discussed as a central mechanism in forestry–reindeer husbandry relations. Swedish forestry is characterized by a large and fragmented private ownership structure. According to Skogsstyrelsen, individual owners owned 48% of declared productive forest land in 2024, and 308,565 forest owners were registered as natural persons. Although the average holding among natural-person forest owners was 34 ha, the median holding was only 11 ha, indicating that many owners hold small forest properties (Skogsstyrelsen, 2025). This ownership structure shows how smaller private owners often operate within decentralized governance arrangements where environmental and social considerations are addressed through voluntary responsibility, advisory systems, certification, or forest-owner associations rather than through uniform formal consultation procedures (Beland Lindahl et al., 2017; Danley, 2018).

This ownership pattern within and around the reindeer husbandry area creates different conditions for consultation preparation. State forest actors, including Sveaskog and Statens fastighetsverk, hold approximately 2.4 million ha of productive forest land within the reindeer husbandry area. Skogsstyrelsen (2023) also reports 10.8 million ha of forest land in the five counties overlapping the reindeer husbandry area, where four large private companies own 42% and approximately 84,000 individual forest owners own 58%. Figure 3 summarizes this ownership context and illustrates the mix of state forest actors, large private companies, and individual private forest owners relevant to forestry–reindeer husbandry consultation.

This mixed ownership structure is relevant because consultation responsibilities, planning authority, and capacity for landscape coordination vary across state, large-company, and small private ownership contexts. Large forest companies and state forest actors may have greater capacity to coordinate planning across broader areas and longer timeframes. Smaller ownership contexts by contrast may rely more heavily on stand-level planning, decentralized advisory

systems, and individual decision-making. As a result, forestry decisions affecting reindeer husbandry may be distributed across multiple ownerships, planning systems, and organizational routines rather than coordinated through a single landscape-level process (Widmark, 2006; Widmark and Sandström, 2012; Beland Lindahl et al., 2017).

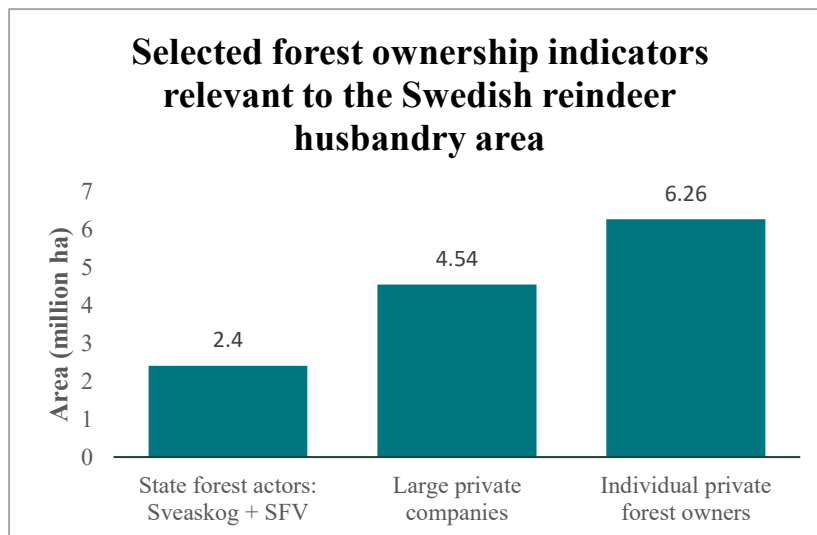


Figure 3. Selected forest ownership indicators relevant to forestry–reindeer husbandry consultation in the Swedish reindeer husbandry area. The state forest actor value shows productive forest land held by Sveaskog and Statens fastighetsverk within the reindeer husbandry area. The large private company and individual private forest owner values are calculated from Skogsstyrelsen’s reported shares of 10.8 million ha of forest land in the five counties overlapping the reindeer husbandry area. Author-created figure based on Skogsstyrelsen (2023).

Certification systems have also developed unevenly across ownership types. FSC has historically been more closely associated with larger industrial and public forest actors, while PEFC has been more strongly associated with small-scale private and family forestry contexts (Schlyter et al., 2009; Johansson and Lidestav, 2011). This means that substantial parts of reindeer winter grazing landscapes may fall outside more formalized consultation and certification frameworks, particularly where fragmented small-scale ownership is common.

These institutional differences matter because forestry actors do not prepare for consultation from identical organizational or regulatory positions. Consultation is embedded within existing forestry planning systems, organizational routines, and operational decision-making structures rather than occurring as a separate or neutral process.

Collaborative planning processes depend on institutional context, organizational routines, and established ways of working, not only formal policy goals (Healey, 2003; Calderon and Westin, 2021). Consultation preparation therefore operates within a wider institutional setting. Legal requirements,

certification obligations, ownership structures, planning authority, organizational routines, and organizational capacity shape how forestry actors identify, interpret, and act on reindeer husbandry concerns.

2.3 Forestry planning structures and landscape-scale mismatch

Forest planning is commonly organized across strategic, tactical, and operational levels. Strategic planning defines long-term objectives, production goals, and broad management priorities. Tactical planning translates these objectives into medium-term harvest priorities, planning areas, and resource allocation. Operational planning prepares specific stands, forestry measures, roads, field checks, and implementation schedules (Ulvdal et al., 2023).

Figure 4 illustrates this simplified planning chain and shows consultation as a procedural point within the movement from broader forest planning toward operational decisions. Consultation preparation occurs within forestry planning systems that are already structured around forest stands, mapped treatment units, harvest schedules, and organizational decision stages. Forestry actors may identify potential harvest objects, prepare maps, and screen proposed measures before consultation, but detailed operational planning and timing should follow the consideration of consultation outcomes.

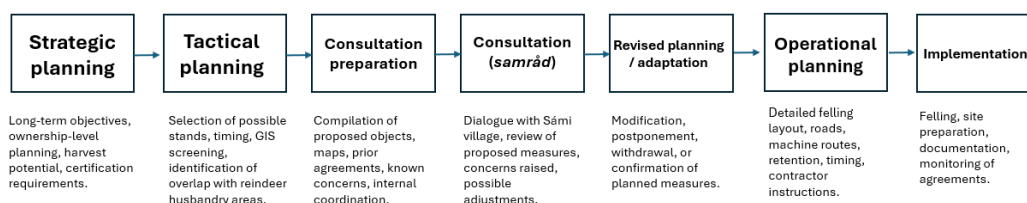


Figure 4. Forest planning process and the position of consultation within the planning chain. Adapted from Ulvdal et al. (2023). The sequence is simplified. In practice, stages may overlap or be repeated.

Forestry planning and reindeer husbandry operate through different spatial and temporal logics. Forestry planning commonly organizes the landscape through stands, compartments, ownership boundaries, and production schedules. Reindeer husbandry depends on seasonal grazing areas, migration routes, pasture continuity, snow conditions, and landscape relationships that extend across larger areas and longer time periods (Kivinen et al., 2010; Korosuo et al., 2014; Harnesk et al., 2023).

Previous research has identified this difference in scale as a central challenge in forestry–reindeer husbandry relations. Forestry decisions are often prepared through individual harvest objects, while reindeer husbandry concerns may relate to broader landscape patterns, cumulative effects on grazing resources, and animal

movement across ownership boundaries (Korosuo et al., 2014; Österlin and Raitio, 2020; Harnesk et al., 2023). Consultation preparation therefore often requires forestry actors to translate landscape-scale concerns into forestry planning categories and operational decisions.

The timing and structure of forestry planning provide an important context for consultation between forestry actors and reindeer herding communities. Early and continuous preparation can create more room for adjustment, while late or fragmented preparation can narrow the scope of consultation. Figure 5 illustrates the difference in planning scale between forestry operations and reindeer husbandry land use.

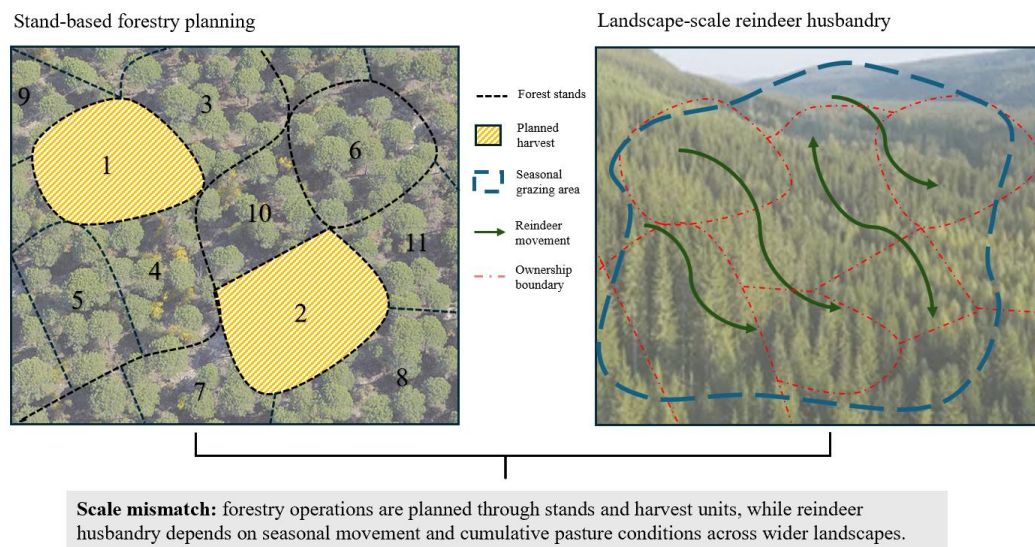


Figure 5. Conceptual illustration of the scale difference between forestry planning and reindeer husbandry land use. Forestry planning is commonly organized around stands, harvest units, and ownership boundaries, while reindeer husbandry depends on broader seasonal landscapes, migration routes, and cumulative pasture conditions. Figure created by the author, based on Kivinen et al. (2010), Österlin and Raitio (2020), Ulvdal et al. (2023), and Harnesk et al. (2023).

2.4 Consultation governance in Swedish forestry

Consultation has become one of the principal institutional mechanisms through which forestry actors and reindeer herding communities are expected to address forestry measures within reindeer grazing areas. Under the Swedish Forestry Act (SFS 1979:429), forestry actors are required to take reindeer husbandry into consideration in relevant forest management measures and, in specified cases, provide affected reindeer herding communities with the opportunity for consultation before felling or road construction. FSC certification adds another governance layer by requiring certificate holders to identify and uphold Indigenous Peoples' legal and customary rights, engage affected communities in management planning, recognize traditional knowledge, and consider

environmental and landscape values in forest management (Forest Stewardship Council, 2023; FSC Sweden, 2020).

Together these legal and certification frameworks position forestry actors within a formal governance environment in which Sámi engagement, reindeer husbandry consideration, and broader landscape planning are institutionally expected. However, research suggests that formal consultation procedures have not resolved the deeper tensions between forestry and reindeer husbandry. Widmark (2006) argues that consultation emerged as an institutional attempt to reduce land-use conflict, but that unresolved property and use-rights issues continue to complicate coexistence. Sandström and Widmark (2007) show that consultation procedures are shaped by uneven power relations, limiting their capacity to function as meaningful co-management. Roos et al. (2022) similarly argue that consultation has often functioned more as information exchange before decisions are made than as an effective arrangement for conflict mitigation.

The consultation process does not occur in a neutral institutional setting. Forestry actors prepare consultation cases within arrangements where they often hold greater control over planning timelines, technical information, and final operational decisions. Formal governance requirements may support landscape consideration and Sámi engagement in principle, but organizational routines, planning tools, and uneven authority shape how these concerns enter forestry practice.

