



Using Traditional Knowledge in Unpredictable Critical Events in Reindeer Husbandry

*– The case of Sámi reindeer husbandry in Western Finnmark,
Norway and Nenets reindeer husbandry on Yamal Peninsula,
Yamal Nenets AO, Russia*



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ABSTRACT

This thesis investigates in what way traditional knowledge is used when unpredictable critical events occur in Sámi reindeer husbandry in Western Finnmark, Norway and Nenets reindeer husbandry on Yamal peninsula, Russia. In addition the aim was to investigate to what extent reindeer herder's traditional knowledge is supported by the state official governance of reindeer husbandry. In Norway each *siida* number of reindeer and a strategic plan for potential unpredictable events must be included in the prescriptive rules of usage which is decided by Norwegian Reindeer Husbandry Act of 2007. In Russia there is no federal law on reindeer husbandry.

A qualitative research method was chosen to highlight reindeer herder's traditional knowledge with in-depth interviews and participating observations in addition using archival sources.

The findings of traditional management perspective reflect that both in Western Finnmark and on Yamal peninsula traditional knowledge is significant in reindeer husbandry, for example in response to climatic unpredictable weather events as *goavvi*. The results are analyzed according to Berkes' (2008) traditional knowledge analysis. The thesis suggest a management system based on Berkes analysis model and is named *Traditional management model for Sámi reindeer husbandry* with focusing on traditional management and state governance perspectives. In Norway the implementation of the Reindeer Husbandry Act in 1978 seems to have constrained use of traditional knowledge in the governance of reindeer husbandry, while the Reindeer Husbandry Act of 2007 aimed to support traditional knowledge. The main finding indicates that the use of traditional knowledge in the Sámi reindeer husbandry is only partly supported today in the Norwegian governance of reindeer husbandry which in future may affect the response of unpredictable critical events. On Yamal peninsula flexible use of knowledge in a traditional management might strengthen the resilience to handle unpredictable critical events for Yamal.

Key concepts: traditional knowledge, reindeer husbandry, unpredictable critical events, governance, *siida*, brigade.

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MAP OF STUDY AREAS

Figure 1



Map provided by IPY EALÁT and International Centre for Reindeer Husbandry, and Google.

1 INTRODUCTION

*There was so much snow that the reindeer could not get through it to the bottom. If they got through, then they disappeared into the snow. There was so much snow that we had to stay on the south side of the river during the calving period. It did not become warmer until June...*¹

(Informant M, woman, Sámi reindeer herder, Western Finnmark)

Reindeer husbandry is a traditional livelihood in the Arctic for more than 20 groups of indigenous peoples across Eurasia (Magga et al., 2011a: 139) (Figure 1). Reindeer herders migrate along with the herds between winter, spring, summer and autumn pastures where different pastures from the inland to the coast is being utilized (Jernsletten and Klokov, 2002: 18-19; Stammler, 2005: 60). The goal for herders is to find the optimal conditions for the reindeer herds in constantly changing environment, daily coping and adapting (Maynard et al., 2010: 178). This case examines the Sámi in Western Finnmark in Norway and the Nenets on the Yamal peninsula in Russia (See Figure 1) by focusing on the use of traditional knowledge in reindeer husbandry when unpredictable critical events occur. The use of seasonal pastures in the reindeer herding regions investigated in Norway and Russia, is similar in the sense that the herds migrate north in the spring and southwards in the autumn, accessing seasonal pastures along the way.

1.1 Background for choice of topic and research question

Reindeer husbandry is family based and includes collectively herding of reindeer (Jernsletten and Klokov, 2002: 22). It is a livelihood where use of traditional knowledge is rich. Traditional knowledge has always been important for Sámi reindeer husbandry (Eira, 2012). More recently it has gained recognition from the mainstream scientific community. Linkage of traditional knowledge to scientific knowledge perhaps offer new solutions to the challenges faced by for example herding communities dealing with e.g. climatic changes (Magga et al., 2011a: 140).

¹ Translation from Sámi to English by author: "*Lei nu ollu muohta, ii ge boazu beassan oba bodnái ge. Ja jus beassá bodnái, dat jávká dohko čeargga vuollái. Dat lei nu ollu muohta ahte mii šattaimet orrut lulábealde eanu guottetáiggi. Ii ge oba bivaldan ge, lei Juni go easka bivaldii...*"

Governance frameworks have a considerable impact on reindeer husbandry (Maggia et al., 2009: 142). In Norway reindeer husbandry is protected by different laws today, in particular the management is organized around the Reindeer Husbandry Act of 2007 regulated by the Ministry of Agriculture and Food². The Act legislate reindeer herding districts³ to clarify specific *siida* issues on internal matters by proposing “prescriptive rules of usage”⁴ which protect the pastures within a district (Sara, 2011: 138-139). The prescriptive rules are supposed to be a working document made by a *siida* and district that contains all seasonal pastures, number of reindeer, migratory routes and also internal responsibilities in a *siida* and their funds⁵. In addition Norway has ratified the ILO-Convention no. 169 in 1990, further securing indigenous peoples rights (Jonassen and Kalstad, 2003: 9; Jernsletten and Klokov, 2002: 7), United Nations Declaration on the Right of Indigenous Peoples, United Nations Convention on Biological diversity art. 8 J. The Russian Federation has not ratified the ILO-Convention no. 169 and there is no federal law regulating reindeer husbandry. Neither there is constitutional legislation regarding reindeer husbandry in Russia, that manages the industry’s legal status (Ulvevadet and Klokov, 2004: 89) However, at the federal level there do exist three framework laws that concern indigenous peoples (Degteva, 2005; Turi, 2008) and in some regions of Russia laws on reindeer herding which include aspects of traditional way of living and culture have been adopted such as in Yamal-Nenets AO (Kryazhkov, 2010).

In history of Sámi reindeer husbandry there are several narratives about unpredictable critical events (Eira, 2012). In the quotation above, a reindeer herding Sámi woman explained how her family experienced the spring season about thirty years ago. If the reindeer cannot find or reach food through the snow, it can have devastating results, especially in the winter and spring. Reindeer herders always have to have a plan to deal with such challenges. The winter grazing conditions in Guovdageaidnu area in the winter 1967/68 is one example of an unpredictable critical event in reindeer husbandry. As the Sámi woman explained, the handling of an unpredictable critical event such as staying on the winter pastures, avoided hunger during the crucial calving period in the spring. Their decision was made after assessing the grazing conditions in the calving area. Most probably this saved their herd that year. Traditionally, herder’s previous experience is of great importance in being able to cope with rapid changes. Traditional knowledge, which is evolved over time by observing the

² In Norwegian: *Landbruks- og Matdepartementet*

³ In Norwegian: *Reinbeitedistriktet*

⁴ In Norwegian: *Bruksregler i distriktet*, Lov 15. juni 2007 nr 40, chapter 7. Reindeer Husbandry Act 2007 impose reindeer herding districts and *siida* to make a written plan on their resource management.

⁵ Lov 15. Juni 2007 nr 40, article 57

behavior of reindeer in harmony with nature, is handed down from generation to generation (Turi, 2009: 9; Berkes, 2008). The knowledge reindeer herders have gives them the ability to deal with such unpredictable critical events. Socio-economic change in reindeer husbandry could also represent another example of unpredictable critical event. The Norwegian Reindeer Husbandry Act from 1978 introduced in broad strokes a rapid change from a family-based *siida* organized livelihood into a “one-mans” economy (Reinert, 2008: 192).

The aim is to analyze how traditional knowledge is used to respond to such events in reindeer husbandry in Western Finnmark and on Yamal peninsula, both climatic and socio-economic events. The following research question specifies the basis of thesis; in what way is traditional knowledge used in Sámi reindeer husbandry in Western Finnmark, Norway and in Nenets reindeer husbandry in Yamal, Russia when unpredictable critical events occur? To what extent is the use of reindeer herder’s traditional knowledge supported by the governance of reindeer husbandry?

In order to answer the research questions, a comparison between the Sámi and the Nenets can be a useful analytical tool. A comparison of Norwegian and Russian reindeer husbandry was suggested as useful in the sense that it could expand the understanding of the Norwegian governance of reindeer husbandry in a broader perspective, since topic chosen might have been understood and influenced by my own perspectives as a Sámi reindeer herder.

1.2 Study areas

The study of Sámi reindeer husbandry was carried out in Western Finnmark (Figure 1), located in northern Norway. Guovdageaidnu is the largest municipality in Finnmark with 9,708 km² and approximately 3000 inhabitants. Northern Sámi is the main language and most of the inhabitants are Sámi. The areas around the village of Guovdageaidnu, the winter-pastures for Western Finnmark reindeer herding region are placed within the municipality. The number of reindeer in the region in 2009/2010 was 97 013 reindeer owned by 1410 people belonging to 209 *siida*-shares (Reindrifftsforvaltningen, 2011: 9, 85). The reindeer herding districts migrate approximately 250-300 km between inland and the coast. The summer-pastures are located in the coast of Finnmark and northern Troms on the inland, on the peninsulas and on the islands.

The study of Nenets reindeer husbandry was carried out in the Yamal-Nenets Autonomous Okrug (region) (YNAO), located in North Western Siberia of Russia (Figure 1).

The peninsula is approximately 148 000 km², bordering to Kara Sea, Baydaratskaya Bay on the west and in the east of the gulf Ob. The capital for YNAO is Salekhard. In administration terms, the Yamal peninsula is a municipality in YNAO and is one of the world's largest reindeer herding areas. The summer pastures are situated in the tundra towards the coast of the Arctic Ocean, while winter pastures are in the forest–tundra across the Ob Bay and spread very close to the city of Nadym. Yar-Sale is an administrative centre on Yamal peninsula where part of fieldwork was conducted. On Yamal peninsula 5605 people, mostly Nenets⁶, and they comprise 1019 households still exercise nomadic way of life herding 281 600 reindeer. Approximately 14 500 people in the YNAO are engaged in reindeer husbandry herding approximately 665 200 reindeer. (YNAO Statistics, 2011)

1.3 Framework of research - Theoretical background

Sámi reindeer herder and social scientist Mikkel Nils Sara has written an article named “Land usage and *siida* autonomy” (Sara, 2011). This article discusses the prescriptive rules of usage⁷ in the new Reindeer Husbandry Act of 2007. These should contain the *siida* natural resources available including a set number of reindeer for the *siida*. The term “prescriptive rules of usage” is made by Sara and used in this thesis. The article brings up an important issue about the use of traditional knowledge in decision making within the national state of Norway. Sara implies that the traditional knowledge that Sámi reindeer herders have, could be more pivotal than it has been so far, especially in formal processes (Sara, 2011: 140). By including their own “understanding of their lands and herds”, their own words concerning pastures and reindeer should be used instead of the “borrowed terms and foreign concepts” that the official administration has imported. (Sara, 2011: 142-143) There are several challenges which might occur when a *siida* is preparing proposals for the prescriptive rules. One aspect of Sara's article is to highlight the importance of traditional knowledge in Sámi management of reindeer husbandry, which could provide another governing model instead of a model based on Western science.