2.5 Reindeer husbandry plans, RenGIS, and knowledge translation

Several planning tools have been developed in response to the challenges of coordinating forestry and reindeer husbandry, particularly the Reindeer Husbandry Plans (*Renbruksplaner*) and the associated GIS-based platform ReindeerGIS (*RenGIS*). These tools were developed in part to make reindeer husbandry knowledge more visible and usable in land-use dialogue. Earlier consultation settings often gave forestry actors access to maps, stand data, and planning information, while reindeer herders had to communicate their concerns verbally. Reindeer Husbandry Plans were therefore developed to create a more equivalent planning tool for reindeer husbandry and to support both operational herding needs and consultation with other land users (Sandström, 2015; Sandström et al., 2023).

RenGIS and Reindeer Husbandry Plans combine reindeer herders' mappings of seasonal grazing lands, field inventories, GPS data from reindeer, and other land-use information into a common platform for analysis and communication (Sandström, 2015; Sandström et al., 2023). Sandström (2015) presents this process as part of knowledge co-production and improved land-use dialogue rather than only as a technical mapping exercise. RenGIS is therefore not only a

tool for storing spatial information. It is also a mechanism through which reindeer husbandry knowledge can be translated into formats that are more legible within forestry planning and consultation systems.

Mapping tools do not automatically resolve the institutional and procedural barriers that shape consultation. Swedish forest governance increasingly refers to landscape connectivity, ecosystem services, adaptive management, dialogue, and consultation, but implementation remains constrained by conflicting goals, uneven authority, and weak mechanisms for balancing production, environmental, and Sámi land-use interests (Beland Lindahl et al., 2017). Winter pasture impacts are also shaped by compound pressures from climate change, forestry, and other encroachments, which means that effective planning must address interacting landscape conditions rather than isolated forestry measures (Harnesk et al., 2023). Participatory mapping may support this work, but only if it changes how power and knowledge are handled within consultation processes (Roos et al., 2022).

For this thesis, the key issue is not only whether tools such as RenGIS or Reindeer Husbandry Plans exist. The key issue is how forestry representatives use, interpret, and limit these tools during consultation preparation. Mapped information can make reindeer husbandry concerns more visible within forestry planning, but it does not automatically resolve questions of authority, interpretation, confidentiality, or operational follow-through.

2.6 Indigenous knowledge as an analytical concept

In this study, Indigenous knowledge refers to Sámi reindeer husbandry knowledge related to land use, seasonal grazing patterns, mobility, snow and pasture conditions, and landscape characteristics as these are recognized, interpreted, and engaged within forestry planning and consultation processes. It is understood as a place-based and experience-driven knowledge system embedded in long-term relationships with land, animals, livelihood, and cultural practice (Axelsson-Linkowski et al., 2020; Berkes 2012; Sara 2009; Turi 2016).

In the Swedish forestry context, however, such knowledge is not always explicitly labelled as Indigenous knowledge in practice. Forestry actors may instead refer to it as local, traditional, practical, or experience-based knowledge connected to reindeer herding. The term Indigenous knowledge is therefore used here as an analytical concept, while the study also examines how forestry representatives themselves understand, categorize, and describe this knowledge.

Importantly, Indigenous knowledge should not be treated as extractable data that can simply be inserted into dominant planning systems. Latulippe and Klenk (2020) caution that Indigenous knowledge is inseparable from Indigenous governance, land relations, and self-determination, while Ogar et al. (2020) argue that environmental science and management must engage Indigenous knowledge through rights-based and partnership-oriented approaches. This distinction is

important for the present thesis because the focus is not only whether forestry actors “use” reindeer husbandry knowledge, but how that knowledge is translated, constrained, or made legible within forestry planning routines before consultation occurs.

Together this literature shows that forestry–reindeer husbandry relations are shaped by overlapping rights, cumulative ecological impacts, fragmented planning processes, unequal consultation structures, and contested forms of knowledge translation. However, less attention has been given to the consultation-related planning procedures through which forestry actors assemble consultation cases and determine which landscape concerns, maps, and forms of reindeer husbandry knowledge become relevant within forestry planning. This thesis addresses that gap by examining consultation-related planning as a key site where Indigenous knowledge and landscape-scale considerations are interpreted, translated, and constrained within forestry planning practice.

3. Aim and research questions

This study examines the planning procedures through which forestry representatives in Sweden prepare for consultation with Sámi reindeer husbandry, and what these processes reveal about how reindeer husbandry knowledge enters, is translated within, and is constrained by forest planning practices.

3.1 Main research question

Through what planning procedures do forestry representatives in Sweden organize consultation with Sámi reindeer husbandry in practice, and what do these procedures reveal about how reindeer husbandry knowledge is interpreted, translated, and used within forest planning?

3.2 Sub-questions

1. How do forestry representatives identify and interpret reindeer husbandry knowledge as relevant to planning and consultation?
2. How do forestry actors understand and distribute responsibilities for reindeer husbandry consideration and consultation within consultation-related planning procedures?
3. How are GIS-based tools, reindeer husbandry plans, and digital consultation systems used to support the procedural organization of consultation cases?
4. What barriers and enabling factors shape whether landscape-scale and cumulative impacts on reindeer husbandry are recognized and acted upon within these planning procedures?

4. Conceptual framework

This study uses four concepts to analyse consultation preparation: Indigenous knowledge translation, knowledge authority, landscape governance, and procedural planning practice. These concepts frame consultation preparation as a procedural interface where forestry actors identify, represent, translate, and filter reindeer husbandry concerns through forestry planning systems.

The framework focuses on four analytical questions. First, how does reindeer husbandry knowledge become legible within forestry planning? Second, who has authority over how this knowledge is shared, interpreted, and used? Third, how do forestry actors handle landscape-scale and cumulative concerns within object-based planning routines? Fourth, how do organizational procedures shape what becomes actionable as consultation cases move through preparation, dialogue, documentation, and follow-through?

4.1 Indigenous knowledge, translation, and representation

Indigenous knowledge is understood in this thesis as a place-based, relational, and experience-driven knowledge system developed through long-term interactions among people, land, animals, ecological processes, and cultural practice (Berkes, 2012; Latulippe and Klenk, 2020). Applied to the context of Sámi reindeer husbandry, this includes knowledge of seasonal grazing patterns, mobility, snow and pasture conditions, animal behaviour, disturbance, and cumulative landscape change (Sara, 2009; Turi, 2016). Reindeer husbandry knowledge is therefore not easily reducible to static technical information. It includes identifiable grazing areas, migration routes, and crossing points, but also contextual understanding of flexibility, disturbance, snow conditions, cumulative forest change, and the shifting usability of pasture over time.

When reindeer husbandry knowledge enters forestry planning, it does not move into the system unchanged. It must become representable in forms that forestry actors can recognize, store, compare, and act upon. Tengö et al. (2014) caution that knowledge systems operate through different validation practices and representational forms, while Nadasdy (2003) argues that Indigenous knowledge commonly becomes translated into bureaucratically manageable categories when it enters formal resource management institutions. This process can also be understood as a question of institutional legibility, where complex land-based knowledge is translated into maps, planning objects, seasonal categories, consultation records, or operational instructions before it becomes visible and actionable within administrative systems (Scott, 1998).

However, this translation is not neutral. It may make certain concerns easier to communicate while narrowing others, particularly those related to uncertainty, cumulative effects, relational landscape use, or conditions that cannot be fully captured as fixed spatial data. Indigenous knowledge should therefore not be treated as extractable data that can simply be inserted into external planning systems, but as knowledge connected to governance, authority, relationships, and rights (Latulippe and Klenk, 2020; Ogar et al., 2020).

In this thesis, Indigenous knowledge is therefore treated not as a fixed body of information waiting to be included, but as knowledge that undergoes processes of translation, simplification, and representational narrowing as it becomes legible within forestry planning systems. This directs attention to how forestry representatives reformulate reindeer husbandry concerns into maps, object files, practical notes, seasonal markers, or operational guidance during consultation preparation.

4.2 Knowledge authority and Indigenous data sovereignty

The fact that reindeer husbandry knowledge must be translated into institutionally legible forms does not mean that such knowledge becomes neutral planning data. Questions of Indigenous knowledge integration are also questions of authority, governance, and control: who decides what knowledge is shared, what remains withheld, how information is represented, and how translated knowledge is subsequently interpreted within external management systems.

Information concerning Indigenous peoples, territories, lifeways, and resources cannot be treated as unrestricted institutional property, but is bound up with rights of ownership, access, interpretation, management, and future application (Kukutai and Taylor, 2016; Walter and Suina, 2019). Related principles such as OCAP similarly stress that Indigenous communities retain legitimate interests in how their knowledge is collected, circulated, stored, and used within external systems (First Nations Information Governance Centre, 2016). This is particularly relevant in planning contexts that increasingly rely on mapped spatial information and digital decision-support systems, where land-based knowledge may become detachable from the social relationships through which it is produced.

As Johnsen et al. (2024) note in relation to participatory mapping, meaningful inclusion requires that knowledge-holders retain influence not only over what is mapped, but also over the narrative, omissions, and representational choices embedded in the map itself. Research on long-term Indigenous–science partnerships further shows that willingness to share land-based knowledge depends heavily on trust, retained authority over interpretation and release, and confidence that knowledge will not simply be extracted into external management systems (Moller et al., 2009).

Midzain-Gobin's (2022) concept of legibility and misrecognition is useful here because it draws attention to how institutional data systems can make Indigenous lands and practices visible to governance while still misrecognizing the political relationships and lived realities that the data are meant to represent. In the context of this thesis, limited access to reindeer husbandry maps or selectively shared planning knowledge is therefore treated not simply as a technical information gap, but as an indicator that knowledge integration remains inseparable from questions of sovereignty, representation, and institutional control.

4.3 Landscape governance and planning scale

This study uses landscape governance to analyse how consultation preparation handles spatial scale, cumulative effects, and coordination across forestry objects. Reindeer husbandry depends on large, connected, and seasonally variable landscapes. Reindeer wellbeing is also closely linked to the integrity of boreal forest ecosystems, including pasture resources, migration pathways, and functional grazing areas (Harnesk et al., 2026; Horstkotte et al., 2022). Winter grazing access, movement flexibility, forest continuity, and responses to disturbance all depend on conditions beyond individual harvest objects.

Forestry planning commonly organizes decisions through bounded stands, ownership units, harvest targets, and operational timelines (Ulvdal et al., 2023). Forest companies may use detailed databases and strategic plans, but they can still finalize harvest-block decisions only months or weeks before implementation (Korosuo et al., 2014). Reindeer husbandry requires planning across seasonal grazing areas, movement routes, snow-dependent pasture conditions, and ownership boundaries (Korosuo et al., 2014). This difference creates a structural mismatch between forestry planning systems and the landscape-scale conditions required for reindeer husbandry.

In this thesis, landscape governance is used to examine whether broader landscape relationships remain visible as forestry actors move from general planning information to concrete consultation cases. This includes migration routes, neighbouring stands, previous harvests, ownership boundaries, seasonal grazing access, and cumulative disturbance. The analysis focuses on how these concerns are retained, translated, or narrowed during consultation preparation.

4.4 Procedural planning practice

Procedural planning practice focuses on how forestry actors organize consultation within everyday forestry work. This includes the routines, responsibilities, timelines, documentation systems, GIS interfaces, and decision pathways through which consultation cases are assembled before formal dialogue occurs.

Institutional expectations do not enter practice automatically. Requirements for Indigenous consideration, landscape adaptation, and conflict mitigation must pass through organizational procedures. Forestry organizations decide who selects consultation cases, who accesses reindeer husbandry information, who prepares planning material, what authority planners have to alter measures, how communication is documented, and when operational decisions become difficult to change.

Previous research shows that consultation between forestry and reindeer husbandry is shaped by interdependence, uneven influence, and persistent coordination challenges rather than functioning as a straightforward conflict-resolution mechanism (Widmark and Sandström, 2012; Roos et al., 2022). Procedural planning practice therefore helps identify where knowledge is maintained, narrowed, delayed, or lost as consultation cases move through forestry planning systems. It also supports analysis of barriers and enabling conditions as products of planning procedure and organizational structure rather than individual attitude alone.

4.5 Conceptual synthesis

Together, Indigenous knowledge translation, knowledge authority, landscape governance, and procedural planning practice frame consultation preparation as an interface between reindeer husbandry knowledge and forestry planning systems.

Indigenous knowledge translation directs attention to how forestry actors reformulate reindeer husbandry knowledge into maps, object notes, planning comments, and operational adaptations. Knowledge authority focuses on who controls what information is shared, how it is represented, and how forestry actors interpret it. Landscape governance identifies the scale mismatch between connected grazing landscapes and bounded forestry objects. Procedural planning practice focuses on the routines, timelines, responsibilities, and decision pathways that shape consultation before formal dialogue occurs.

This framework supports analysis of consultation preparation as a process where forestry actors make reindeer husbandry concerns legible, translate them into forestry-compatible forms, and constrain them through planning procedures. It provides the analytical basis for examining how forestry actors organize consultation internally, what forms of reindeer husbandry knowledge become actionable, and how planning structures shape the possibilities and limits of landscape-scale adaptation.

5. Methods

5.1 Research design

This study uses a qualitative research design based primarily on semi-structured interviews, supported by supplementary document analysis. The purpose of the methodology was to examine how forestry representatives in Sweden prepare for and conduct consultation with Sámi reindeer husbandry, with attention to how reindeer husbandry knowledge, planning tools, organizational routines, and landscape-scale considerations are understood and handled in practice.

A qualitative approach was selected because the study focuses on meanings, interpretations, professional routines, and institutional processes rather than statistical measurement. Qualitative research is well suited to examining how actors understand their own practices and how these practices are shaped by social and organizational context (Bryman, 2012; Creswell and Creswell, 2018). Semi-structured interviews were used because they allow participants to describe their experiences in depth while ensuring that the same core themes are addressed across interviews (Kvale and Brinkmann, 2009; Corbetta, 2003).

The conceptual framework informed the research design by guiding the development of interview themes and initial deductive and inductive coding categories.

The study focuses specifically on forestry and agency representatives because the research aim is to examine how consultation cases are prepared, interpreted, documented, and carried through forestry planning systems. Sámi reindeer herders were therefore not included as interview participants, not because their perspectives are peripheral, but because the study is delimited to the institutional practices through which forestry actors prepare, interpret, and structure consultation cases. This delimitation means that the findings cannot assess how reindeer herding communities experience consultation or whether they consider these processes meaningful, sufficient, or legitimate.

5.2 Sampling and recruitment

Participants were recruited through purposive sampling. This strategy was used to identify individuals with direct experience of forest planning, consultation preparation, advisory support, or organizational coordination related to forestry and reindeer husbandry. Purposive sampling was appropriate because the aim was not statistical representativeness, but analytical coverage of relevant institutional positions and professional roles (Bryman, 2012; Corbetta, 2003).

Snowball sampling was used to identify additional participants through referrals from interviewees, a strategy commonly used when relevant participants

occupy specialized or difficult-to-identify roles (Corbetta, 2003). This helped identify individuals occupying specialized roles that may not have been easily visible through public information alone.

The sample was designed to include variation across organizational contexts, including large forest companies, a forest owners' association, a state authority, and a public forest owner. Participants also differed in their degree of direct involvement in consultation, ranging from operational planning and preparation to advisory, coordination, and support roles.

The final sample consisted of eight (8) participants. The number of interviews was shaped by access, the project timeframe, and the extent to which the material provided sufficient coverage of relevant organizational roles and recurring themes. The aim was to develop analytical coverage of contrasting institutional positions involved in consultation preparation. Limitations related to sample size, participant selection, and regional coverage are discussed in Section 5.9.

5.3 Participants

The final sample included eight forestry and institutional representatives whose work was connected to forest planning, consultation preparation, advisory support, or coordination in relation to Sámi reindeer husbandry. The participants shared a common connection to consultation-related forestry planning but represented different organizational positions within that system. This included representatives from large forest companies, a forest owners' association, state forest management, a public agency, church forest ownership, and private-sector forest planning. The sample therefore captured variation in ownership context, certification setting, organizational capacity, and the degree to which consultation responsibilities were centralized within organizations or carried by individual planners.

Participants also differed in their proximity to consultation practice. Some were directly involved in preparing maps, selecting stands, communicating with reindeer herding communities, documenting outcomes, or carrying knowledge across planning stages. Others occupied advisory, support, or coordination roles, where they contributed to procedural guidance, organizational routines, or broader institutional interpretation rather than direct operational planning. This variation was analytically important because the study did not treat forestry actors as a single uniform group. Participants were understood as occupying different positions within the planning chain through which consultation cases are prepared, interpreted, documented, and carried forward.

Table 1 provides a more detailed overview of the participants, including their organization category, ownership or forestry context, role, geographic scope, planning or consultation authority, and institutional context. Participants were anonymized using letter codes A–H.

Table 1. Interview participants and institutional positioning.

Participant	Organization category	Ownership/forestry context	Position	Geographic scope	Planning/ consultation authority	Institutional context
A	Large forest company	State-owned industrial forestry owner	Consultation manager	Västerbotten	Direct coordination of consultation preparation and sameby contact	FSC
B	Forest owners' association	Member-owned association representing private small-scale forest owners	Consultation advisor	Jämtland	Advisory coordination; limited direct control over individual forest owner decisions	PEFC and Forestry Act
C	State-owned forest actor	State-owned public forest management organization	Forest planner	Jämtland	Direct planning and consultation preparation within managed estates	FSC
D	State authority	Public regulatory and advisory agency; not a forest-producing owner	Consultation advisory/support	Cross-regional	Advisory and procedural support; no direct operational decision authority	Legal/regulatory
E	Large forest company	State-owned industrial forest owner	Area manager	Västerbotten	Direct local planning decisions and operational adaptation	FSC
F	Large forest company	Private industrial forest owner	Forestry specialist/coordination	Jämtland	Internal support and coordination across districts	FSC
G	Church forest owner	Church-owned non-industrial forest management organization	Diocesan forestry ranger	Norrboten and Västerbotten	Direct coordination and relationship management across diocesan forests	FSC
H	Large forestry company	Private industrial forest owner	Forest planner	Primarily Jämtland; coastal properties	Direct operational planning and consultation preparation	FSC for certified properties

To situate the sample geographically, Figure 6 provides an overview of Sweden's counties (län). Participants referred primarily to forestry and consultation-related work in northern and central Swedish contexts, including Västerbottens län, Jämtlands län, Norrbottens län, and cross-regional advisory or coordination roles.

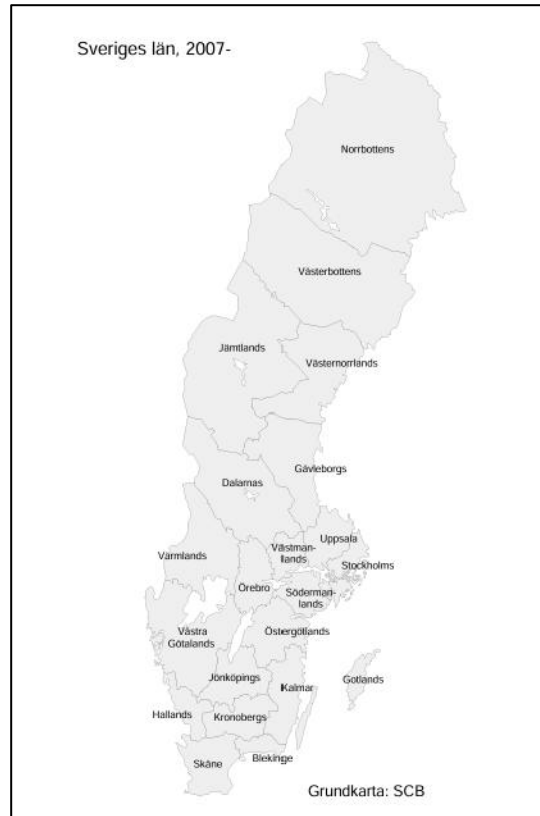


Figure 6. Overview map of Sweden's counties (län), provided as geographic context for the regions referred to by participants. Source: Statistics Sweden (SCB, 2007).

5.4 Data collection

Data were collected through semi-structured interviews with forestry and agency representatives involved in consultation preparation, forest planning, advisory work, or operational planning in relation to reindeer husbandry. Semi-structured interviews were used because they allow participants to describe their experiences in depth while ensuring that the same core themes are addressed across interviews (Kvale and Brinkmann, 2009; Corbetta, 2003). Interviews were conducted online using Microsoft Teams and lasted approximately 60 minutes.

An interview guide was developed based on the research questions, conceptual framework, and background literature. The guide included questions on participant role and organizational context, consultation preparation routines, use of maps and planning tools, understandings of reindeer husbandry knowledge,

responsibility and decision-making, landscape-scale and cumulative impact considerations, barriers, enabling conditions, and improvements. The same general interview guide (see *Appendix 1*) was used across interviews, but the order and wording of questions varied depending on the participant's role and responses. Follow-up questions were used to clarify terminology, ask for examples, and explore unexpected themes. This flexibility is central to semi-structured interviewing, where the researcher follows an interview outline while allowing participants to develop their own explanations and priorities (Kvale and Brinkmann, 2009; Corbetta, 2003).

Interviews were conducted in English. When participants used Swedish terms, such as *samråd*, *sameby*, *samrådsunderlag*, or forestry-specific terminology, these terms were retained where analytically relevant and clarified during transcription and analysis. Interviews were recorded with participant consent.

5.5 Use of supplementary documents

Publicly available legal, certification, and planning-tool documents were used to contextualize the study and inform the background, interview design, and interpretation of participant accounts. These included the Forestry Act (SFS 1979:429), the Reindeer Husbandry Act (SFS 1971:437), FSC standards (Forest Stewardship Council, 2023; FSC Sweden, 2020), and PEFC standards (PEFC Sweden, 2024), forestry guidance documents, and descriptions of relevant planning tools such as *Renbruksplan* and *RenGIS*.

These documents were not treated as a primary empirical dataset in the same way as the interview material. They were not systematically coded as independent data. Instead, they were used to clarify formal requirements, institutional terminology, and the broader governance context in which consultation preparation takes place.

5.6 Data management and transcription

Interviews conducted through Microsoft Teams were transcribed using the platform's automatic transcription function. After each interview, the transcript was downloaded and reviewed by the author. The transcripts were checked against the recording where needed and lightly edited to correct transcription errors, clarify Swedish forestry and consultation terminology, and improve accuracy without altering participants' meaning.

Several interviews included Swedish terms or mixed English-Swedish expressions, so attention was given to correcting terminology related to forestry planning, consultations, reindeer husbandry, and institutional roles. Participant names and identifying details were anonymized. Each participant was assigned a letter code from A to H. Role descriptions were generalized where necessary to

reduce the risk of identification, particularly because consultation work takes place within relatively small professional networks.

Interview files, transcripts, notes, and documents were stored securely and organized by participant code. Analytical notes were kept throughout the research process to record emerging interpretations, uncertainties, and cross-case comparisons.

5.7 Data analysis

The interview material was analysed through thematic analysis using both deductive and inductive coding (see *Appendix 2*), allowing the analysis to be guided by the research questions and conceptual framework while remaining open to themes emerging from the data (Bryman, 2012; Creswell and Creswell, 2018). Deductive coding was informed by the research questions, interview guide, and conceptual framework. Initial codes included consultation preparation, planning tools, responsibility, reindeer husbandry knowledge, landscape-scale considerations, cumulative impacts, institutional constraints, and organizational routines.