Recently, Sámi reindeer herder and linguist, Inger Marie Gaup Eira in May 2012 published a PhD where the main goal was to “investigate the content and the use of Sámi snow concepts about grazing conditions for reindeer on snow covered ground in Sámi

⁶“The Nenets are officially recognised as one of the *Indigenous Small Numbered Peoples of Russia*”. 44 small indigenous groups satisfy certain criteria and their population must not exceed 50, 000 which brings a number of benefits according to laws preserving and supporting these groups (Turi 2008:38)

⁷ In Norwegian known as *bruksregler*

reindeer herding in Guovdageaidnu, Norway” (Eira, 2012: 89). The thesis discuss the importance of using traditional knowledge which Sámi reindeer herders have embedded in their livelihood and language in their adaptation to climatic variability and changes. The combination of both reindeer herders knowledge together with scientific knowledge might become an important tool to deal with future challenges. According to Eira (2012) reindeer herder’s knowledge is important when making decisions around their livelihoods like knowledge about the extreme weather event *goavvi* and other snow concepts which are decisive for the survival of reindeer in winter.

According to anthropologist Robert Paine (1994; 2009) the traditional knowledge was important in the daily use of Sámi reindeer husbandry in the 1960s, which is still important today. The legal framework of Norway has influenced the Sámi reindeer husbandry with regard to decision on number of reindeer and pasture use (Bjørklund, 1990; 2003) which has influenced the use of traditional knowledge.

Sámi and Nenets reindeer husbandries were presented with a broad overview of all management levels in Norway and Russia by Jernsletten and Klovov (2002), and Ulvevadet and Klovov (2004). Other research by Magga et al. (2011), Magga et al. (2011b), Oskal et al. (2009), Kemi (2008), Turi (1999) and Eira (1994) on traditional knowledge in reindeer husbandry is significant. The legal framework of Norwegian and Russian reindeer husbandry was studied by Ellen Inga Turi with a focus on the social organization of the *siida* and brigade (Turi, 2008). Factors constraining implementation of international legal standards of indigenous rights using the Nenets and Komi peoples in the Nenets Autonomous Okrug, Russia as examples was conducted by Anna Degteva (2006).

Andrei Golovnev and Gail Osherenko (1999) describe the Nenets reindeer husbandry in the beginning of 1990s in YNAO facing “new challenges to the survival of their culture” that connects the traditions of the culture with the danger of industrial development and challenges it may bring. Finally, the rich Nenets history through the ages including culture, religion and social organization are discussed by Ravna (2002; 2005), Ravna & Vylka (2001) and Stammler (2007).

The perspectives presented represent a broad line of different studies with different approaches. The works show clearly my own background when it comes to using traditional knowledge and the importance of understanding Sámi concepts in management of reindeer husbandry. This study is discussing use of traditional knowledge in reindeer husbandry where two perspectives are used to present the findings. The findings are presented through my own inside and outside perspectives.

1.4 Key concepts

Traditional knowledge and the social organizations of the Sámi *siida* and Nenets *brigade* are main concepts discussed in this thesis, including *unpredictable critical events*. Other important concepts used are *reindeer husbandry* which means families collectively herding reindeer while *reindeer herding* is connected to only the practical work with the herd. *Livelihood* is sometimes used to explain the life of reindeer herding people to express it contains aspects of life where economy, social relationships and culture are a part of. Both *reindeer herder* and *reindeer owner* is a person working with the herd and owning reindeer.

1.4.1 Unpredictable critical events

Defining unpredictable critical events in reindeer husbandry can be a sudden change in the livelihood which affects significantly the daily life and which could not be foreseen by the herders. It does not only need to be a climatic or weather event but could also be a sudden change in socio-economic condition. An extreme unpredictable event in reindeer husbandry can be a rapid change that have devastating outcome for the welfare of reindeer and on herders economy. Examples of critical events can be a change in grazing condition which locks the pastures in winter when snow condition gets difficult, but also suddenly change in the pasture habitat, closing of national borders, previous use for migration or other socio-economic stressors or events. This thesis will focus on different types of events: unpredictable changes of weather condition, sudden socio-economic changes due to shifts in the governance of reindeer husbandry, and how traditional knowledge was and is used to respond to such events in reindeer husbandry in Western Finnmark and on the Yamal peninsula. Examples of unpredictable weather events are the *goavvi* years (bad winter grazing years) in Guovdageaidnu 1917/18, 1967/68 and 1996/97 (Eira, 2012: 77). On the other hand, the implementation of the Reindeer Husbandry Act in 1978 in Norway is an example of sudden socio-economic event change. This omitted much of the traditional knowledge embodied in Sámi reindeer husbandry which subsequently affected the total numbers of reindeer and the family-based Sámi reindeer husbandry and the traditional use of pastures.

Likewise, the collapse of economy and governance of the Soviet Union (1989-2000) affected most reindeer herding regions in Russia. The Nenets family-based reindeer husbandry on Yamal peninsula dealt with these changes because the herder's traditional knowledge about reindeer, the herd, pastures and environment was strong (Magga et al.,

2011b) Unpredictable weather event according to Turi (2008: 62) occurred in the winter 2006/07 on Yamal peninsula when the rain came in October

Climate change is influencing indigenous societies, especially those who are dependent on natural resources such as pastures (Berkes, 2008: 173-174). Several examples of experiences Inuit have faced lately indicate that sea ice is thinner than in previous decades. Cree peoples have observed that berries the geese ate in fall were all dried out because of hot summers (Berkes, 2008: 173). Reindeer herders have also experienced some changes in weather and climate which impact especially the grazing conditions in the winter and spring (Oskal et al., 2009: 23).

1.4.2 *Siida* and brigade

The central concepts *siida* and *brigade* explain the social organization of a reindeer herding community and can today be understood as similar concepts. At the same time, there is an important difference between these two forms of organization of reindeer herding. *Siida* is a traditional form of Sámi herding organization, characterized by high flexibility (Jonassen and Kalstad, 2003: 15-16). “Brigade” was imposed by the Soviet state as a form of organization in an agricultural cooperative which was controlled and managed by the state. Brigade did not accommodate all aspects of flexibility inherent for nomadic reindeer herding livelihood which is still observed, for example, among the private herders of Yamal. (Informant 17; Stammer, 2007: 133)

The term *siida* is referring to, as Sara’s explanation “a group of reindeer owners that practice reindeer husbandry jointly on certain areas” (Sara, 2011: 138-139). This is the definition of a *siida* in the Reindeer Husbandry Act of 2007, and the Act distinguishes between summer *siida* and winter *siida*. A *siida* is usually understood as families practicing reindeer husbandry together. In some cases the families can divide into several *siida* and this division depends on the seasonal pastures. For example there might be one or two families in a winter *siida* who are using other pastures in spring or summer than the rest of the winter *siida* members. Within a *siida* the different families have *siida*-shares⁸. A *siida*-share is owned by a family or an individual who is a part of a *siida* and practices reindeer husbandry⁹.

⁸ *Siida*-share was in the 1978 Act called *driftsenhet* which were based on Norwegian agricultural model (Jonassen and Kalsrad, 2003: 37). In English different terms were used as “official permit” (Bjørklund, 2003), “corporate unit” (Paine, 2009) and “husbandry unit” (Jernsletten and Klokov, 2002).

⁹ Lov 15. Juni 2007 nr. 40 article 10

The concept *District* came into being in 1894 (Jonassen and Kalstad, 2003: 56) and was further strengthened in the Reindeer Husbandry Act of 1978 (Jonassen and Kalstad, 2003: 29) and the term is still used in practical reindeer husbandry and official state management. In the Act of 2007 a reindeer herding district¹⁰ covers all seasonal pastures for the herds where a *siida* is a part of a district.

According to Turi (2008: 41) Nenets reindeer husbandry in YNAO brigade is “different households work collectively to herd their reindeer, and in case of *brigades*, also reindeer owned by the state enterprises”. The Soviet state first created collective farms called *kolkhozes* and then state farms named *sovkhozes*. It ended up with state enterprises where each enterprise or *sovkhoz* had many herds, in other words brigades under each enterprise. Reindeer herding families are hired to work in brigades where both private-owned reindeer belonging to the families and state-owned reindeer belonging to enterprise are in the same herd. The family-based reindeer husbandry in YNAO survived because the brigades were formed in accordance with the family’s tradition and use of pastures (Turi, 2008: 39; Ulvevadet and Klovov, 2004: 58) as a Sámi *siida* also is. The families or people belonging to a brigade are usually related to each other and having private ownership to each individual reindeer. There exists reindeer husbandry in Russia which is not a subject of state enterprise, but since this thesis is examining the state enterprises, other types are not further presented.

1.4.3 Traditional knowledge

Reindeer husbandry is dependent on natural resources, such as land, in order to perform the pastoral life. Living a nomadic life, even in modern conditions, requires particular knowledge that gives the best possibilities to achieve the desired results. A leading reindeer herder must have certain specific knowledge to deal with all the formalities that come with surviving in a modern society. The herder also needs to have a specialized knowledge about the herd and the herd’s behavior and the natural resources available, in other words traditional knowledge. Sara (2001) states that knowledge about reindeer husbandry covers all issues connected to the reindeer and its surroundings. It contains the skill of knowing how to manage a herd throughout a year, how to benefit the reindeer, the skill of understanding the connection between animal and nature. Knowledge which is collected from many generations experiences and understanding of being with reindeer through all types of weather and all

¹⁰ Lov 15. juni 2007 nr. 40 article 42. Names of some reindeer herding districts in Western Finnmark are *Gearretnjárga, Fálá, Stierdná, Cohkolat*. The name represent the summer area which can be an island, peninsula etc. Each district have a number. (http://www.reindriftno.no/?objid=305&subid=0&selected_tab=3)

times of year (Sara, 2001: 10). The reindeer herder's detailed knowledge about the areas is pertinent to a specific area; though differences occur between forest- and mountain herding practices (Inga, 2008: 28). Berkes has defined traditional ecological knowledge that it "is a way of knowing; it is dynamic, building on experience and adapting to changes. It is an attribute of societies with historical continuity in resource use on a particular land." (Berkes, 2008: 7)

The ecologist, Berkes (2008) use "traditional ecological knowledge" while in this thesis "traditional knowledge" will be used. This refers to knowledge collected through time immemorial and has been customized through time to fit the changes. Reindeer husbandry has a flexibility which enables the livelihood adapt to changes in the Arctic where traditional knowledge is significant. According to the political scientist, Agrawal "indigenous knowledge is generated in the immediate context of the industry's of people, it is a dynamic entity that undergoes constant modifications as the needs of the communities change." (Agrawal, 1995: 429)

Berkes uses the example of where moral precepts are taught to children through story telling with explaining how the environment around the story is, the animals and the local knowledge connected to their own areas. (Berkes, 2008: 6) Local knowledge is of great importance when teaching young reindeer herders the practice of herding. Reindeer herding families, with elders, parents and children and others connected to the family have a significant status in a *siida* and brigade where knowledge is shared between all members in the work with the reindeer. Use of traditional knowledge is important when dealing with adaptation to climate change and industrial development in reindeer herding regions which reports from the EALÁT-project clearly indicate (Magga et al., 2011a; Magga et al., 2011b; Oskal et al., 2009).

1.5 Traditional knowledge analysis

Berkes (2008: 17) has developed a traditional knowledge analysis model based on previous works by Lewis (1993), Kalland (1994; 2000), Orlove and Brush (1996), Nabhan (1985), Stevenson (1996), Usher (2000), White (2006), Simpson (2005), Whitehead (1929) (Berkes, 2008:16-18). After studying the Cree's management fishing system in James Bay he discovered a traditional management body where learning by doing, conversations with elders, and learn and fail system was managing the fishing success. Through these experiences the Cree knew how to manage their fishing grounds and had a system for

seasonal fishing, for example by using different nets in different seasons. No formal state management practices existed in the society, but through informal institutions the Cree were redesigning a traditional management system subsequently. (Berkes, 2008: 156-157) The system demonstrates how resource-use practices of indigenous societies evolve over time. By learning from mistakes and through discussion of the errors, a new understanding of nature and environment is always reached. The management key for this system relies in the concept of “rules-of-thumb” which are small instructions easily remembered as rules in the local society. The rules are helpful in decision making and accomplished through social channels. Berkes and Berkes state that “indigenous knowledge is able to deal with ecosystems as complex adaptive systems by using simple prescriptions, consistent with fuzzy logic thinking” (2009: 7).

The backbone of fuzzy logic models are using language-based data instead of numerical data and the three points covering this model are; “a) there are large amounts of information; b) it is collected continuously and c) changes are incorporated into collective mental model as new information flows in.” (Berkes and Berkes, 2009: 8-9) According to Berkes and Berkes (2009) the seal hunters had its own system of evaluating the condition of the seals with language-based terms as “fat”, “skinny” etc. The algorithm for fuzzy logic is “IF a THEN b”. This algorithm is a tool for accumulating the knowledge and concludes upon the observations. (Berkes and Berkes, 2009: 10) Eira (2012) indicates that the same variables are found in reindeer herding where the reindeer herders specialized language is crucial and descriptive vocabulary is used instead of numbers (Eira, 2012: 33). Mental modeling, the use of fuzzy logic and rules-of-thumb exist in Sámi reindeer herding. In reindeer herding these small rules are important guidelines for managing the reindeer herd, especially for teaching the youth. These rules are especially significant in a local context and Sámi reindeer herders are taught to read signs, e.g. in the autumn season when predicting the upcoming winter season. Reindeer herding peoples have language-based information for categorizing reindeer, the shape of reindeer, and the landscape, weather and snow conditions which gives a broad understanding and guidance on how to manage the herd through different seasons. (Eira, 2012) Mental modeling with various variables exists in reindeer herding and helps to assess different situations. Eira (2012) argue that herders assess the herd, air temperature, behavior of reindeer, weather, from where the wind blows and the snow and grazing conditions. This is all a part of the mental models of a Sámi reindeer herder’s daily work. (Eira, 2012: 34) Years of experience have taught herders to foresee situations and make decisions according to what they observed and monitored. The knowledge herders have is inherited from the older

generation, but is also a fruit of their own studies and experiences (Inga, 2008: 28).

The traditional knowledge analysis model presented by Berkes (2008: 17) has four interrelated levels. It is suggested that this kind of analysis of traditional knowledge could be used when investigating and analyzing reindeer husbandry. This interrelated model could be used to explain the state governance of reindeer husbandry (multi-level governance), from the state political level down to local level.

The suggested traditional knowledge model for Sámi reindeer husbandry, called *traditional management model for Sámi reindeer husbandry* in this thesis, was developed based on experiences from Cree fishing management system.

The first level in the model contains the “local and empirical knowledge of animals, plants, soils and landscape”. This level also contains information about species, life histories, and behavior of animals, distributions and classification of animals (Berkes, 2008: 17). The second level of Berkes’ traditional knowledge analysis contains “a resource management system, one that uses local environmental knowledge *and also includes* an appropriate set of practices, tools and techniques”. The third level of Berkes’ traditional knowledge analysis require “appropriate social institutions, sets of rules-in-use, norms and codes of social relationships” and even “institutions of knowledge”. On the fourth level of the analysis model is the “worldview, which shapes environmental perception and gives meaning to observations of the environment”. Berkes (2008: 97) indicated that the Cree worldviews might be different from Western worldviews. The way humans conceive the world is constituted by the observations made and direct conceptions are perceived. The four levels are interconnected and one level can be affected if changes occur in another level in the Cree fishing management system. (Berkes, 2009: 18) If traditional management system is assimilated into a state governance system of e.g. Sámi reindeer husbandry in Norway, effects can be seen subsequently in the traditional livelihood.

The purpose of introducing a traditional management model for Sámi reindeer husbandry in this thesis is to increase knowledge related to unpredictable critical events in reindeer husbandry. Effects of unpredictable critical events are discussed in the light of traditional management and state governance to the model. This model might help to view the Norwegian governance of Sámi reindeer husbandry with new eyes. The goal was to understand how the traditional management model can help to see the connections between the use of traditional knowledge and the governance of reindeer husbandry.

1.5.1 Traditional management model for Sámi reindeer husbandry

A schematic table of the traditional management model is showed in the figure below (Figure 2).

Traditional Management Model for Sámi reindeer husbandry	A Traditional management perspective	B State governance perspective
4. level	Traditional worldview	State policy on reindeer husbandry
3. level	The <i>siida</i> and district	Governance, the Reindeer Husbandry Administration
2. level	The herd and pastures	The prescriptive rules of usage
1. level	Family and individual reindeer herder	<i>Siida</i> -share

Figure 2: The traditional management model for Sámi reindeer husbandry with two perspectives, traditional management perspective and state governance perspective.

The reindeer herder's or the family's detailed knowledge about the herd is placed on the first level in the traditional management perspective. The reindeer herder's daily work includes observation of land, categorizing reindeer and communication with the family. In the state governance perspective, it represents the *siida*-share.

Resource management in Sámi reindeer husbandry could be placed in the second level of Berkes' model. In the traditional management perspective, this level represents the herd and the pastures. The Sámi *siida* and herd reindeer in one unit and they are constantly assessing the grazing conditions throughout the year. The daily discussions around herd management, availability of resources and how to cope with unexpected critical events and further decision making are highly significant in Sámi reindeer husbandry. This is the fundament of the traditional management of reindeer herding. On the other hand, the state governance perspective, the prescriptive rules of usage could be included.

The governance of Sámi reindeer husbandry in Norway is divided into underlying subjects for example with the local offices of Reindeer Husbandry Administration in six

different reindeer herding regions. The regional governance covers the Norwegian Administration of Reindeer Husbandry, the Sámi Parliament and the County Council and can be fit into the third level of Berkes model. On the other side, traditional management perspective could include the whole *siida* organization.

Finally, the state governance perspective is political level of national and international politics. The national state governance is represented by Norwegian Ministry of Agriculture and Food and is suggested as part of the fourth level. Traditional management perspective it represents the way people understand the connection between animals, humans, nature and governance in the fourth level. A reindeer herder is closely connected to the herd and the worldview of a reindeer herder is also influenced by the governance systems of reindeer husbandry with laws and regulations. It is suggested that the traditional management analysis model can help to understand how traditional knowledge could be a part of the future management and governance of Sámi reindeer husbandry.

The research questions focus on traditional knowledge, unpredictable critical events and governance of Sámi reindeer husbandry. The idea is to discuss traditional solutions for handling critical events in a state governance system.

1.6 Research method – a comparative study with qualitative approach

For this research a qualitative method is chosen as the main approach since the research question requires such analysis where reindeer herder's point-of-view is presented. A qualitative research method can give a broader understanding of the reindeer herder's choices in decision making and herding when questions can be raised. The choice of research method depends on what the researcher is trying to find out (Silverman, 2005:6) and in this study a multiple method is chosen where interviewing individuals and observations are combined (Silverman, 2005: 121). A combination of methods was chosen since the fieldwork included both in-depth interviews and participating observations. The interviews in the YNAO were conducted together with an interpreter.

Spradley (1980) mention two observing methods; participant observation and descriptive observation. With participant observations researcher can participate in what the study object is doing (Spradley, 1980: 54). With descriptive observation the researcher is more descriptively collecting and recording the data as the researcher's point of view (Spradley, 1980: 76). Fieldwork on Yamal peninsula was based on observing the Nenets reindeer herders, while migrating with them for two weeks in July toward to Coast of Kara

Sea. By this, the fieldwork also included in-depth interviews during summer migration, while in Western Finnmark the fieldwork was based on in-depth interviews of selected reindeer herders. In addition, written sources from both regions were analyzed as an important part of the research method. Some interviews from Sámi reindeer husbandry were collected earlier in the IPY EALÁT-project¹¹, carried out by myself and used in this thesis about the use of traditional knowledge in reindeer husbandry. I return to my own role later in this chapter.

As Silverman points out (2005: 106) “if you cannot find a comparative case, try to find ways of dividing your data into different sets and compare each one”. This was the thinking behind the research question and aims of this thesis. The aim is therefore not a complete comparison. Western Finnmark and Yamal will be compared when it comes to the traditional solutions embedded in the natural livelihood when unpredictable critical events occur. The aim is to widen the perspective around the Norwegian state governance of Sámi reindeer husbandry and present the Yamal reindeer husbandry. The Russian case is used to understand better the processes happening in Norway, while it is actually the Norwegian case which is analyzed in depth.

The traditional knowledge, experiences, situations or other issues relevant to the topic are of interest and assess the similarities and differences and why these are observed. Regarding comparisons, the studies by Mörner (1982) and Kocka (1996) are significant and both of them focus on historical comparisons. Mörner (1982) highlights the question of land rights that shows indigenous peoples have many similar issues that can be compared in some sense. He states that despite enormous geographical distances there exist parallels which are interesting since indigenous peoples often are colonized. By this he means “a situation in which an indigenous peoples is governed by another, non-native people, with a different culture, history, systems and values and, at least originally, of a different race...” (Mörner, 1982: 37) The Sámi and the Nenets peoples are governed by the Norwegian and Russian states with special rights, the former with special rights when keeping the ILO Convention no. 169 in mind. Mörner states those differences exist when using comparative methods to compare issues “which are temporally and/or spatially widely divergent” like for example the land rights of indigenous peoples. That “such ‘distant’ comparisons” provides one with a larger perspective and sharpens a person’s understanding on the nature of things. (Mörner, 1982: 54)

¹¹ The IPY EALAT project is an interdisciplinary, intercultural study assessing the vulnerability of reindeer herding, a coupled human-ecological system involving reindeer herders, linguists, remote sensing scientists, meteorologists, lawyers, biologists, anthropologists, philosophers, indigenous institutions and organisations, industrial enterprises and management authorities. www.ealat.org.

Kocka's opinion is quite similar to Mörner's when looking at the question of distance where Kocka is pointing out that to investigate another country, society, village or the other part of the world would give the researcher a better understanding of its own history (Kocka, 1996: 202). Doing research in two different reindeer herding societies gave the possibility to obtain new knowledge, a greater perspective and a better understanding of the situation in Norway.

1.6.1 Researcher's role in the field

The fieldwork has been in two parts where two reindeer herding regions were studied. The main areas visited during fieldwork were the village of Guovdageaidnu in Western Finnmark, Norway and the Nenets village of Yar-Sale in the Yamal municipality, Russia, while half of the fieldwork in Russia was actually spent in tundra, in reindeer herding Brigade no. 17 (See Figure 1). These regions were not randomly chosen. I wanted to do research in my own community and within the livelihood I grew up in to contribute something for the Sámi reindeer husbandry. The YNAO was chosen in order to experience another large reindeer husbandry region and it was especially interesting to visit Yamal peninsula where Nenets still maintain full nomadic way of life when compared to the Sámi reindeer herders (Ulvevadet and Klovov, 2004: 58-59). Including fieldwork in these regions, also participation in a conference at Pomor State University in Arkhangelsk, Russia in April 2010 and participation in the Norwegian Reindeer Herders Association Congress in June 2010 has been an important part of fieldwork.