Inductive coding was then used to identify themes that emerged from the interview material itself. This allowed unexpected issues, tensions, and participant-specific perspectives to be incorporated into the analysis rather than forcing all material into pre-existing categories. Coding was iterative: transcripts were read multiple times, codes were refined, and related codes were grouped into broader themes.

The analysis proceeded through the following steps:

1. Each transcript was read in full to develop familiarity with the participant's role, organizational context, and main points.
2. Initial deductive codes were applied based on the research questions and conceptual framework.
3. Additional inductive codes were added where participants raised new or unexpected issues.
4. Codes were compared across participants to identify recurring patterns and important differences.
5. Codes were grouped into broader themes related to models of consultation preparation, responsibility and continuity, knowledge use, mapping and planning tools, landscape-scale concerns, and barriers or enabling conditions.
6. Quotations were selected to illustrate recurring themes, clarify institutional variation, and show tensions or contrasting perspectives.

Cross-case comparison was central to the analysis. Participants were not treated as interchangeable representatives of a single forestry perspective. Instead, their accounts were interpreted in relation to their organizational role, institutional context, geographic scope, ownership context, and degree of decision-making authority.

5.8 Ethical considerations

Participation in the study was voluntary. Participants received information about the purpose of the research, what participation involved, how interview material would be used, and their right to withdraw. Written informed consent was obtained before data collection.

Participants were asked for consent to record the interview and to use anonymized quotations in the thesis. They were informed that identifying details would be removed or generalized where necessary. Because the professional field is relatively small, confidentiality was treated as an ongoing concern throughout transcription, analysis, and writing.

Before final submission, participants were offered the opportunity to review thesis sections where their interview material is used, especially direct quotations and role descriptions. This review is intended to support accuracy, confidentiality, and contextual fairness. It does not give participants control over the analytical conclusions of the thesis.

The study also required reflexivity because the researcher is a non-Indigenous researcher examining how forestry actors describe Sámi reindeer husbandry knowledge and consultation. The research does not claim to represent Sámi perspectives directly. The analysis is limited to how forestry and agency representatives describe, interpret, and operationalize reindeer husbandry-related knowledge within consultation preparation.

5.9 Scope and limitations

This study examines contemporary consultation preparation within selected forestry and agency contexts in Sweden. The empirical material includes participants working primarily in Västerbotten, Jämtland, Norrbotten, and broader cross-regional advisory or forest-owner contexts connected to the Swedish reindeer husbandry area.

The study focuses on forestry and agency representatives. It does not include interviews with Sámi reindeer herders. The findings therefore show how forestry and agency actors describe consultation preparation, but they cannot assess how reindeer herding communities experience consultation, evaluate its legitimacy, or judge whether existing procedures are sufficient.

The study does not conduct technical GIS analysis, assess ecological impacts directly, or model future forest planning scenarios. Instead, it examines how knowledge translation, planning scale, and institutional responsibility shape what becomes relevant, feasible, and actionable during consultation preparation.

5.10 Methodological limitations

Several methodological limitations should be acknowledged.

First, the study is based on a small qualitative sample and cannot be interpreted as statistically representative of all forestry consultation practices in Sweden. Participants were selected to provide variation across organization type, ownership context, geographic scope, and consultation role. However, the sample does not cover all forest ownership categories, all regional consultation arrangements, or all institutional positions involved in consultation. The findings should therefore be understood as an analytical examination of selected forestry and agency perspectives rather than a sector-wide account.

Second, the geographic coverage remains partial. Consultation arrangements differ across Sweden depending on ownership structure, certification status, local reindeer herding community relations, and regional historical agreements. The study includes participants connected to several northern and cross-regional contexts, but it cannot capture all regional variation.

Third, the study relies on interview accounts rather than direct observation. Participants described routines, constraints, and interpretations from their professional positions, but the study did not observe consultation meetings, internal planning sessions, GIS workflows, or field implementation. The findings therefore reflect reported practice and institutional interpretation rather than direct behavioural verification.

Finally, consultation work occurs within relatively small professional networks. Some role descriptions and contextual details were therefore generalized to protect confidentiality. This anonymization was necessary for ethical reasons, but it limits how explicitly some institutional details can be discussed.

Despite these limitations, the study provides analytical depth by comparing participants across contrasting institutional positions and by focusing on the underexamined preparatory stages of consultation. Appendix 2 presents the coding framework used in the analysis.

6. Results

This section presents findings from eight (8) semi-structured interviews with forestry and agency representatives involved in consultation-related planning, preparation, coordination, and advisory work connected to Sámi reindeer husbandry. The study includes forestry and agency representatives, so the findings describe consultation preparation as understood from these institutional positions.

Across the interviews, consultation emerged not as a single meeting or isolated procedural requirement, but as a broader planning process through which reindeer husbandry concerns were identified, interpreted, translated, documented, negotiated, and carried through forestry planning systems. Participants described multiple organizational approaches to preparing and managing consultation cases, varying according to ownership structure, certification context, planning authority, and organizational role.

The findings are organized around four themes: (1) the early planning procedures through which consultation was organized, (2) how responsibility and continuity were distributed within these procedures, (3) how reindeer husbandry knowledge became actionable during preparation, and (4) how landscape-scale and cumulative concerns were recognized yet unevenly operationalized in planning practice.

6.1 Planning procedures varied by institutional form

Participants described several distinct institutional forms through which consultation cases were identified, assembled, shared, discussed, and carried forward. These differences were shaped by ownership structure, certification context, organizational role, and the point at which reindeer husbandry concerns entered the broader planning chain. Table 2 summarizes the main models of consultation preparation identified across the sample.

Table 2. Comparative summary of consultation preparation models identified across the interview sample.

Model of Preparation	Main Characteristic	Participants	Key Strength	Key Limitation
Centralized consultation coordination	Preparation is handled by designated consultation staff or a specialized internal function using maps, records, planning systems, and internal coordination.	Large forest companies, especially A and F.	Clearer responsibility and more consistent documentation across cases.	May become separated from field-level site knowledge or implementation.
Planner-led and field-based preparation	Individual planners select stands, prepare maps, assess planned measures, communicate with reindeer herding communities, and draw on site knowledge.	State forest management and private-sector planning, especially C and H.	Strong connection between local knowledge, planning decisions, and practical adaptation.	Depends heavily on individual experience, discretion, and continuity.
Decentralized and case-by-case preparation	Preparation is less centralized and often linked to individual forest owners, notifications, or advisory support.	Forest owners' association and small-scale private forestry context, especially B.	Reflects the fragmented ownership structure of private forestry.	Limited coordination and weaker capacity to address cumulative landscape effects.
Coordination- and support-based preparation	Actor provides guidance, interpretation, or procedural support rather than directly preparing or implementing forestry measures.	Public agency or regulatory/advisory roles, especially D.	Helps clarify legal expectations and consultation procedures.	Limited authority over how concerns are carried into forestry planning or implementation.

6.1.1 Centralized consultation coordination

The large-company consultation manager (Participant A) described the most formalized model. In this case, consultation preparation was organized as a recurring annual process involving a dedicated consultation team, yearly contact with multiple reindeer herding communities, advance publication of planning material, and object-by-object review through a shared digital platform. In this model, forestry material was finalized and published in December or January, after which the company contacted reindeer herding communities to arrange consultation meetings. Consultation therefore took place after advance review of the material, as part of a recurring annual process rather than as an ad hoc response to individual operations.

The large-company consultation manager (Participant A) described this process as follows:

“Our material for this year was finished in December, January, and then I invited every Sámi village and told them that I have published all the material. And I called the Sámi villages and talked to them and asked them when do you think you will have [meetings] this year?”

In this model, preparation extended beyond final felling proposals alone and included thinning, site preparation, road building, burning, fertilization, and tree species choices. Meetings also began with a recap of previous discussions before moving into the current year’s objects. The large-company consultation manager (Participant A) emphasized that this represented a shift from temporary note-based communication toward a more systematic planning process in which requests could be formally registered and tracked over time.

6.1.2 Planner-led and field-based preparation

A second model of preparation was planner-led and field-based, described most clearly by the state forestry planner (Participant C), and reflected in the work of the private-sector forest planner (Participant H). In these cases, consultation preparation depended less on a centralized consultation function and more on the continuity, discretion, and site knowledge of individual planners. Planners were directly involved in identifying proposed forestry objects, preparing consultation material, assessing site conditions, communicating with reindeer herding community representatives, and ensuring that consultation outcomes were reflected in later planning documents, maps, or operational instructions.

For Participant C, preparation involved selecting relevant compartments, preparing maps, deciding what information should be shared, sending

documentation in advance, and drawing on personal familiarity with the sites during consultation. This meant that consultation preparation was closely connected to operational planning rather than being handled as a separate administrative task. The planner's knowledge of forest conditions, planned treatments, and previous contact with reindeer herding communities formed part of the material basis for consultation.

A similar structure was described by the private-sector forest planner (Participant H), who worked across multiple properties on behalf of external landowners. In this case, preparation began with identifying stands for potential harvest, preparing maps and stand lists, and sending materials in advance, followed by stand-by-stand discussion with reindeer herding community representatives. Unlike large-company coordination models, preparation remained closely tied to the planner's own knowledge of the property and their ability to negotiate operational adjustments directly. Participant H described consultation as involving review of "every single stand" together and reaching agreements through discussion, including postponing harvest, modifying treatments, or leaving lichen-rich trees.

Preparation in this model therefore depended on assembling formal consultation material and knowing the proposed forestry measures well enough to discuss them credibly. Field familiarity was especially important when discussing forest conditions such as lichen, blueberry cover, stand age, or likely reindeer-use values. Compared with centralized coordination models, planner-led preparation created a closer link between consultation, site knowledge, and practical adaptation, but also relied heavily on individual continuity and professional judgement.

6.1.3 Decentralized and case-by-case preparation

A third model was decentralized and case-by-case preparation, described most clearly by the forest owners' association representative (Participant B). This model differed from the larger FSC-linked company contexts because the organization did not own the forest land directly. Instead, it provided forestry advice and planning support to many individual private forest owners, often with relatively small and spatially dispersed holdings. Consultation-related work was therefore tied to specific proposed measures on individual properties rather than to a single company's long-term estate-level planning.

Participant B clarified that consultation was generally handled by staff who worked with members and contracts and who contacted the relevant reindeer herding community when consultation was requested. Participant B's own role was advisory and coordinative. They supported colleagues, helped gather experience within the organization, contributed to internal learning, and advised staff when questions arose about consultation. The forest owners' association

could therefore act as an intermediary between individual forest owners and reindeer herding communities, but final decision-making authority remained with the individual private forest owner.

Participant B explained that many members owned small forest areas and did not have the same planning capacity, certification obligations, or long-term consultation routines as larger FSC-certified actors. Consultation experience was also distributed across many staff members, each of whom encountered consultation only infrequently. As a result, consultation preparation was less centralized, less routine for individual staff, and less connected to multi-year landscape planning.

Consultation preparation often focused on a specific proposed measure on an individual property. Reindeer husbandry concerns were more likely to enter through response to a concrete notification or proposal than through early co-planning. Participant B described the process as follows:

“Often [a] text is enough, or we don’t hear from them at all. And sometimes you get a phone call and that phone call is the whole consultation. You talk about this and you see that you can change this detail and make it much better. And that’s all really. And sometimes you go out in the forest and look together and talk about the details.”

This account shows that consultation in this context varied by case. Some cases involved no response, some were handled through a short phone call, and others involved field visits and practical adjustment. Compared with formalized annual processes in larger company contexts, consultation preparation in the forest owners’ association context was more response-oriented and less likely to involve early landscape-level discussion. Participant B directly contrasted this with larger FSC-certified companies that may discuss future activity in an area five to seven years ahead, noting that “that’s not at all the case for us.”