My role of the author is significant in relation to this research and analysis. It needs to be pointed out that the author comes from Western Finnmark, from a reindeer herding family, that has been affected by the Norwegian policies toward reindeer husbandry in general and traditional knowledge in particular. The following shall give the reader a better understanding of the authors' point-of-view.

1.6.2 Being an insider – fieldwork in Western Finnmark, Norway

Sidsel Saugestad states in her article "Research on, with, and by indigenous peoples" that "gradually, one has moved from a situation characterized by research on, to research with, and increasingly research by, Saami people" (1998: 1). Fieldwork in Guovdageaidnu contained of interviewing local people and going through archival sources. Saugestad emphasizes research done by indigenous peoples by using the Sámi as an example where they are doing research

on their own community, as in my circumstance. I felt that being a researcher in my own community was challenging, and at the same time important because there might be things that I see and that a researcher from outside might not see or the opposite too. Perhaps research done by the young people from the community might be welcomed in a different way than outsider's research? Evjen (2009: 3, 17) and Saugestad (1998: 1, 6) are both discussing *the researcher*, what status the researcher has and from what context the researcher is in. It also depends on what topic is being focused on and why. Some students even wish to keep some information in their work not accessible (Evjen, 2009: 17). By being an insider doing fieldwork in the community where I grew up, made me aware of what I can and cannot published. Maori researcher Linda Smith (1990: 39-40) thinks it is important that indigenous peoples look critically into the research methods used by Western scientists, which make *us* feel uncomfortable. Decolonization does not mean a rejection of these methods but to understand research and theory in our own way. The understanding of the field is also of importance when discussing the role of the researcher. In this part of fieldwork I was an "insider", since the area is the village I grew up in and I know the informants chosen for interview. When choosing an informant I was looking at the size of the reindeer herding districts. I termed a reindeer herding district with less than 10 *siida*-shares a small district and with more than 10 *siida*-shares a large district. I avoided people that were my closest relatives and was also choosing informants by their status in the district or their connection to reindeer husbandry through administrative work. I have five primary informants and two of them were women. Two of the informants are full time reindeer herders and also district leaders of a small district and a large district. Both the women are from reindeer herding families but are engaged in other administrative works. The first woman is a secretary of a District Board and the second woman has a position in the Area Board in Western Finnmark. The third man is working in the Reindeer Husbandry Administration in Western Finnmark. Including to these five informants, two other informants from previous project in IPY-EALÁT are used.

Having a status as an "insider" and doing research on reindeer husbandry did challenge me as a researcher. It was challenging because I was in a position where I was supposed to be a researcher, in other words an *outsider*. Since I was familiar with the community I was looking into and knew my informants from before, I was challenged in a new way. I felt it was difficult to discover information that was new for me because I had knowledge about the Sámi reindeer husbandry and the challenges they are facing before starting my interviews. Sometimes I found myself "putting answers in their mouth" during interviews. I was shaping the questions in the way so I knew what the answer could be from

before the interview. The hardest part of being a researcher in your own community is that you already know some of the answers, and you might not be able to see new things from the setting you are in. Some issues are so obvious, which might not be the case for another researcher, that you actually are able to miss some important points. I have been struggling to see new perspectives when doing research in my own community. That is one of the weak points when conducting research as an insider.

The most difficult issue I experienced was to get hold of the informants I had chosen. I believe it is common for every researcher using a qualitative method that you have to be prepared to use more time on the interview-section than you maybe predicted. The time of year I had chosen to do the interviews was autumn. I should have known that this time is the most stressful season for reindeer herders when migration to winter areas is going on. The informants were positive to participate in interviews, but I had to wait until they had the opportunity to do it. All interviews, except one, were recorded and a part of the information was written during the interviews. The interviews were done in their homes or in their place of work.

There are some benefits to being an “insider” doing research on this topic. Firstly, I speak the same language, Northern Sámi, and I know the terminology used in a Sámi community, especially in reindeer husbandry. Secondly, I have the same background as these people and I know what reindeer husbandry is about, the values it is built on, the customs and all sides of the practical work. Thirdly I believe reindeer herders are eager to discuss reindeer husbandry with their own youth. On the other hand, an insider might not see what an outsider sees, as mentioned earlier. An insider may not be able to ask so detailed and descriptive questions and can leave out information that an outsider would not. I have perceived, in earlier assignments when interviewing elders, that they expected me to know general and basic things around reindeer husbandry. For example when sometimes during the interviews the informants were expecting me to know the different terms for pastures which have a large terminology, terms on topography and so on. The main concern is of course the problem relating to impartiality and objectivity when being an insider when my role can and will be questioned.

1.6.3 Being an outsider – fieldwork on Yamal peninsula, Russia

The fieldwork in the YNAO was a quite different experience to fieldwork in Western Finnmark. First of all the language was the main obstacle but fortunately I had a good

interpreter during my month in Russia who also helped me to organize the trip. Secondly I was not familiar with the Russian culture generally, or with the Nenets culture.

The fieldwork in the YNAO was in two parts; in tundra with Brigade no. 17 of the reindeer herding enterprise Yarsalinskoe that is “*Okrug* owned through so called municipal enterprise” (Turi, 2008:39) and in the village of Yar-Sale in Yamal municipality. Interview with representative of regional authorities were also done in Salekhard - the administrative capital of YNAO.

On the tundra participant observation was the main method used and I could see and experience the everyday life of the Nenets people. Their livelihood is built on family-based reindeer herding where everyone is taking part in the tasks in the brigade. I was also taking part in their everyday life and my tasks were often to fetch water and firewood and help with the cooking in the *chum*. A *chum* is similar to the Sámi *lávvu* which is a traditional tent. In other connections it can also be used as a term about the family living in the tent. I and my interpreter were welcomed to their homes and treated as a part of the brigade.

Conversations and interviews with reindeer herders, women, youth and children were also a part of the fieldwork on the tundra. There was a great deal of interest from them to know more about my background and how reindeer husbandry is managed in Norway. Since language was an obstacle, I was very dependent on the interpreter. During interviews on the tundra and in the village of Yar-Sale, everything was translated. Every evening after interviewing informants, we went through the interviews and conversations. We discussed the questions and answers and made notes and I eagerly wrote everything in notebooks during the fieldwork period in Russia and also recorded our discussions after the interviews. The interpreter is an indigenous person from Russia, who has an in depth knowledge of both Russian reindeer husbandry and Norwegian reindeer husbandry. This made everything much easier during fieldwork in Russia. It was easy to explain to my interpreter what I needed to know and could easily use examples from Norway without thorough explanation because of the prior knowledge.

The informants were several reindeer herders and administrative workers who were engaged in reindeer husbandry and issues connected to the pastoral life and land management. The respondents on the tundra who I interviewed or had a conversation with were nine reindeer herders, where two of them were women living on the tundra with their families. Some were very eager to talk to us and some were not. The informants were aware of my research project and agreed to be interviewed. The main informant on the tundra was the

brigadier who is the formal leader of the brigade and the man with whom we also stayed with on the tundra.

In the village of Yar-Sale we were living together with a young family known to my translator. The man of this family brought us to Brigade no. 17 and also came to fetch us after two weeks on the tundra. He is educated in animal welfare and works as a veterinary assistant¹² in the enterprise Yarsalinskoe. He is also a pathfinder for the helicopters that fly to the different brigades. In Yar-Sale ten interviews were conducted where eight were men and two women. Three of the ten were working in different positions in the Administration of Yamal municipality and in the village of Yar-Sale. One respondent was a historian and lawyer; another was an economist of the Yarsalinskoe enterprise. A young reindeer herder, also working in the enterprise, was in charge of the veterinary assistants. An older man was a private reindeer herder, reindeer herder who is not a part of a state enterprise and was also a singing storyteller. We also interviewed the leader of the NGO “Yamal” and the chief of the veterinary assistants. In Salekhard we interviewed a specialist on reindeer husbandry in the Agricultural Department, the *okrug* capital, on the development of agricultural production of YNAO. All together 20 interviews and conversations were done in YNAO which gave an insight into the Russian state governance on reindeer husbandry and the Nenets reindeer husbandry.

The pros and cons of this part of the fieldwork was that I did not have much prior knowledge about Yamal and Russian reindeer herding before I entered the field. This gave me the opportunity to get to know the Nenets people and learn about their lifestyle. However I had knowledge about Sámi reindeer husbandry which strengthened my role in the brigade. The cons were that I was highly dependent on the interpreter since I do not speak Russian which can have some influence on the information collected.

1.7 Thesis outline

This thesis is divided into five main parts. The research topic and main questions are presented in the first part, as well as the background for the choice of theme, study areas where the research was conducted are also described in the first introduction part. Following with the theoretical framework where relevant literature is reviewed and the key concepts are defined. Furthermore, an analytical model regarding traditional management of Sámi reindeer husbandry is presented with a special focus on inclusion of traditional reindeer herders’

¹² Zoo-technician

knowledge into such management. The research methods are presented and followed by a discussion about the role of the researcher in fieldwork. The latter incorporates a description of limitations when conducting such a research, while also describing advantages of being an insider in reindeer herding community and understanding the role of traditional knowledge.

The second chapter is a background chapter presenting the reindeer year of the Sámi and Nenets. This chapter continues by looking at the management systems of reindeer husbandry whereby the local, regional and state levels are presented. The chapter presents changes in the management systems and concludes by connecting them to the traditional management model of Sámi reindeer husbandry.

The third chapter covers the discussion around the increasing number of reindeer which might be a result of the change in governance of reindeer husbandry as presented in the previous chapter. The problem lies in the understanding of the number of reindeer. The discussion and analysis is built around the traditional management model of Sámi reindeer husbandry.

The fourth chapter presents another critical event, *goavvi* where traditional solutions and state governance solutions to handle such event are presented. Both traditional management perspective and state governance perspectives are analyzed in connection with the model.

The fifth chapter provides an overview of themes analyzed and of conclusions found in this research project. Results connected to the traditional management model of Sámi reindeer husbandry are finally presented.

2 DAILY LIFE AND CHANGING GOVERNANCE OF REINDEER HUSBANDRY

*At the end of the 1970s the new Reindeer Husbandry Act came with a hard Norwegianisation policy and the strong power of money. Traditional reindeer husbandry was changed totally.*¹³(Gaup, 2010: 25)

A change of governance models in a state could start a process of rapid change. This is certainly true in the Norwegian case in the late 1970's. The quotation alleges that the implementation of the Reindeer Husbandry Act in 1978 radically changed traditional reindeer husbandry in Norway. This is a statement of one person and cannot stand for the whole livelihood's opinion, though it shows a general view of reindeer herders about this change. The law introduced a detailed control model of reindeer husbandry which caused different challenges for the livelihood, both internally and externally. A new law was again adopted in 2007 and then a question arise, in what way is the new Reindeer Husbandry Act of 2007 a solution for dealing with the changes caused by the former law? When comparing the change in Norwegian governance model with the situation in Russia, in what way did the fall of the Soviet Union in 1991 create a change for reindeer husbandry?

Firstly, to contextualize this chapter a presentation of how a reindeer year is organized for reindeer herding Sámi in Western Finnmark and the Nenets in Yamal is required. Secondly, a presentation of the legislative framework and management of reindeer husbandry in these two regions is needed to understand the systems and the differences.