This model also limited landscape-scale coordination. The association representative worked across many separate owners and properties, while final decision-making authority remained with individual landowners. Participant B emphasized that landscape perspective was important but difficult to act on because the association could not simply tell one private owner to postpone harvesting for ten years to coordinate with another owner’s activity.

This model should not be interpreted as consultation being absent or meaningless. Participant B described cases where minor changes improved proposed measures and where field discussion helped resolve practical details. However, the process was more case-by-case and response-oriented than the formalized FSC-linked company models. The forest owners’ association case illustrates how consultation preparation can become fragmented in small-scale private forestry: individual cases may be adjusted, but broader cumulative

landscape effects are harder to coordinate across many separate owners, parcels, and planning timelines.

6.1.4 Coordination- and support-based preparation

A fourth model was coordination- or support-based preparation. This was a related set of roles in which participants helped consultation function across multiple actors, districts, or cases. The agency support representative (Participant D), the large-company coordination representative (Participant F), the large-company area manager (Participant E), and the church forestry representative (Participant G) all described forms of preparation that included coordination, advice, documentation, or internal support alongside direct planning work.

The large-company coordination representative (Participant F) described their role as “holding everybody together” and helping forest managers “conduct a good material.” Similarly, the church forestry representative (Participant G) described helping forest managers arrange meetings, call reindeer herding communities, structure agendas, take notes, and make consultation workable across dispersed forest holdings. These accounts show that consultation preparation was not always located in one planner’s work but could depend on intermediate actors who carried procedural knowledge and helped translate consultation expectations into everyday forestry routines.

Together these procedural forms differed not only administratively but in how early reindeer husbandry concerns entered planning and how much flexibility remained for adaptation before forestry actions were fixed. More proactive and structured models created greater room for adjustment, while more reactive models positioned consultation closer to response than to early co-planning. These differences also shaped how responsibility for consultation outcomes was carried through the planning chain.

6.2 Responsibility and continuity shaped whether concerns carried through

Beyond differences in procedural form, participants also differed in how responsibility for reindeer husbandry consideration was distributed across the planning chain. In this study, continuity refers to situations where the same actor, role, or documentation system connects preparation, consultation, documentation, planning revision, and operational follow-through. The opposite is fragmented responsibility, where these stages are divided across different staff, landowners, advisors, systems, or decision points. In more continuous arrangements, the person who understood the reasoning behind consultation outcomes could also carry that understanding into later planning decisions. In more fragmented arrangements, concerns had to be transferred through notes, protocols, GIS

markings, or later interpretation, increasing the risk that they would be simplified, partially applied, or lost.

6.2.1 Concentrated end-to-end responsibility

In the strongest examples of continuity, one actor remained involved across the main stages of the consultation process. In this study, this is understood as end-to-end planning responsibility: the same person or role was involved in selecting proposed forestry objects, preparing consultation material, discussing those objects with reindeer herding community representatives, documenting outcomes, and ensuring that agreed considerations were translated into the planning documents, maps, or instructions used before field operations.

This was described most clearly by the state forestry planner (Participant C), who linked responsibility for preparation directly to later planning follow-through. The participant selected the relevant compartments, prepared consultation maps, communicated directly with reindeer herding communities, visited sites personally, documented responses, and remained responsible for carrying agreed considerations into operational planning. As they explained:

“I do all of the steps. I decide what compartments or forest areas in a smaller scale that I want to discuss with them... I prepare the maps, what information I want to share with them, and the whole process.”

The significance of this arrangement was that the same person who selected and prepared the objects also understood the reasoning behind the consultation discussion and could carry that understanding into later planning decisions. Consultation outcomes were therefore less dependent on being transferred only through written notes or interpreted by someone unfamiliar with the discussion.

A similar form of continuity appeared in the work of the large-company area manager (Participant E), who described being responsible for assembling yearly material, conducting repeated meetings with reindeer herding communities, and making many of the planning decisions personally. A comparable form of end-to-end responsibility was also present in the work of the private-sector forest planner (Participant H), who identified harvest areas, prepared consultation material, conducted consultation, documented agreements, and remained involved in later operational preparation. In these cases, agreed adaptations such as retaining trees, adjusting treatments, or postponing harvest could be carried forward by someone who had participated directly in the consultation discussion.

Continuity was therefore not only a matter of who attended the consultation meeting. It also depended on whether the person or role involved in consultation had enough connection to later planning and operational preparation to ensure that agreed considerations remained visible, specific, and actionable after the meeting.

6.2.2 Distributed and fragmented responsibility

Other participants described settings where consultation-related responsibility was more distributed. In this study, fragmented responsibility refers to situations where advisory responsibility, ownership authority, documentation, and operational preparation were not held together within one continuous role or planning system.

This was most evident in the forest owners' association context described by Participant B. Unlike large forest-owning companies, the association did not own the forest land directly and instead supported many individual member forest owners. Participant B also described the organization was PEFC-certified rather than FSC-certified and explained that its members often owned relatively small forest areas. In this context, consultation-related work was distributed across many local staff members who worked with members and contracts, while final decisions remained tied to individual forest owners.

This created a different kind of fragmentation from a large-company setting. The issue was not that consultation was absent, but that consultation knowledge and experience was dispersed across the organization. Participant B explained that many staff members might be involved in these cases, but that each person encountered consultation only infrequently. This made consultation less centralized and less connected to repeated procedural experience. Participant B also described documentation as a weakness, noting that the organization lacked a strong shared system for uploading consultation documents or tracking who had previously consulted with reindeer herding communities. As a result, previous contacts, agreements, and experience were harder to carry across staff and cases.

Fragmented responsibility also appeared in the agency support role described by Participant D, but in a different form. Participant D's role was centred on legal interpretation, procedural guidance, map review, and sometimes protocol-writing, rather than direct responsibility for forestry planning or operational preparation. The agency could clarify requirements, advise actors, or ask forest owners to offer consultation when required, but it did not normally control the forest owner's planning chain. The agency could support the consultation process without holding authority over whether and how agreed considerations were translated into later forestry plans, maps, or operational instructions.

In these more distributed settings, reindeer husbandry concerns became more dependent on written protocols, emails, maps, GIS markings, staff memory, and later interpretation. Where the same person or system did not connect consultation discussion to operational planning, agreed considerations were more likely to be simplified, partially applied, or weakened as they moved into later preparation.

This issue was not limited to small-owner or agency contexts. The large-company consultation manager (Participant A) also described the importance of assigning clear internal responsibility for carrying consultation outcomes forward.

Reflecting on earlier, less systematic practices, Participant A explained that in previous years “you wrote it down on a note. And then when the consultation is over, the note is gone.” This suggests that even in larger organizations, continuity depended on whether consultation outcomes were linked to clear responsibility and documentation systems instead of remaining as informal or temporary notes.

6.2.3 Continuity, trust, and organizational memory

The contrast between Participants B and H shows that private-owner contexts did not produce one uniform consultation model. Participant B’s forest owners’ association context was characterized by many small private owners, PEFC rather than FSC certification, distributed advisory roles, infrequent consultation experience among individual staff, and limited capacity for long-term landscape planning. By contrast, Participant H worked in an FSC-certified external-property management context where one planner prepared the material, conducted consultation, documented outcomes, and carried agreements into operational planning. The result is therefore not simply that small-scale or private ownership fragments consultation, but that continuity depends on whether responsibility, documentation, and authority to translate consultation outcomes into operational planning remained connected across the planning chain.

Across both concentrated and distributed responsibility models, continuity emerged as a central enabling condition. Several participants stressed that repeated engagement with the same reindeer herding communities made future preparation easier because forestry actors no longer had to begin each consultation case from zero. Previous agreements, known crossing areas, repeatedly sensitive sites, and informal understandings could be carried forward into new planning cycles if the same actors remained involved.

The large-company coordination representative (Participant F) linked this issue directly to staff turnover:

“The Sámi people... are the same every year and we are shifting people... [so we] have to take the history again and again and again. And I think that’s something that we have to work with.”

This illustrates that continuity problems repeatedly shifted the burden of historical explanation and place-specific context back onto reindeer herding community representatives. Similar emphasis on continuity appeared in the account of the church forestry representative (Participant G), who described how long-term familiarity made it easier to understand what had been previously discussed, what concerns were likely to reappear, and which adaptations had already been attempted.

Responsibility therefore functioned not only as a formal obligation to conduct consultation, but as a practical pathway through which reindeer husbandry

concerns either remained connected through planning or weakened between stages.

6.3 Reindeer husbandry knowledge became actionable through maps, dialogue, and field-based translation

A third finding concerned what forestry representatives understood as relevant reindeer husbandry knowledge and how that knowledge entered consultation preparation. Across the interviews, participants did not refer to one singular category of information. They described a combination of mapped seasonal use areas, migration routes, known grazing locations, previous agreements, field observations, direct comments from reindeer herding community representatives, and gradually accumulated place-specific familiarity developed through repeated consultation over time.

This section examines how such knowledge became usable within forestry planning. The findings show that reindeer husbandry knowledge became most actionable when it could be connected to spatially visible areas, discussed through repeated dialogue, and translated into planning-relevant adjustments such as modified harvest timing, retained trees, altered treatment choices, or protection of movement corridors.

6.3.1 Mapped and spatially visible knowledge

The most immediately actionable forms of reindeer husbandry knowledge were those that could be spatially identified and connected to concrete forestry objects. Participants repeatedly referred to migration corridors, key winter grazing areas, calving zones, crossing points, hanging lichen forests, and historically sensitive locations as examples of information that could directly shape object review. Participants described a clearer ability to anticipate possible concerns before entering consultation when these areas were visible through GIS layers, previous documentation, or earlier consultation records.

This was evident in the formalized settings described by the large-company consultation manager (Participant A), the large-company area manager (Participant E), and the church forestry representative (Participant G), where map overlays and previously documented concern areas allowed planners to identify likely discussion points before the meeting.

However, participants also described limits to the availability of mapped reindeer husbandry knowledge in forestry preparation. Several participants noted that they did not have access to RenGIS, Renbruksplan, or other reindeer herding community mapping systems, or that such maps were not consistently shared or up to date. While this was often described by forestry representatives as a

constraint on advance preparation, participants also recognized that these maps belonged to reindeer herding communities and were not open planning data. This meant that mapped knowledge could support preparation where available, but much reindeer husbandry knowledge still entered consultation through dialogue, explanation, and case-specific discussion.

6.3.2 Dialogue- and experience-based knowledge

Participants also emphasized that mapped information alone was not sufficient. Several noted that reindeer husbandry use is dynamic, seasonal, and dependent on snow conditions, herd movement, disturbance, and changing yearly context. A map could indicate where concerns might exist but could not fully explain how or why a particular area mattered in a given year.

For this reason, repeated dialogue with the same reindeer herding community was described as an equally important source of knowledge. Through recurring conversations, forestry representatives gradually learned which places repeatedly generated concern, which forestry measures were more negotiable, and which forest conditions mattered beyond what was immediately visible in digital layers.

The large-company area manager (Participant E) described this learning process based on listening, curiosity, and direct time spent with reindeer herding community representatives:

“You have to just be out with them and listen to what they say and be curious and ask them questions... I have been out with some groups when they move their reindeers... I try to be out and be open to learn more.”

The large-company area manager (Participant E) further noted that reindeer herding community representatives often “know more about the land than I do,” even if forestry staff know more about forestry operations.

This reliance on dialogue was particularly visible in the private-sector planning context described by Participant H. In this case, limited access to shared reindeer husbandry mapping systems meant that some information about seasonal use, movement patterns, and site-specific concerns became clearer during consultation discussion. The planner did not rely only on prior mapped data. They described asking reindeer herding community representatives how the area was used and then worked through the proposed stands in dialogue with them. This made consultation an important site of learning. It also showed how preparation could be constrained when relevant reindeer husbandry knowledge was not available to the planner in advance.