2.1 The Sámi year

A reindeer year includes the reindeer's migration in the different seasons and also an insight into the daily life of reindeer herding families. Some of the explanations below are the author's understandings and experiences gained through fieldwork but also as being an insider in Sámi reindeer herding society. It shall be noted that these presentations of the annual cycles are from Western Finnmark and Yamal peninsula. Other reindeer herding regions can have different systems.

¹³ Translation from Norwegian to English by the author: *På slutten av 70-tallet kom en ny reindriftslov med sterk fornorskingspolitikk og sterk pengemakt. Den tradisjonelle reindriften endret seg totalt.*

The reindeer herding Sámi divide a year into eight seasons, a division of reindeers migration between the different seasonal pastures; *gidđa* - spring, *gidásgeassi* – spring-summer, *geassi* - summer, *čakčageassi* – autumn-summer, *čakča* - autumn, *čakčadálvi* – autumn-winter, *dálvi* - winter and lastly *gidásdálvi* – spring-winter (Sara, 2001: 48; Jernsletten and Klovov, 2002: 18-19). The seasons represent reindeer's use of pastures and people must adapt their tasks to the reindeer's basic needs (Sara, 2001: 48). There is no end or a beginning of a reindeer year, but since spring is a time when the amount of work increases my presentation starts with spring.

In spring, *gidđa*, around beginning of April and May, reindeer start moving more around and search for food in areas where there are bare spots on the ground. Consequently reindeer can easily be mixed into neighboring herds because the animals are moving in larger areas in search of food. The pregnant females also become more stressed and long to go towards the coast and their natural calving areas. (Sara, 2001: 49) In the *siida* the herders are working day and night with a shift system. This time migration towards the coast starts. Before migration the winter-herd is being split into several spring-herds. The separation is needed since the calving areas are in different territories. The herd is brought to a corral where separation to smaller herds takes place. Usually the whole family participates in this event to help in the separation process. After separation of the winter herd, migration begins and family members join if needed. The family members are important since they represent “a potential work force in intensive periods” (Jernsletten and Klovov, 2002: 20). Everyone who owns reindeer in the herd are already from childhood motivated to work with the herd, especially to help when needed. If leave of absence from school and work is possible, children and mother migrates with the herd together with father and brothers. The change of the economic status in a reindeer herding family; “from a household economy to a cash economy” which took place after 1978, forced women to seek additional income (Ulvevadet and Klovov, 2004: 117) and that is why some women today are not able to join migration with herd.

My experience is that spring migration is a great time for children. Fishing on the ice, learning to manage the herd and by this they will have close connection with the reindeer and learn to recognize earmarks and reindeer's hair colors and personalities. Children also learn how to manage on the mountain in bad weather, how to see where it is difficult and dangerous to move. During spring migration it is a good time to teach children traditional knowledge around issues such as good conditions for migration. In bad weather that causes poor grazing conditions for reindeer, adults have less time to teach. On the other hand this is also a lesson

for children because they must manage without the adults help and guidance and in this way learn to be independent. Participation in reindeer herding and other tasks connected to the industry is the best way to teach children and youth to become professionals (Ulvevadet and Klovov, 2004: 118).

The regulations around reindeer husbandry in Norway have certain dates for when arrival to summer or winter areas are allowed. For example the dates are set by the Area Board (read further explanation of Area Board later in this chapter), a statutory from the Act¹⁴. As this is the time for reporting to the relevant administrations, herders spend a lot of time also doing paperwork in the spring. On reaching the calving areas herders have more free time for paperwork and family since the herding is not so intensive anymore. Usually there is always a herder with the herd during calving too, to look out for predators and avoid other disturbances reaching the herd. Females and males separate naturally, since the males usually graze widely and prefer valleys and lower grazing areas where the snow melts first and fresh grass grow. Females prefer to graze in higher areas avoiding places where people move, as in valleys nearby villages (Sara, 2001: 53). Some herds are even split into a female and male herd before the migration since females need to reach the calving areas as soon as possible while the males do not. This also depends on the system each *siida* have. Another reason for separation is that the females are not so tolerant in the presence of males and prefer peaceful places (Paine, 1994: 87). During this time children and women go back to school and work, but commute to the calving area or summer area on the weekends.

In early summer, *giđásgeassi*, June, earmarking of the calves is done in some *siida* in Western Finnmark, while other *siida* might earmark in the autumn. It depends on the herding system in each summer area placed in the mainland or on the islands¹⁵ in the coast of Finnmark and Troms. Some *siida* have the possibility to earmark in the summer, while others do not because they do not gather the herd together until the autumn. Early summer is the time for reindeer to gain weight and is intensively grazing before the mosquitoes starts flying and the hot summer days begin (Jernsletten and Klovov, 2002: 18). In spring-summer usually the yearly congress of the Sámi Reindeer Herder's Association of Norway is held. Here reindeer herders all over Norway come together to discuss issues concerning reindeer husbandry and also to plan on how to meet the governments imposed duties and requirements.

The summer, *geassi*, end of June, July and beginning of August, is a calm time for reindeer herding families. The summer is spent at the summer area. The reindeer goes freely

¹⁴ Lov 15.juni 2007 nr. 40 article 61

¹⁵ Islands as Kvaløya, Stjernøya, Seiland, Sørøya, Arnøya etc.

in the summer area and are not disturbed by the herders if earmarking is not taking place. The only disturbance is the insects on warm summer days.

Reindeer herders prepare for the autumn by fixing fences and corrals in the summertime, also vehicles and snow mobiles. Traditionally there were always different tasks to do for a reindeer herding family and the summer is not an exception. The summer is the time to prepare for the winter by cutting a special type of grass to put in the reindeer skin boots called *gápmagat* in Sámi. Sewing clothing, picking berries, fishing, chopping wood, preparation of skins and other necessities are managed. These tasks have traditionally been a part of the daily life of a family where children have been engaged in all tasks. The children and youth have been learning the best traditional ways as they were learning by doing. This also contains learning to recognize the places where to e.g. pick berries and cut grass, to know when the best time to chop trees is and where the best fishing places are in a river or lake. These traditions are still valued today and passed over to the younger generations.

In the early autumn, *čakčageassi*, mid August to the beginning of September the preparation for autumn and winter is starting. Children go back to school and families are commuting between Guovdageaidnu and the summer areas on the weekend. In the autumn, *čakča*, September, the different reindeer herding districts gather the whole herd together. Some districts are now earmarking the calves while others only chose reindeer for slaughter and the yearly income is calculated. During the corralling of the herd in autumn the vaccination of reindeer against warble flies is also done and also castration of some bulls. Vaccination can also be done in early winter if it was not possible to do so during autumn. Slowly the migration towards autumn and winter pastures starts, and in the end of September the rut starts for reindeer. During the rut it is easier to herd since the rutting males are controlling the herd. (Sara, 2001: 62) Migration is difficult during the rutting period. Usually some males stop the herd from moving and also separate a female or more from the rest of the herd and runs away with it from the main herd. Some *siida* in the middle range of Western Finnmark have fences around the autumn pastures that makes the autumn season easier for the herders. Note that the reindeer herding area in Western Finnmark is divided into three ranges, as “threefold division” which is recognized by the Reindeer Husbandry Administration (Paine, 2009: 10). The ranges are called *Nuortabealli*, Eastern range, *Guovdojohtolat*, the Middle range and *Oarjjabealli*, the Western range¹⁶.

¹⁶ http://www.reindrift.no/?objid=305&subid=0&selected_tab=3

After the rut usually the summer herd is split into several winter herds. This separation is forming the winter *siida* and migration to different winter areas is taking place. This is an important event for the whole family where everyone who has their own reindeer engages. Migrations to the winter areas happen in November which is called *čakčadálvi*, autumn-winter. The rutting males are exhausted and weak after the rut but the rest of the herd is in good shape after a good summer and autumn season (Sara, 2001: 65). This time of year is again stressful for the herders. This is because migration must be arranged when the herd is quite difficult to control due to the mushroom season. The reindeer are searching for mushrooms over large distances, which are a substantial part of the diet at this time and the herd becomes almost uncontrollable. Herding is even more intensive and challenging if the snowfall is late. Snowfall usually makes the herd calmer.

In the prescriptive rules of usage, the Reindeer Husbandry Act of 2007 has imposed that a *siida* needs to decide what time of year they can use the different seasonal pastures if the Area Board has not decided dates for them¹⁷. These dates were already imposed by the Act of 1978. November 1st is the usual date when *siida* can cross over to winter pastures. A *siida* can apply for dispensation from the agronomist in the local office if there is a need to go earlier to winter pastures. An example, snowfall earlier in the autumn or heavy pressure on pastures in autumn areas where fences may hinder reindeer from wandering further are some reasons for such an application. Reindeer herders are dependent on their own knowledge when assessing the situation in the autumn pastures and by what decisions to make. They are also evaluating the coming winter and looking for signs to understand how the winter season will be. The weather conditions in autumn are often imitating the forthcoming winter, herders have assessed this for generations. The use of traditional knowledge is very significant in this time of year. It gives the herders strength to deal with the unknown, but expected conditions after interpreting the signs in the autumn.

Winter and spring-winter, *dálvi* and *gidásdálvi*, from December to beginning of April are usually calm and there are herding shifts again for the herders. In a big *siida* there is less herding for the men and they can spend time at home with the family. This time of year is also the time to fetch the *siida* reindeer from neighboring and other herds if there has been a mixing of herds in the autumn or early winter (Sara, 2001: 69). Some *siida* even bring reindeer to slaughterhouses if they did not deliver all that they wanted the last autumn. This is the time to slaughter for themselves too, for weddings and confirmations and for summer use.

¹⁷ Lov 15. Juni 2007 nr. 40 article 59

The winter is great time for youth and children to participate in herding in calm surroundings. After the Easter holidays the herd starts to move slowly towards the coast again. The spring is once again ahead of them.

This overview gives a picture of the life of reindeer herding Sámi. There exists yearly alterations; a reindeer year is not a static system. As the Sámi often refer to a saying, "a year is not another years' brother"¹⁸ actually means that a reindeer herder cannot expect similar situations to take place the next year. A reindeer herder cannot be sure on what is going to happen and therefore not be able to prepare for it. There are several situations during a year that can be characterized as a critical event. Some unpredictable critical events are most commonly connected to the herd, poor grazing conditions in the winter season, sickness in the herd, changes in climate causing different situations as rivers and lakes are not freezing and so on. There are also challenges connected to people such as financial crises, difficulties in delivering reindeer to slaughter, communication problems with others or great changes in the management system. As stated earlier, I have chosen to focus on challenges in connection to governance of reindeer husbandry, high number of reindeer and on the extreme weather event *goavvi*. In the next section a presentation of Nenets migration with reindeer on Yamal peninsula.

2.2 The Nenets year

In Yamal peninsula the annual migration of reindeer is quite similar to reindeer migration in Western Finnmark, from inland to the sea. However there are some differences related to the topography, there are no high mountain pastures. The Nenets have named the months after natural changes throughout the year, and as in the Sámi culture there is no end or beginning of a year since the life of nomadic people is cyclical (Stammler, 2007: 100, 105). There exists the same cyclical use of seasonal pastures as in Western Finnmark. There are no major differences in the life cycle of the reindeer between Western Finnmark and Yamal but there exist other differences, as in how the life is organized in a brigade.

In the spring, around end of March or beginning of April, around the time when migration starts, there is a celebration called Reindeer Herder's Day. This is celebrated in the city of Nadym and in villages nearby the brigades where social relationships with relatives and others are cared for. This festival marks an end to the winter, or beginning for the spring. All members of the different brigades can meet in the village before the long migration

¹⁸ *li leat jahki jagi viellja*. (Gaski and Solbakk, 2003: 132)

towards the summer pastures starts. (Stammler, 2007: 105-107) The Nenets usually use reindeer as transportation and the use of snow mobile is not as important as in Western Finnmark. To some extent it is, as for bringing groceries from village to tundra which can be a long distance. Then a snow mobile is considered useful to have. In the administrative organization of herding units in Yamal there are a number of private herders whose activities are not strictly regulated by the state. The private herder's migration might be organized differently than migrations of brigades (Informant 17, Informant 6).

The herds need to cross the frozen Ob Bay before it starts to thaw. After crossing this bay the great tundra lies ahead of them. Now the families must provide households with food and groceries in the villages for many months before leaving. The migration towards the summer areas is challenging since all other brigades are on the same route rushing through the same narrow corridors. Some brigades have longer migration routes than others, as in Western Finnmark there are some *siida* which has longer migration than others. Note that the migration routes in Yamal are at least twice as long as in Western Finnmark. The brigades with shorter migration routes have specific calving areas that they rush to reach, while brigades with longer migrations need to organize the calving during migration. Reindeer prefer the same calving areas year after year, and is a traditional understanding between reindeer herding communities. (Stammler, 2007: 107-109) This is also known by Sámi reindeer herders. By June the snow has thawed significantly and brigades can change from winter equipment to summer equipment. Winter clothing is changed into summer clothing and tent covers from reindeer fur to canvas. The equipment is left harnessed into sledges which are then left on the migration routes. The summer equipment was left there last autumn and is common between all brigades to leave their summer and winter gear on the tundra. (Informant 5) Children are engaged in collecting fire wood since there is a lack of forests on the tundra. The storing of food becomes more difficult because of the rise in temperature. The vaccination of reindeer against anthrax is done in the spring and early summer, while vaccination against warble flies happens in autumn. Some brigades also earmark the calves at this time. (Stammler, 2007: 110-113)

Unlike to Western Finnmark the summer is a period of intensive herding for the Nenets on Yamal peninsula. Insects cause problems for the reindeer herds and the herds are kept together to avoid the plague of mosquitoes and warble flies. The insect plague is extreme on the tundra though this also depends on the weather and temperature. When reaching the coast it becomes easier for the herds. (Stammler, 2007: 113) In Yamal such a system as in Western Finnmark is not possible because of the tundra topography. There are no natural

boundaries on the land. In Western Finnmark the topography of the coast with steep mountains, deep valleys and even the ocean makes a border between the different herds that eases the summer period.

During the spring and summer reindeer grow new antlers. The females usually lose their antlers a week after giving birth. Other smaller reindeer lose theirs in the spring while the males which were in rut in the autumn lose them after the rut. New antlers start growing in the spring and grow all summer until the mid of August. When the bone substance is fully grown then reindeer starts to remove the velvet away by scratching the antlers against trees and other things. In the 1970's the collection of fresh antlers of reindeer became popular in Russia, as they were considered to be important in medicine for strengthening the human immune system (Stammler, 2007: 306) and this remains an important source of income for herders in Yamal, as well as in Russia in general (Jernsletten and Klovov, 2002: 27). In the summer the cutting of fresh velvet antlers is done by the reindeer herders in the brigades. This brings extra income to the herders and the possibility of trading antlers for groceries (Stammler, 2007: 113-114). This cutting of velvet antlers is not practiced in Norway.

The importance and daily practice of traditional knowledge among the Nenets reindeer herders was observed by a number of researchers (Stammler, 2007; Klovov and Khrushchev, 2004; Magga et al., 2011b; Degteva and Nellemann, 2012), as well as during fieldwork in 2010. The use of fish oil against the mosquito plague can serve as a good example. Reindeer herders make the fish oil themselves and it is at least as efficient as modern chemicals (Informant 12). It was used on the transportation reindeer's antlers, around the eyes and back where the skin is very thin. By taking the fish oil into the mouth and spit against the areas gave protection for approximately two hours. There were many other examples where the traditional knowledge was performed such as the time of migration during a day, decision making about migration and separation of mixed reindeer, preparing skins for certain type of clothing and equipment, etc.

Early autumn, in August, is the best time to slaughter calves for the skin to make the clothing to children, female and some parts to male's clothes (Informant 7). In August also in Russia the mushroom period starts when reindeer become wilder and more difficult to control. In this period herders need to be working with the herd all the time (Stammler, 2007: 115), as well as there is a need for dogs with special qualities used only in the mushroom season (Informant 12). The Nenets are always on the move since the reindeer need fresh pastures every day. In the beginning of August they reach the very summer pastures, stay there some days and then turn direction south towards the winter pastures in the forested area around

Nadym. In August and September vaccination of herd against warble flies is done. Castration of bulls is before the rut, which starts at the end of September. Usually the bulls chosen for transportation are castrated in the spring, because then they would get stronger (Informant 9). After the rut the brigade herds are counted by the workers of enterprises and reindeer are also selected for slaughter. From November the winter period starts and by the end of December slaughters ends. The brigades must reach the winter pastures before January 10 which is a decision made by the enterprise. (Informant 9) This is similar to Norwegian regulations with dates regulating the use of the different pastures as explained earlier in the former section.

December and January are calm months. Now brigades can stay up to a month in the same camp before migrating to another area. The herd is calm and herders can spend time hunting, making equipment and also with the families in the *chum*¹⁹. In some cases two families can share one chum, usually a father and son with their families or two brothers, as observed during fieldwork in 2010. In the winter period they have more time to visit neighboring brigades and relatives and visit the villages nearby to fetch food. The spring is ahead and preparations for migration are done (Stammler, 2007: 116-117).

Nowadays in Yamal the children usually stay at the boarding school in the villages during the study year and visit their families only on vacations (Informant 5). For instance, children of those reindeer herders who migrate on the pastures assigned for reindeer herding enterprise Yarsalinskoe, including children from Brigade no. 17 stay at the boarding school in the village of Yar-Sale (Informant 7). This is a result of the Soviet times when nomadic life was disrupted and women and children sent to settlements (Jernsletten and Klovov, 2002: 29) This was common in Guovdageaidnu during the years after World War II. The reindeer herding Sámi children were at the boarding school in Guovdageaidnu while the rest of the family migrated with the herd on the tundra. Informants from Yamal expressed that it was sad that their children could not stay with the family and learn the traditional way of living. The parents understood the importance of formal education. The parents hoped that their children would return back to the tundra. Today there are many youth who chose a life in the village instead of the nomadic life.

The families have their own lives within the brigade where women are engaged with their tasks, children the same and men with the herd. According to Golovnev and Osherenko (1999: 42) the women and men are responsible for their tasks in a household and the man should not help the woman, and the opposite. During the fieldwork in 2010 it was observed

¹⁹ Traditional Nenets tent, in Sámi; *lávvu*.

that women and men were cooperating with many tasks, but there were some specific things that only women were responsible for such as cooking; sewing and fetching fire wood and water. The exception for the two latter is the time when women are putting up the tents after the migration, and then men fetch water. Men's responsibilities were to fix sledges and harnesses, working with the main herd and plan the migration with other men in the brigade. In Norwegian reindeer herding families there are also tasks which are traditionally done by the women such as sewing and cooking while the men work with the herd. The division of women's and men's tasks was strengthened with the implementation of the Act of 1978. The division of men's and women's task in a brigade and *siida* are for practical reasons where women are used to take care of the household while men are more accustomed to the practical elements of herding.

The life of Nenets on the Yamal peninsula today is less assimilated with the Russian society than the life of Sámi in Norway. The Nenets live in chums all year around, wear traditional clothing more or less and also use reindeer and sledges for transportation in all seasons where traditional knowledge is comprised in. In comparison, in the Guovdageaidnu area, the reindeer herding Sámi only live in *lávvo* when corralling the herd, migrating, herding etc. Usually cottages in winter areas and also summer areas are the housing while having the main house in Guovdageaidnu where children go to school. On Yamal peninsula the migration routes of brigades are 2-3 times longer compared to herders' migrations in Nordic countries. While the use of mechanical utilities as snowmobiles and ATVs are minimal in Yamal (Ravna, 2002: 145). Norway has since the end of World War II undergone intense modernization and infrastructural development, and this has impacted Sámi reindeer husbandry. On Yamal peninsula the modernization of reindeer husbandry is slower because Nenets peoples were able to maintain their traditional way of living despite the changes in the governance (Ulvevadet and Klovov, 2004: 58).

2.3 Governance of reindeer husbandry in Norway

Norwegian reindeer husbandry policy is built on two independent bases; as an economical industry and as a cultural cornerstone for the Sámi (Labba et al., 2006: 40) In Norway the Ministry of Agriculture and Food is responsible for reindeer husbandry. The Reindeer Husbandry Board²⁰, which is the national board responsible for the management of reindeer husbandry, has both an advisory and a management role. The Board is responsible for most of

²⁰ In Norwegian: *Reindrifststyret*

the decision making concerning reindeer husbandry in Norway. (Jernsletten and Klovov, 2002: 86-87) It is elected for a four year period by the Ministry of Agriculture and Food and the Sámi Parliament. The Norwegian Reindeer Husbandry Administration²¹ is a subject of the Ministry of Agriculture and Food. It is responsible for among other the national Reindeer Husbandry Board, the Reindeer Development Fund²², the Economic Committee²³, the Area Boards and for the earmark committees²⁴ in each of the six reindeer pasture areas as well.

The regional Area Boards²⁵ are divided into six pasture areas which comprise all of Norway's reindeer herding area where Western Finnmark is the northernmost. The Area Board is responsible for contributing to fulfilling the national goals of reindeer husbandry. In each area there is a local office where the reindeer agronomist functions as a secretary for the Area Board.

On the local level of management each reindeer herding district has a District Board²⁶ where members from the district are chosen and below this we find the different *siida*. (Jernsletten and Klovov, 2002: 86-87) The reindeer herders' professional organization in Norway is called the Sámi Reindeer Herder's Association, or NRL²⁷, established in 1948. The organization has influence on the policies that impact and govern reindeer husbandry in Norway (Berg, 1997: 168). NRL and the Norwegian state, here the Ministry of Agriculture and Food, have yearly negotiations which culminate in the annual Reindeer Husbandry Agreement. These negotiations constitute the economical and political mechanisms the state uses to fulfill the national goals for reindeer husbandry each year (Ulvevadet, 2011: 167). Reindeer herders are represented in all three levels (Kemi, 2008: 30).