6.3.3 Translation into planning-relevant adjustments

These accounts show that reindeer husbandry knowledge did not enter forestry planning as neutral information that could simply be inserted into existing plans. It became actionable when translated into specific planning adjustments, such as avoiding crossing points, retaining corridors, delaying operations, modifying treatments, protecting lichen-rich trees, or reconsidering the size and concentration of nearby harvest areas.

This translation was shaped by prior preparation and consultation dialogue. The state forestry planner (Participant C) described using previous consultation notes and site familiarity to anticipate which proposed compartments were likely to raise concern before the meeting. Similarly, the large-company area manager (Participant E) explained that repeated learning about how each reindeer herding community used the landscape helped them choose forestry objects that were more likely to be workable in consultation.

GIS-based systems supported this process by improving spatial overview, documenting previous concerns, and connecting known reindeer husbandry areas to planned forestry operations. However, participants also indicated that maps did not remove the need for judgement. Spatial data could show where overlap occurred, but it could not fully explain the severity of a concern, its relationship to conditions elsewhere in the grazing landscape, or which adaptation would be meaningful from the reindeer herding community perspective.

Overall, the findings show that reindeer husbandry knowledge became actionable through a combination of spatial visibility, dialogue, field familiarity, and translation into operational choices. Mapped areas, previous consultation notes, direct comments from reindeer herding community representatives, and accumulated site familiarity did not influence planning automatically. They became usable when planners connected them to specific forestry objects and translated them into operational choices that could be documented, adjusted, and followed through within forestry planning systems.

6.4 Landscape-scale concerns were recognized but unevenly operationalized

A fourth major finding concerned how participants understood broader landscape perspective and cumulative impacts in relation to consultation preparation. Several forestry representatives acknowledged that reindeer husbandry concerns extend beyond the boundaries of any single harvest stand. Participants referred to migration continuity, disturbance concentration, surrounding ownership patterns, road networks, sequential harvesting, and the cumulative reduction of available lichen-bearing forest as examples of issues that could not be meaningfully understood through one object in isolation.

6.4.1 Recognition of cumulative and connected impacts

Participants from company and agency contexts described reindeer husbandry concerns as spatially interconnected. The agency support representative (Participant D) emphasized that reindeer herding community concerns often reflected the accumulated effects of many activities rather than only the notified object currently under review. Similarly, the church forestry representative (Participant G) and the large-company consultation manager (Participant A) described recurring discussions in which one forestry object could not be understood without reference to what had already happened nearby or what neighbouring landowners were doing.

The large-company area manager (Participant E) also explicitly described trying to plan beyond one stand at a time:

"I try to have like a landscape perspective... if we have a lot of harvest areas here, I don't want us to harvest more, not now... I take big parts and chunk them up to small parts and make a really good plan... we're not gonna take a really, really big part and make like a big hole in the area."

The private forest planner (Participant H) also described using a landscape perspective as a basis for negotiation, particularly by avoiding concentrations of young forest or maintaining movement corridors across properties. However, these considerations were typically applied through stand-by-stand adjustments rather than through coordinated landscape-level planning, reflecting similar constraints to those identified in other cases.

6.4.2 Stand-based planning routines limited procedural action

Recognizing landscape-scale concerns did not necessarily mean that participants had procedures for acting on them. Despite this recognition, consultation preparation was still largely organized around discrete forestry cases that had to be reviewed, notified, discussed, and documented one by one. Even where broader maps were available, the immediate planning task remained tied to a particular stand, road, or treatment area. Several participants suggested that they could mentally situate an object within a broader known pattern of pressure but still had to make decisions through object-specific planning files and annual harvest requirements.

6.4.3 Ownership boundaries and missing coordination mechanisms

A further recurring limitation was fragmented ownership and limited cross-landscape authority. Forestry representatives repeatedly noted that they could modify their own planned operation but had little influence over neighbouring

forest owners or other disturbances affecting the same grazing system. The forest owners' association representative (Participant B) described this particularly clearly from the private ownership context, explaining that "it's easier if you own a lot of forest in that area, to have that landscape perspective," whereas their members often owned only small areas of forest. As Participant B put it, the organization could not simply tell one owner to wait ten years because another owner had recently harvested nearby: "we can't decide for other people's lives." This illustrates how fragmented ownership limited the possibility of coordinating forestry activity across the wider grazing landscape.

The same limitation appeared in other institutional contexts, although in different forms. The church forestry representative (Participant G) explained that although landscape planning was discussed, their forest holdings were "very spread out in very small units," making larger-scale planning difficult. These accounts suggest that landscape perspective was not only a question of whether forestry actors recognized cumulative impacts, but whether they had authority, ownership continuity, and coordination mechanisms through which to act on them.

6.4.4 Uneven meanings of landscape perspective

Participants also varied in how concretely they defined landscape perspective. For some, it meant looking beyond one stand to nearby surrounding objects in the annual plan. For others, it implied thinking across migration routes, winter pasture continuity, and multi-owner disturbance patterns across a much larger grazing district. The large-company coordination representative (Participant F) described this uncertainty directly, asking: "The landscape perspective, what's that? What's the level of the landscape?" This was described as a recurring discussion with reindeer herding communities, indicating that the scale of landscape consideration was itself unresolved.

Overall, landscape-scale and cumulative impacts were not absent from consultation preparation, but they were unevenly operationalized. Participants recognized that reindeer husbandry concerns were cumulative and spatially interconnected, yet the practical tools available for acting on these concerns remained constrained by ownership boundaries, stand-based planning routines, annual production timelines, and the absence of any fully shared procedural mechanism for cumulative coordination.

6.5 Cross-case synthesis: enabling and constraining conditions

Across the interviews, several conditions shaped whether consultation preparation functioned as a substantive planning process or as a narrower procedural

requirement. These conditions appeared across different institutional contexts, although they operated in different ways depending on ownership structure, certification status, organizational role, and planning authority.

Early timing created more room for adaptation because forestry actors could identify likely overlaps before planned measures became fixed. Continuity across planning stages helped previous agreements, recurring concern areas, and site-specific knowledge remain visible as consultation cases moved from preparation to later planning. Stable documentation systems supported follow-through by making consultation outcomes easier to retrieve, interpret, and communicate. GIS tools and digital consultation systems improved spatial overview, but participants emphasized that these tools worked best when combined with repeated dialogue, field familiarity, and accumulated local knowledge.

Fragmented responsibility weakened follow-through. This occurred when consultation preparation, documentation, advisory support, ownership authority, and operational planning were divided across multiple actors. Fragmented ownership also limited the extent to which forestry representatives could respond to cumulative landscape concerns in a coordinated way. In these cases, reindeer husbandry concerns could still be addressed through specific adjustments, but broader concerns related to grazing continuity, disturbance concentration, and multi-owner landscape effects were harder to act on.

Different preparation models created different possibilities for knowledge use. Centralized coordination supported consistency and documentation. Planner-led preparation connected consultation more closely to field knowledge and operational adjustment. Decentralized and case-by-case preparation allowed practical issues to be addressed in individual cases but provided weaker support for long-term landscape coordination. Coordination- and support-based roles helped clarify procedures but often lacked direct authority over operational follow-through.

Overall, consultation-related planning operated as a filtering and translation process. Reindeer husbandry concerns entered forestry planning through maps, dialogue, field knowledge, previous agreements, and consultation records. They became actionable unevenly depending on timing, continuity, documentation, organizational role, and planning authority. Consultation preparation is therefore not a neutral administrative stage. It is a key procedural site where the possibilities and limits of reindeer husbandry knowledge integration are shaped before, during, and after consultation.

7. Discussion

This study examined how forestry representatives in Sweden prepare for consultation with Sámi reindeer husbandry and what these preparatory practices reveal about the integration of reindeer husbandry knowledge in forest planning. The findings show that consultation preparation is not simply an administrative step before dialogue, but a procedural stage where reindeer husbandry concerns are selected, translated, documented, and carried forward. Consultation preparation varied across institutional contexts, from centralized annual coordination and planner-led preparation to decentralized case-by-case arrangements and support-based roles. Across these different models, reindeer husbandry knowledge became actionable unevenly, depending on whether it could be connected to planning objects, mapped overlaps, repeated dialogue, field familiarity, previous agreements, operational adjustments, or organizational routines. The discussion develops four main points: consultation preparation as institutional translation; mapping and knowledge control; responsibility and procedural follow-through; and the difficulty of operationalizing landscape perspective within object-based forestry planning.

7.1 Consultation preparation as institutional translation

One central finding of this study is that forestry actors made reindeer husbandry knowledge actionable by translating it into forestry planning formats. Participants used maps, previous consultation notes, field observations, reindeer herding community comments, and repeated dialogue to identify potential conflicts. However, this knowledge did not enter planning as a complete understanding of seasonal grazing continuity or landscape function. It became most usable when forestry actors attached it to harvest objects, mapped overlaps, crossing points, previous agreements, or operational adjustments.

This translation process differed across preparation models. Centralized coordination used recurring annual procedures and documentation systems to make reindeer husbandry concerns visible across many cases. Planner-led preparation relied more on field familiarity, professional judgement, and direct dialogue. Decentralized and case-by-case preparation translated knowledge through specific notifications, individual properties, and available advisory capacity.

This finding complicates the idea that more information alone will improve consultation. Forestry actors did not simply lack information. They also worked within planning systems that required knowledge to fit object-based formats. Reindeer husbandry concerns became easier to act on when they could be translated into concrete measures, such as moving a road, leaving a corridor,

adjusting timing, delaying harvest, changing species choice, or modifying a stand treatment. This reflects wider critiques of knowledge integration, which show that Indigenous and local knowledge can be narrowed when dominant management systems require it to fit existing categories, records, and decision formats (Nadasdy, 2003; Tengö et al., 2014; Latulippe and Klenk, 2020; Hill et al., 2020).

Consultation preparation therefore shapes the terms of consultation before formal dialogue begins. Forestry actors prepare *samrådsunderlag*, review internal planning material, identify relevant objects, and decide what information enters the consultation process. This extends previous research on forestry–reindeer husbandry consultation by showing that consultation quality depends not only on the meeting itself, but also on how knowledge is selected, formatted, and made actionable before the meeting takes place (Widmark and Sandström, 2012; Sandström et al., 2006; Roos et al., 2022; Österlin and Raitio, 2020).

7.2 Mapping, knowledge control, and Indigenous data sovereignty

The findings also show that mapping is not only a technical issue. Several participants described limited access to reindeer herding community maps, reliance on dialogue, and uncertainty about how forestry systems should use reindeer husbandry knowledge. Forestry actors often experienced limited map access as an information gap. However, selective sharing can also function as a way for reindeer herding communities to retain control over sensitive land-use knowledge.

Indigenous data sovereignty scholarship shows that information about Indigenous peoples, territories, lifeways, and resources is not neutral institutional data. It is connected to ownership, access, interpretation, management, and future use (Kukutai and Taylor, 2016). OCAP principles similarly emphasize Indigenous control over how knowledge is collected, stored, circulated, and used within external systems (First Nations Information Governance Centre, 2016).

Maps can detach knowledge from context. A spatial layer may show where a grazing area, migration route, or seasonal pasture is located, but it does not explain how the area is used, when it matters, or what conditions affect its function. Participatory mapping research emphasizes that knowledge-holders should retain influence over what is mapped, what is omitted, and how maps are interpreted (Johnsen et al., 2024). Research on Indigenous–science partnerships also shows that knowledge-sharing depends on trust, retained authority over interpretation and release, and confidence that knowledge will not be extracted into external management systems (Moller et al., 2009). Limited access to reindeer herding community maps should therefore not be treated only as a technical deficiency. It may also reflect concerns about how forestry actors might store, reuse, or interpret spatial knowledge after consultation.

Midzain-Gobin's (2022) concept of legibility and misrecognition is useful here. Institutional data systems can make Indigenous lands and practices visible to governance while still misrecognizing the political relationships and lived realities behind the data. A similar risk appears in forestry consultation when reindeer husbandry knowledge becomes usable only after forestry actors translate it into spatial layers, notes, or object-level planning categories.

Sámi-specific research on knowledge co-production strengthens this point. Näkkäljärvi and Juntunen (2024) show that Sámi reindeer herders have described distrust toward researchers and external institutions when knowledge has been extracted, distorted, or returned with limited benefit to Sámi communities. These concerns apply directly to consultation preparation, where forestry actors may want more spatial information but reindeer herding communities need authority over how their knowledge is interpreted and used.

Knowledge-sharing therefore cannot be reduced to map access. Digital layers can improve overview, but they cannot replace dialogue, trust, or reindeer herding community authority over knowledge. Indigenous knowledge integration depends not only on whether knowledge becomes visible in forestry systems, but also on whether reindeer herding communities retain meaningful authority over how forestry actors interpret and act on that knowledge.

7.3 Responsibility, continuity, and procedural follow-through

The findings show that responsibility was not only a formal obligation to conduct consultation. It was also a practical condition for keeping reindeer husbandry concerns connected from preparation to operational follow-through. Previous research shows that forestry–reindeer husbandry consultation does not function as a straightforward conflict-resolution mechanism. It is shaped by interdependence, uneven influence, and persistent coordination challenges (Widmark and Sandström, 2012; Widmark, 2019; Roos et al., 2022). This study shows that these coordination problems also occur inside forestry planning procedures.

Continuity was strongest when the same actor, role, or documentation system connected several stages of the planning chain. These stages included object selection, preparation of consultation material, dialogue with reindeer herding communities, documentation of agreements, planning revision, and operational instructions. In these cases, reindeer husbandry concerns had a clearer pathway from consultation to later forestry decisions.

Fragmentation weakened this pathway. Advisory responsibility, ownership authority, documentation, and operational planning capacity were often distributed across different actors or systems. This was clearest in the forest owners' association context, where consultation-related work was spread across staff members and individual member owners, while final authority remained tied

to separate private landowners. It was also visible in the agency support role, where guidance and legal interpretation could support consultation but did not provide direct authority over forestry planning or implementation.

In fragmented settings, reindeer husbandry concerns depended more heavily on written protocols, emails, GIS markings, staff memory, and later interpretation. These systems can support continuity, but they can also narrow or weaken the meaning of consultation outcomes. This reflects a broader issue in knowledge integration: knowledge does not move neutrally into planning systems, but is translated into administrative forms, categories, maps, and documents (Nadasdy, 2003).

The present study therefore extends existing consultation research by locating coordination problems before and after the consultation meeting. Previous studies have shown that consultation is constrained by unequal authority, vague expectations, and limited influence over final land-use decisions (Sandström and Widmark, 2007; Roos et al., 2022). The findings here add that consultation outcomes also depend on whether responsibility remains connected to the roles, documents, and systems that shape later forestry decisions.

Continuity also mattered relationally. Repeated interaction with the same reindeer herding community contacts helped forestry actors build familiarity with previous agreements, recurring concern areas, and local expectations. Staff turnover, dispersed roles, and weak documentation systems could shift the burden of historical explanation back onto reindeer herding community representatives. Organizational memory is therefore not only an internal efficiency issue. It shapes the quality and fairness of consultation over time, especially where repeated interaction and trust are important for knowledge-sharing and joint problem-solving (Berkes, 2009).

Reindeer husbandry concerns often depend on cumulative and historical context. A single stand may appear manageable in isolation, but its significance can change when viewed alongside earlier harvests, future operations, road development, climate-related grazing pressures, or the loss of nearby grazing areas (Kivinen et al., 2010; Österlin and Raitio, 2020; Harnesk et al., 2023). Weak organizational memory can therefore erase the cumulative meaning of consultation history, even when individual consultation events are formally documented.

The contrast between the forest owners' association case and the private planner case shows that fragmentation did not follow automatically from private ownership alone. Both operated outside the simple model of a large company managing its own continuous land base, but they showed different degrees of continuity. In the forest owners' association context, fragmented ownership, dispersed advisory roles, and limited shared documentation made long-term landscape coordination difficult. In the private planner case, continuity was partly

recreated through one planner's responsibility for preparing material, conducting consultation, documenting agreements, and carrying outcomes into operational planning. The key issue is therefore not ownership type alone, but whether responsibility, documentation, and implementation authority remain connected across consultation-related planning.

7.4 Landscape perspective within object-based forestry planning

The findings also show that forestry actors often recognized landscape-scale and cumulative concerns but struggled to operationalize them. Participants understood that reindeer husbandry concerns extended beyond individual stands. They referred to migration continuity, winter grazing access, disturbance concentration, sequential harvesting, road networks, and the cumulative reduction of lichen-bearing forests. However, their planning procedures often remained organized around discrete forestry objects, annual production schedules, ownership boundaries, and case-by-case documentation.

This reflects a broader scale mismatch between reindeer husbandry and forestry planning. Reindeer husbandry depends on large, connected, and seasonally variable landscapes. Forestry planning commonly proceeds through bounded stands, operational timelines, and ownership-specific decision structures (Eggers et al., 2023; Horstkotte et al., 2022; Korosuo et al., 2014). Forestry actors may therefore recognize landscape concerns conceptually while still acting through object-based administrative procedures. The landscape can become visible as a problem without becoming available as a planning unit.

This finding connects directly to Österlin and Raitio's (2020) concept of fragmented "planscapes." Reindeer herding communities must navigate fragmented grazing landscapes as well as fragmented planning processes across sectors, landowners, and decision timelines. These processes often treat impacts as separate even when reindeer husbandry experiences them cumulatively. The present study shows how the same fragmentation appears within forestry consultation preparation. Forestry actors could recognize cumulative pressures, but they often lacked mechanisms to coordinate decisions across neighbouring stands, ownership boundaries, future harvest schedules, or other land uses.

The findings also align with research showing that cumulative land-use pressures reduce the functionality of reindeer grazing areas and constrain herders' adaptive flexibility. Studies on forestry, climate change, infrastructure, and other encroachments show that impacts on reindeer husbandry are not experienced as isolated disturbances. They interact through pasture access, grazing peace, movement, and long-term resilience (Pape and Löffler, 2012; Harnesk et al., 2023; Bostedt et al., 2025; Fohringer et al., 2021). A forestry measure may

therefore appear minor at the object level while still contributing to cumulative landscape degradation from the perspective of reindeer husbandry.

The findings also relate to FSC requirements concerning landscape perspective (FSC Sweden, 2020; Forest Stewardship Council, 2023). The findings suggest that FSC-linked contexts were associated with more structured and proactive preparation practices, including earlier sharing of material, recurring meetings, documentation systems, and broader planning discussions. However, certification language alone did not resolve the practical difficulty of translating cumulative reindeer husbandry impacts into coordinated landscape-level action. Landscape perspective still depended on organizational capacity, continuity, access to planning tools, and control over sufficiently large land areas.

Landscape perspective therefore cannot be achieved only by asking forestry actors to “think bigger.” It requires institutional mechanisms that allow cumulative disturbance, seasonal connectivity, and neighbouring land uses to be considered before object-level decisions become fixed. Without such mechanisms, forestry actors may acknowledge landscape-scale concerns in principle while addressing them through small operational adjustments that do not alter the broader pattern of fragmentation.

7.5 Implications for consultation practice

The findings point to several practical implications for consultation preparation. First, consultation preparation needs to occur early enough for reindeer husbandry concerns to influence planning before decisions become difficult to change. Consultation that occurs after harvest objects and operational assumptions are already established is more likely to produce mitigation than meaningful planning adaptation.

Second, forestry organizations need stable procedures for carrying consultation outcomes across planning stages. This is especially important where different actors handle preparation, dialogue, documentation, and operational follow-through. Organizations need clear responsibility for ensuring that consultation outcomes are reflected in GIS systems, operational plans, contractor instructions, and future planning cycles. Documentation is important, but it is not sufficient unless someone remains responsible for interpreting and applying it.

Third, GIS and digital consultation systems should function as support tools rather than substitutes for dialogue. These systems can improve spatial overview, transparency, and organizational memory, but they cannot replace relational knowledge or reindeer herding community interpretation. Their use requires clear protocols for how reindeer husbandry information is accessed, stored, updated, interpreted, and reused.

Fourth, a landscape perspective requires more than object-by-object review. Consultation preparation needs mechanisms for considering cumulative

disturbance, neighbouring land use, and spatial connectivity across planning units. Consultation preparation alone cannot resolve the wider structural conflict between forestry and reindeer husbandry. It remains embedded in legal, institutional, and ownership systems that leave final authority largely on the forestry side. However, stronger preparation can improve the quality of dialogue, the durability of agreements, and the extent to which reindeer husbandry concerns are carried into operational decisions.

These implications point toward knowledge-accountable consultation. Knowledge-accountable consultation requires forestry actors to account not only for what information is collected and shared, but also for how reindeer husbandry knowledge is translated, who controls its interpretation and use, who remains responsible for follow-through, and whether planning systems can act on cumulative landscape concerns before decisions become fixed. Improving consultation-related planning therefore requires more than additional data, maps, or meetings. It requires procedures that keep knowledge connected to authority, responsibility, and operational decision-making.

7.6 Limitations and future research

This study has several limitations. Most importantly, the research is based on interviews with forestry and agency representatives, not reindeer herding community representatives. The findings therefore describe how consultation preparation is understood from forestry and agency positions rather than how reindeer herding communities experience these processes. Future research should examine these reindeer herding community perspectives directly, particularly regarding how consultation materials are received, how knowledge-sharing decisions are made, and how previous consultation outcomes affect trust.

The study is also based on a small qualitative sample. While the interviews provide detailed insight into several institutional settings, they do not represent all forestry actors, all reindeer herding communities, or all regional contexts in Sweden. Further research could compare consultation preparation across regions, ownership types, and certification contexts more systematically.

Finally, this study did not conduct spatial analysis of actual consultation cases or forest plans. Future work could examine how consultation outcomes are documented and whether agreed adaptations are traceable through GIS systems, operational plans, contractor instructions, and implementation records. Such research would help assess whether consultation preparation not only shapes dialogue but also produces durable changes in forestry practice.

8. Conclusion

This study examined how forestry representatives in Sweden organize consultation-related planning with Sámi reindeer husbandry and what these procedures reveal about how reindeer husbandry knowledge is interpreted, translated, and used within forestry systems. By shifting attention from consultation as a single meeting to the planning procedures that surround it, the study identifies consultation-related planning as a key institutional process through which reindeer husbandry concerns are interpreted, documented, negotiated, and carried through forestry decision-making.

Consultation-related planning was not organized through one standardized model. Participants described approaches shaped by ownership structure, certification context, organizational role, and planning authority. These ranged from formalized annual planning processes in larger FSC-certified organizations to more decentralized, planner-led, advisory, and case-by-case approaches in fragmented ownership contexts. These differences shaped when reindeer husbandry concerns entered planning, how much flexibility remained for adaptation, and whether agreed considerations could be carried into implementation.

A central finding is that reindeer husbandry knowledge did not enter forestry planning as a complete or unchanged system of understanding. It became actionable primarily when translated into forms compatible with forestry planning routines, including mapped overlaps, stand-level concerns, previous agreements, operational restrictions, and concrete forestry adaptations. Knowledge connected to broader landscape functionality, cumulative disturbance, seasonal movement, and long-term grazing continuity was more difficult to retain within stand-based and operationally bounded planning systems.