2.3.1 The legislative framework and the introduction of the prescriptive rules of usage

With the Reindeer Husbandry Act of 1978 the formal framework and official perspective on practical work and daily life of traditional reindeer herding was radically changed. The Act introduced a formal administration for reindeer husbandry, creating general rules to conduct reindeer pastoralism with certain rights to do reindeer herding and property rights and other

²¹ In Norwegian: *Reindrifftsforvaltningen*

²² In Norwegian: *Reindrifftens utviklingsfond* (RUF)

²³ In Norwegian: *Økonomisk utvalg for reindrifftsneringen*

²⁴ In Norwegian: *Merknemndene*

²⁵ In Norwegian: *Områdestyrene*

²⁶ In Norwegian: *Distriktsstyre*

²⁷ I Norwegian NRL stand for: *Norske Reindriftssamers Landsforbund*. In the information booklet published by the Norwegian Reindeer Husbandry Administration in (2009: 4) it is stated that NRL "serves the Sámi reindeer husbandry industry in Norway and its purpose is to promote the economic, professional, social and cultural interests of the Sami reindeer herders."

changes regulated by law. (Turi, 2008: 36) The Act of 1978 introduced a change to the old *siida* organization, the original community system the Sámi had maintained for centuries. The *siida* members, often several families, cooperated and helped each other in the *siida* yet still retained individual rights to use the resources in their area. The *siida* consisted of many families that had traditionally been using the same grazing areas for generations. The Act of 1978 proposed a so-called “husbandry unit”, that consisted of one person, or spouses doing reindeer husbandry together with one herd. (Jernsletten and Klokov, 2002: 20-21)

It is claimed the policy with the Act of 1978 did not work “according to its intentions” (Bjørklund, 2003: 124). The intention of the Act was to ecologically arrange reindeer husbandry’s pasture use to the benefit of reindeer herders and the society in general²⁸. This caused a modification that changed the importance of the *siida* and cooperation between *siida* members. According to Sara (2011) three main problems arose in the period after the adoption of the Act in 1978. The primary concern was the increasing number of reindeer in Western Finnmark over the past decade. The second concern was the co-management system which only included the legally recognized units. The Boards of the reindeer herding districts was an example of this and as a result, the *siida* lost its status as a recognized unit. The third concern was the exceedingly large herds which were crossing the traditional boundaries and the focus of the management system was not the *siida* and the traditional rules by which a *siida* operated before the Act. (Sara, 2011: 139) This was a critical event for the management of reindeer husbandry in Norway and especially for Western Finnmark. In 1998 a committee was appointed to prepare amendments for a new law (Sara, 2011: 138).

In 2001 a “Proposal for an amendment to the Norwegian Reindeer Herding Act” (NOU, 2001: 35) was published. A group of lawyers and reindeer herders which was mandated to review the Act of 1978 proposed giving the old *siida*-system its status back by introducing the prescriptive rules of usage (Sara, 2011: 139). The proposal focused on the administration of reindeer husbandry with special attention paid to the internal organization within reindeer husbandry where the decision around number of reindeer was important to the *siida*. (Jernsletten and Klokov, 2002: 106-107)

The Reindeer Husbandry Act of 2007 was adopted and reintroduced the *siida*-system. The “husbandry unit” was now named *siida*-share. The traditional Sámi *siida*-system was recognized as the basic unit for the working partnerships and rights holders (Vistnes et al., 2009:13; Sara, 2011: 138). The Act of 2007 mandated every reindeer herding district to create

²⁸ Lov 9. Juni 1978 nr 49 article 1

prescriptive rules of usage for their district. Now the responsibility lay on the reindeer herding districts to fulfill the amendments and resolve the challenges that the 1978 Act brought to reindeer husbandry in Norway. In other words, the new Act gave room for reindeer herders themselves to make decisions around their livelihood internally. Various provisions in the Act give room for the livelihood to take responsibility for the management and sustainability of reindeer pastoralism.

The main task for a *siida* is to organize the work within a *siida* and the Act provides an internal autonomy by imposing the prescriptive rules of usage as stated in the information booklet published by the Ministry of Agriculture and Food and the Norwegian Reindeer Husbandry Administration. (2007: 4-5) It must be noted that a District Board is given the responsibility to propose the rules for the summer area, while the Boards of the different ranges, e.g. The Board of Eastern range²⁹ are responsible to propose rules for the winter areas which is named as a winter district. The winter pastures in Western Finnmark are a kind of communal grazing area for all the *siida* in Western Finnmark where the different *siida* have their traditional pastures within the winter district. The common pastures are divided into tree winter districts, or ranges, as explained earlier.

In Article 57 of the Reindeer Husbandry Act of 2007 it states that prescriptive rules of usage should secure an ecologically sustainable utilization of the pasture resources that the reindeer herding district has available. The prescriptive rules should also contain provisions about the use of pastures (article 59), the number of reindeer (article 60), the use and maintenance of fences and other common facilities. Furthermore, the use of motorized vehicles, the disposition of the reindeer fund (see article 47 in the Act), the management of other assets and the funds in the district, the division of duties and other investments and lastly other conditions as considered appropriate for regulation should be included in the prescriptive rules of usage. In addition to all this, a district must also have a written district plan (article 62) that must contain migratory routes in the district, an overview of the seasonal pastures, calving areas etc. In addition an overview of the vehicles and transport used in the district and an overview of all fences and corrals which are permanently set up and also fences for temporary use. The district plan must be sent to all neighboring districts and also to the municipalities that the district has their pastures in and to the County and to the County Council. The prescriptive rules of usage thus present a lot of paperwork for the reindeer

²⁹ In Norwegian: *Østre sonestyre* http://www.reindrift.no/?objid=305&subid=0&selected_tab=3

herders and *siida*. These provisions are based on the traditional ways reindeer herders have been working in their areas, now in a written statement.

The Norwegian state is presenting the prescriptive rules as a solution to resolve the challenges that arose after the Act of 1978. The responsibility is now on the reindeer herders to resolve the problems concerning the number of reindeer, pasture use and internal issues within the *siida* by making prescriptive rules. These rules are supposed to be approved by the Area Board, the Reindeer Husbandry Board and the Ministry of Agriculture and Food. The question is, whether the prescriptive rules are a solution for the problems still existing after the Act of 1978? Is the use of traditional knowledge important in the prescriptive rules when i.e. deciding number of reindeer? The decisions around the number of reindeer will be discussed in the third chapter.

2.4 Governance and legislation of reindeer husbandry in Russia

The management of reindeer husbandry in Russia is quite different to the Norwegian management system. The question posed in the beginning of this chapter concerns in what way did the fall of Soviet Union in 1991 create a change in reindeer husbandry with regard to the collectivization process?

It can be stated that the Soviet state brought substantial changes to the practice of reindeer husbandry. The ideology of the Soviet Union was to strategically develop reindeer herding into a breeding economy which was to become economically profitable (Vladimirova, 2006: 138). The collectivization process introduced enterprises (first kolkhoz and later sovkhov), as reindeer were expropriated from the herders, considered to be the state's property and collected into bigger herds under the management of these kolkhoz and sovkhov leaders. Then the main aim of reindeer husbandry on the tundra became meat production. The transformation from private to public ownership was a painful process for reindeer herders, and even today the herders remember in which brigade their families had reindeer (Informant 6). Public reindeer husbandry was developed e.g. a lot of state funding was distributed to overcome reindeer diseases.

One of the largest difference between the Russian and Norwegian management of reindeer husbandry, as mentioned earlier, is that there is no constitutional legislation around reindeer husbandry in Russia that govern the industry's legal status (Ulvevadet and Klovov, 2004: 89) while in Norway there is. During fieldwork 2010 it was mentioned that a bill on reindeer husbandry had been written which has not yet been adopted by the state parliament.

However, without a federal law especially focusing on the reindeer husbandry there exist three framework laws concerning indigenous peoples, as Degteva (2006) and Turi (2008) point out. The first law is called On the Guarantees of the Rights of Small Numbered Indigenous Peoples of the Russian Federation and was signed by President Yeltsin in 1999. This law is known as the “indigenous law” by pronouncing the protecting the indigenous peoples’ traditional areas, way of living and their livelihoods (Ravna, 2002: 156). The second law, On the General Principles of the Organisation of the Indigenous Small Numbered Peoples of the North, Siberia and the Far East of the Russian Federation was signed by President Putin in 2000. The third framework law on indigenous rights is the law On the Territories of Traditional Nature Use of the Indigenous Small Numbered Peoples of the North, Siberia and the Far East of the Russian Federation signed by President Putin in 2001.

According to Degteva (2006) the first law proclaims indigenous rights, though in a very broad sense and subsequent laws were to implement these rights. The second law is concerning “legal formation and activity of local communities (or *obschinas*³⁰)” while the third law concerns the territories of traditional nature use, the management, the formation and maintenance of the territories. The third law mentioned here was never really implemented at the federal level, as at this level there was not even one such a territory established. (Degteva, 2006: 36-38) A number of researchers highlight a declarative character of the above framework laws, while the actual implementation of the international standards of indigenous peoples rights has not been meaningful in the last decade. (Arkhangelsk Conference, April 2010)

In Russia, as well as in Norway, reindeer husbandry is a branch of agriculture and at the federal level it is under the Ministry of Agriculture. This Ministry makes decisions about the general policy towards reindeer husbandry in Russia and about the measures of support. A subsidy for live reindeer, which means that a juridical entity involved in reindeer husbandry like *obschina* and enterprise, receive an amount of money per reindeer per year as an evidence of a supportive government policy towards reindeer husbandry in Russia. An NGO called Reindeer Herders Union of Russia has a close cooperation with the Ministry of Agriculture of the Russian Federation on the issues relevant for the reindeer husbandry. (Jernsletten and Klovov, 2002: 37)

As Russia is a federation, the regions have strong responsibilities and some level of freedom to execute policies and economies within their territory, as well as to process

³⁰ A collective community established by reindeer herders (Degteva, 2006: 33; Turi, 2008; Stammer, 2007).

regional lawmaking. Thus, in the YNAO numerous of laws concerning indigenous peoples were adopted and one law in particular concerns reindeer husbandry. The YNAO regional law no. 46 “secures legal and economic protection, protection of nature and social basis for reindeer husbandry”³¹. The aim of this law is to preserve the traditional ways of living of the indigenous minority peoples and ethnic communities. Turi (2008) highlights other laws on the regional level as having significance for reindeer husbandry, directly or indirectly concerning the “welfare and activities of indigenous minorities” (Turi, 2008: 44).

The Departments of Agriculture of the YNAO is executing the management of reindeer husbandry on the regional level by for example providing extra subsidies per live reindeer, subsidies for meat production, and make programs of economic development of reindeer husbandry as an agricultural industry. Currently a key element of such development is the construction of several slaughterhouses and other infrastructure. This means to facilitate deliveries of reindeer for meat production, as well as to ease herders’ access to the market. This plan is a part of economic measures for regulating number of reindeer, as in stable and favorable economic conditions herders are to be motivated to deliver more reindeer for slaughter. (Informant 16) Private herders only get small subsidies from the federation when delivering reindeer meat to a certain meat processing company, Yamal Reindeer, located in the village of Yar-Sale (Informant 20). In the YNAO the Department of Agriculture manages reindeer husbandry for the Administration of the Okrug where only 12 reindeer enterprises (former sovkhoses) are under the Okrug administration. Private reindeer herders are under no single body since the Department of Agriculture and the State Committee of Land-Use and Land Resources, which are responsible for the reindeer, pasture only deal with state and public enterprises. (Jernsletten and Klovov, 2002: 40)

2.4.1 Ownership of reindeer in Russia

In Norway only private ownership of reindeer exists where owner must be a Sámi and then has the right to have an earmark. In Russia three different kinds of ownership of reindeer can be found. Those are public ownership, state ownership and private ownership (Jernsletten and Klovov, 2002: 34). In Yamal peninsula two types of ownership exist, private and state ownership, the latter exists as municipal ownership. Approximately 80 % of the entire Yamal herd is under private ownership. The reindeer owned by the Yamal municipality, 281 600 reindeer (YNAO Statistics, 2011), are taken care of within three reindeer herding enterprises,

³¹YNAO Law no. 46 1998 article 1

namely municipal reindeer enterprises Panaevskoe, Yarsalinskoe and Yamalskoe. Each of these enterprises has several herding units, brigades, where the herders are laborers and earn salary for herding municipal reindeer. At the same time, the herders working in the brigades own private reindeer, which they keep together with municipal reindeer in one herd. As a result, in one brigade both state and private ownership are found. (Informant 8, Informant 17)

In Yamal reindeer husbandry is presented in three forms. The first form is the above-described brigades, as part of municipal enterprises, which hold the legal right to use the pastures and receive larger amounts of subsidies and other measures of economic support. The leaders of the enterprises are appointed by the YNAO authorities and work in close cooperation with them. The second is private households which are part of bigger unity, for example organized in *obschina*, such unities have juridical status, elect their leaders, who organize the supply of goods and deliveries of reindeer products to the market, and who also report to the YNAO Department of Agriculture when it comes to applying for subsidies and other economic support. The third is also private household but which are not part of any juridical entity and who act individually and experience the least control and management, as well as economic support. (Degteva and Klovov, 2012; Fieldwork materials 2010) The fieldwork for this thesis was conducted in the municipal reindeer enterprise Yarsalinskoe, Brigade no. 17. (See chapter 1, part 1.6.3) Thereby the focus in this thesis is on state-owned enterprise and will not investigate other management systems of reindeer husbandry in Russia.