Responsibility and continuity strongly shaped whether reindeer husbandry concerns remained connected through planning processes. Where the same actor, role, or documentation system linked preparation, consultation, documentation, and operational planning, agreed considerations were more likely to retain their meaning and influence later decisions. In contrast, fragmented responsibility increased dependence on protocols, GIS markings, staff memory, and later interpretation, creating greater risk that consultation outcomes would weaken as cases moved through organizational procedures.

Participants often recognized that reindeer husbandry depends on connected landscapes and is affected by cumulative impacts, but these concerns were unevenly operationalized in practice. Forestry planning remained largely structured around discrete stands, annual production timelines, and ownership-specific decision-making. As a result, landscape perspective was often

acknowledged conceptually while still being addressed through localized operational adjustments rather than coordinated landscape-level planning.

The study also highlights that knowledge integration cannot be separated from authority and control. Limited access to reindeer herding community maps and selective knowledge-sharing should not be understood only as technical constraints, but also in relation to Indigenous data sovereignty, trust, and authority over how reindeer husbandry knowledge is interpreted, stored, and reused within external planning systems.

Overall, the findings suggest that improving forestry–reindeer husbandry consultation requires moving beyond consultation as a narrow information-exchange procedure toward a more knowledge-accountable planning process. Earlier engagement, stronger procedural continuity, clearer responsibility for follow-through, and planning mechanisms capable of addressing cumulative landscape impacts may improve the ability of forestry systems to engage reindeer husbandry concerns more meaningfully. However, consultation-related planning alone cannot resolve the broader structural tensions between forestry and reindeer husbandry, because consultation remains embedded in legal, institutional, and ownership systems that leave final authority largely on the forestry side.

This study contributes to a more detailed understanding of how Indigenous knowledge is engaged within forestry governance in practice by identifying consultation-related planning as a critical but underexamined institutional process. The key challenge is not simply whether reindeer husbandry knowledge is included, but how it is translated, who retains authority over its interpretation and use, and whether forestry planning systems can act on the broader landscape relationships through which that knowledge is produced.

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Popular science summary

Forestry and Sámi reindeer husbandry share the same forest landscapes in northern Sweden. Reindeer depend on large, connected areas for grazing and seasonal movement, while forestry is typically planned in smaller units focused on timber production. This overlap can create tensions, particularly when forestry activities affect grazing conditions, migration routes, or the availability of older lichen-rich forests.

To address this, forestry actors are required to consult with Sámi reindeer herding communities before carrying out certain activities. These consultations are intended to identify potential conflicts and adjust plans where needed. However, much attention has been placed on the consultation meeting itself. This thesis instead examines what happens before consultation takes place: how forestry actors prepare consultation cases, use maps and planning tools, and carry consultation outcomes into later planning and implementation.

The study is based on interviews with eight forestry and agency representatives working with consultation-related planning in Sweden. It shows that consultation preparation is a crucial stage where decisions begin to take form. Before meeting with reindeer herding community representatives, forestry actors may review maps, select areas for harvest, prepare proposals, and assess possible overlaps with reindeer husbandry. As a result, consultation is partly shaped before the meeting itself begins.

The findings show that reindeer husbandry knowledge is considered but often becomes most usable to forestry actors when it can be connected to specific places or actions. This may include adjusting a harvest area, delaying operations, leaving certain trees, or avoiding important movement routes. Broader concerns, such as how many separate forestry activities affect the grazing landscape over time, are more difficult to include in planning.

Responsibility also plays an important role. When the same person or team is involved from preparation to implementation, it is easier to follow through on agreed changes. When responsibility is divided across several actors, important details are more likely to be weakened or lost.

Although forestry actors often recognize that reindeer husbandry depends on large, connected landscapes, forestry planning is still mainly carried out one area at a time. This makes it difficult to fully account for cumulative impacts, where many separate decisions together affect grazing conditions over time.

The study also highlights that knowledge sharing is not only about having better data. It is also about trust, relationships, and control over how information is used. Sámi reindeer herding communities may choose what information to share and how, and this needs to be respected.

Overall, the study shows that improving consultation is not only about better meetings. It also requires stronger preparation before meetings take place, clearer responsibility for follow-through, and better ways of considering the whole landscape.

Appendix 1. Interview guide

Opening, consent, and practicalities

Participants were informed that:

1. The purpose of the interview is to understand how consultation preparation is carried out in practice, including how information, tools, responsibilities, and landscape considerations are handled.
2. Participation is voluntary, and participants may skip questions or withdraw at any time.
3. Interviews would be audio-recorded with consent for accurate transcription; otherwise, notes would be taken.
4. Anonymized quotations may be used in the thesis and related outputs.

Participants were asked:

- Do you consent to this interview being recorded?
- Do you have any questions before we begin?

Role and context

Can you describe your role and how you are involved in consultation (*samråd*) and its preparation?

- What parts of the workflow are you involved in?
- At what planning level do you mainly work (operational, tactical, strategic)?
- What decisions can you influence directly, and what is decided elsewhere?
- What is your geographic area of work?
- How many reindeer herding communities do you consult with?
- How long have you worked in this role?
- Have you received any training related to consultation or *samråd*?

Walkthrough: preparation as it happens

- Can you walk me through a recent consultation you prepared for, step by step?
- What triggered the consultation?
- What did you prepare before contacting the reindeer herding community?
- What was still open or negotiable at the time of consultation?
- Do you ever anticipate concerns from the reindeer herding community and adjust your plans in advance?

What consultation (*samråd*) means in practice

- In your work, what does *samråd* mean in practice?
- What is it supposed to achieve?
- What would a “successful” consultation look like from your perspective?
- What outcomes are expected?
- What determines whether it is successful?

Requirements, landscape perspective, and cumulative effects

What formal requirements or guidance shape how you prepare for consultation?
(e.g., FSC, Forestry Act, internal policies)

- Which documents or routines do you use in practice?
- Who interprets these requirements?

Do you consider a landscape perspective in your planning and preparation?

- What does this mean in practice?
- Do cumulative effects come into your work?
- How, if at all, do you act on these considerations?

Do you consider issues such as:

- Avoiding concentration of clear-cuts
- Maintaining grazing continuity or movement areas
- If so, how?

Responsibilities and mandate boundaries

What are your responsibilities before consultation takes place?

- What is the minimum obligation?
- What would you consider good practice?

How do you understand “adequate consideration” of reindeer husbandry?

- What allows you to move forward in planning?
- What documentation or evidence is required?

Knowledge used in preparation

What knowledge or information is most important when preparing for consultation?

- What information is often missing or uncertain?
- How do you understand and refer to reindeer husbandry knowledge? (local knowledge, traditional knowledge)

Can you give an example where this knowledge changed how you prepared or planned?

Tools and materials used in preparation

What tools or materials do you use in preparation? (e.g., maps, GIS layers, planning systems, templates)

- What is required versus optional?

How do you use reindeer husbandry planning tools (e.g., Renbruksplan/RenGIS), if at all?

- At what stage do they enter your workflow?

What are the main limitations of these tools in practice?

Documentation and follow-up

How are consultation preparation and discussion documented?

- What must be recorded?
- How are agreed adaptations carried into operations?

Where are they recorded?

- How are they communicated to others?

What are common reasons that follow-through may fail?

Do you revisit areas or issues over time?

- How does learning carry into future planning?

What helps and what hinders + closing

What most helps good consultation preparation?

What most hinders it? (e.g., time, coordination, tools, relationships, mandates)

If you could change one thing about consultation preparation, what would it be?

Is there anything important that I have not asked about?

Appendix 2. Coding framework and theme development

This appendix presents the coding framework used in the thematic analysis. Coding combined deductive and inductive approaches. Initial codes were informed by the research questions, interview guide, and conceptual framework (Indigenous knowledge translation, knowledge authority, landscape governance, and procedural planning practice). Additional codes were developed inductively during analysis to capture emerging themes and variations across cases.

Codes were iteratively refined and grouped into broader analytical themes. Table A3 presents the final coding structure.

Table A3. Final coding framework used in the thematic analysis, showing the hierarchical structure of analytical themes, sub-codes, and their descriptions. Codes were developed through a combination of deductive (conceptual framework and research questions) and inductive (data-driven) approaches and were iteratively refined during analysis.

Theme	Sub-code	Description
1. Consultation procedures	Formalized co-planning	Structured, recurring consultation processes with advance planning, shared materials, and multi-year coordination
	Planner-led preparation	Preparation led by a single planner responsible for selecting stands, preparing material, and conducting consultation
	Reactive preparation	Consultation triggered late in planning, often as notification or response rather than early-stage planning
	Coordination/support roles	Roles focused on facilitating consultation (e.g., coordination, advisory, documentation support)
	Timing of preparation	When consultation enters the planning process (early vs late stage)
2. Responsibility and continuity	End-to-end responsibility	One actor responsible across preparation, consultation, and implementation

Theme	Sub-code	Description
3. Reindeer husbandry knowledge	Distributed responsibility	Responsibilities divided across multiple actors or organizational levels
	Implementation responsibility	Who carries consultation outcomes into operational decisions
	Organizational continuity	Stability of roles and relationships over time
	Loss of information	Breakdown in communication or follow-through across planning stages
	Spatial knowledge	Mapped areas such as grazing lands, migration routes, and crossing points
	Experience-based knowledge	Knowledge gained through repeated dialogue and relationships with reindeer herding community representatives
	Seasonal and dynamic use	Recognition of variability in land use depending on time, conditions, and herd movement
	Knowledge gaps and uncertainty	Missing or incomplete understanding of reindeer use prior to consultation
	Terminology and interpretation	How forestry actors describe and categorize reindeer husbandry knowledge
4. Knowledge translation and use	Translation into planning objects	Conversion of knowledge into stand-level or operational decisions
	Operational adjustments	Changes to forestry practices (e.g., delaying harvest, leaving trees, adjusting roads)
	Anticipation of concerns	Preparing alternatives based on expected reindeer herding community input

Theme	Sub-code	Description
5. Tools and planning systems	Limits of translation	Aspects of knowledge that cannot easily be integrated into planning systems
	GIS and mapping tools	Use of internal GIS systems and spatial data in preparation
	Renbruksplan / RenGIS use	Use of reindeer husbandry planning tools
	Digital consultation platforms	Use of shared platforms (e.g., Samplanering)
	Documentation systems	Protocols, notes, and data storage practices
	Tool limitations	Constraints related to access, trust, updating, or interpretation
6. Landscape perspective and cumulative impacts	Recognition of cumulative impacts	Awareness of combined effects of multiple forestry activities
	Landscape perspective in practice	How broader spatial relationships are considered during planning
	Stand-based constraints	Limits imposed by stand-level planning systems
	Movement and connectivity	Consideration of migration routes and grazing continuity
	Ownership fragmentation	Effects of multiple landowners on landscape-level coordination
7. Institutional context and requirements	Legal requirements	Forestry Act and other legal obligations
	Certification requirements	FSC or PEFC standards shaping consultation preparation
	Organizational policies	Internal guidelines and procedures
	Interpretation of requirements	How actors understand and apply formal rules
8. Barriers and enabling conditions	Time constraints	Availability of time for preparation and consultation
	Communication challenges	Difficulty contacting reindeer herding community

Theme	Sub-code	Description
		representatives or coordinating meetings
	Trust and relationships	Role of long-term relationships in facilitating consultation
	Early vs late engagement	Degree to which consultation occurs before decisions are fixed
	Institutional constraints	Structural limitations shaping what can be acted upon

Analytical development

Initial coding followed the structure of the interview guide and conceptual framework. During iterative analysis, codes were compared across participants to identify patterns and variation in how consultation preparation was organized and experienced.

Codes were then grouped into higher-level themes reflecting:

- different models of consultation preparation
- how responsibility and continuity shaped outcomes
- how reindeer husbandry knowledge became actionable
- how landscape-scale concerns were recognized but constrained

These themes form the basis of the Results section and are interpreted through the conceptual framework in the Discussion.

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