2.5 A change of governance and responsibilities from national state to *siida*?

The cyclical reindeer year for Sámi and Nenets reindeer husbandry are similar in the sense of the reindeer's migration according to the seasonal pastures. In Yamal migration from winter to summer pastures is longer than in Western Finnmark and in Yamal summer herding is intensive compared to Western Finnmark where most herds graze free. On Yamal peninsula children join the family in all vacations working closely with reindeer, in that way they have possibilities to learn and maintain their traditional knowledge. In Western Finnmark children live in the settlement all year around, go to school and work with reindeer when needed in the *siida*. In addition the Sámi reindeer husbandry is more assimilated in Norwegian society than Nenets reindeer husbandry in the Russian society and the maintenance of traditional knowledge in reindeer husbandry is therefore challenging in Norway. The importance of

being strongly connected to the herd and work closely with individual animals strengthens the use of traditional knowledge as in Yamal.

The traditional reindeer husbandry in Norway changed after the adoption of the Reindeer Husbandry Act in 1978 by implementing two parallel institutions, the informal *siida* and the formal district. When the new Act in 2007 was adopted, the intention was to give more responsibility on the management of the herd to Sámi reindeer herders and the *siida*. The reindeer herding districts were imposed to write prescriptive rules of usage, in cooperation with their *siida*. Furthermore, the intention with the prescriptive rules of usage was to form the basis of their practical work using the old *siida* system which had existed before the law in 1978. It is still being discussed whether the new Act was the right solution or not, because the responsibility reindeer herders were given in the Act of 2007 had certain limitations.

The collapse of Soviet Union in Yamal created a positive change for the reindeer husbandry in terms of family-based reindeer husbandry, private ownership of reindeer and use of traditional knowledge. Many reindeer herders already connected to a state enterprise chose to become private herders and by making their own brigade. During the Soviet period the Yamal reindeer herders had opportunity to own their private animals making the region unique. However, there are still private herders continuing as employees of the state enterprise.

Using the Traditional management model of Sámi reindeer husbandry (Figure 2), changes caused by the Act of 1978 in Norway can be observed on the state governance perspective. The intention with the Act of 2007 changed the governance of Sámi reindeer husbandry from top bottom (1978 Act) (the fourth level) to the bottom up (first and second level) governance. Today the Sámi reindeer herders have to deal with these challenges brought forward by the state in 1978. The preliminary analysis reveals that the change of responsibility, from the national state to the *siida*, could have increased the use of traditional knowledge in the governance of reindeer husbandry. The decision made by the herders can be overruled by Area Board or Reindeer Husbandry Board, and only to a certain extent traditional knowledge seems to be included in the governance of reindeer husbandry.

From 1978 to 2007 reindeer husbandry was included in several committees to improve the legislation on Sámi reindeer husbandry, to include the traditional management perspective in the new law. However, the Act of 2007 still does not fulfill the intention to include traditional management perspective. So far this thesis indicates that Sámi reindeer herder's traditional knowledge only is included in the name and not in practice of state governance of

reindeer husbandry. The *siida* members have to make the prescriptive rules for their *siida*, discussing the internal system and agree on a fixed number of reindeer, expressed on the third level in the Traditional management model of Sámi reindeer husbandry. Reindeer Husbandry Administration follows up the content of the prescriptive rules and work as a management body between the *siida* and government, also expressed on the third level in the model. When comparing results from the Russian case, Nenets reindeer husbandry do not write plans for the brigades as in Norway. However, reindeer herding enterprise do impose tasks for the different brigades. This comparison shows that the holders of responsibility are different in Russia and Norway since the Norwegian system requires a detailed planning by writing.

The quotation presented in the beginning of this chapter strongly shows how the Act of 1978 changed the Sámi family-based reindeer husbandry. In the traditional management model of Sámi reindeer husbandry, the two perspectives are to a larger extent interacting with each other when concerning the management of reindeer husbandry. Before 1978 the *siida* use of traditional knowledge seemed to be more independent of state governance system.

The next chapter discusses how the Act of 1978 also contributed to change the number of reindeer. In Norway there exists a situation whereby the number of reindeer is viewed as being high (Riksrevisjon report, 2012).

3 TRADITIONAL KNOWLEDGE AND NUMBER OF REINDEER

*A starvation catastrophe on the tundra. Last year there were 40,000 more reindeer in Finnmark than there should be, and this year the extensive death of reindeer because of a lack of food has been reported.*³²

*The authorities did not manage to reduce the number of reindeer in 30 years. That we now should, internally, resolve this problem will not be possible.*³³

There may not seem an obvious connection between unpredictable critical events, traditional knowledge and the number of reindeer. The Norwegian society's general understanding of the number of reindeer is that the number is too high and it has reached a critical point according to the carrying capacities of the pastures (Riksrevisjon, 2012). The previous chapter presented the reindeer year and also the history and legislation around the Norwegian and Russian governance of reindeer husbandry. The Norwegian Reindeer Husbandry Act of 1978 brought changes to traditional reindeer husbandry in Norway, as did the collapse of Soviet Union in 199. Both of these historical events had a critical effect on reindeer husbandry in Western Finnmark and on Yamal peninsula, respectively. This chapter examines consequences these historical events had on traditional reindeer husbandry in the case of reindeer numbers by firstly presenting discussions around number of reindeer and who decide upon a number. Secondly it is important to analyze in what way traditional knowledge is used when deciding on a fixed number of reindeer in Norway, now that the Reindeer Husbandry Act of 2007 gives more responsibility to reindeer herders to make decisions. By analyzing how number of reindeer is decided in YNAO it gives a perspective to the discussion around decision on reindeer numbers in Norway.

³² Translation from Norwegian to English by the author: "Sultkatastrofe på vidda. I de siste årene har det vært rundt 40. 000 flere reinsdyr i Finnmark enn det skal være, og det blir i år rapportert om omfattende reindød på grunn av matmangel." (http://nrk.no/nyheter/distrikt/troms_og_finnmark/1.7408280)

³³ Translation from Norwegian to English by the author: "Myndighetene klarte ikke å redusere reintallet i løpet av 30 år. At vi nå selv, internt, skal løse dette problemet, vil ikke være mulig." (http://nrk.no/kanal/nrk_sami_radio/1.7396079)

3.1 The status of reindeer numbers in Western Finnmark and on Yamal peninsula

After 1978 the shift from a family-based traditional reindeer husbandry into a “one man” industry with meat production as primary income changed the entire focus of Sámi reindeer husbandry (Reinert, 2008: 192). The adoption of the Act in 1978 transformed reindeer herder’s traditional modes of living into a quest for economical success. According to Jernsletten and Klovov (2002: 5) the number of reindeer was increasing in Norway at the end of 1970’s, and reached a peak between 1989 and 1991. From the 1990s onwards it decreased steadily as a result of state legislation, predators and an internal understanding of reindeer herders that reducing the number of animals is one of the solutions in achieving sustainability.

The economist Erik Reinert (2008) observed that in the 1990s the economic situation for reindeer herders in Norway worsened. According to Reinert this was a result of governmental mismanagement of reindeer husbandry. He argues that the failing economy of reindeer herders began in 1976 when the annual negotiations between NRL and the Norwegian state started. With the increasing number of reindeer in the 1980s the increase in meat production was substantial that resulted in lower prices for the meat. When reindeer herders started to lose money the Norwegian state responded with social welfare money for each kilogram of reindeer meat produced. (Reinert, 2008: 192-193)

It can be argued that the Reindeer Husbandry Act in 1978 was an unpredictable critical event which influenced the number of reindeer to increase in Western Finnmark. For a long time in mainstream Norwegian society it has also been debated that the number of reindeer is too high in Western Finnmark. This without an in-depth understanding of the role of traditional knowledge in the *siida* management of reindeer husbandry has. It is often claimed that the number of reindeer is higher than the pastures can carry and that the high number of reindeer causes overgrazing and leaves the reindeer in poor condition (Meld.St.9 2011-2012; Tømmervik et al., 2011; Riksrevisjon, 2012). (See Figure 3 below)

	1970	1980	1990	2000/01	2010/11
Western Finnmark	40 600	66 700	99 100	62 021	96 265

(Reindrifftsforvaltningen, 2012)

Figure 3: Dynamics of number of reindeer in Western Finnmark, Norway.

According to the official numbers from the Reindeer Husbandry Administration, there was an increase of reindeer until the 1990s when bad grazing conditions in the end of 90s caused in loss of reindeer (see chapter 4). Today the number of reindeer has almost reached the same amount as in the 90s in Western Finnmark, as Figure 3 show. There are several reasons affecting the official numbers, for example the system of counting reindeer is better nowadays than before, also variations has affected the number throughout the years. An exact number of reindeer is then difficult to map and numbers must be critically analysed.

	1941	1951	1961	1971	1981	1991	2001	2011
YNAO	362 200	287 000	335 800	414 200	363 200	490 500	504 700	665 200
Yamal municipality	142 900	76 900	103 100	128 700	135 500	175 300	205 800	281 600

(Klokov and Khruschev 2004; YNAO Statistics, 2011)

Figure 4: Dynamics of number of reindeer in Yamal-Nenets AO, Russia.

Number of reindeer in YNAO has also been changing during times. Especially after 1960s it started increasing in the Yamal municipality where the Yarsalinskoe enterprise is located. Note that according to the numbers in the table, there was only one decline in number of reindeer in Yamal municipality between 1941 and 1951, while in the whole region (YNAO) there were two declines. These numbers are official statistics, as in Norway, and there could have been several reasons affecting the numbers, for instance how many reindeer were reported to the authorities during the changing times. For example, during Soviet times there were strict regulations on the number of private-owned reindeer. The Soviet Union allocated money to develop the public reindeer husbandry supporting with veterinarians defeating reindeer diseases, scientific supports, research stations and modern technical means. This was a result of the public ownership of reindeer and private-owned reindeer was limited. After the collapse of Soviet Union, many hunters became private herders which also influenced the total number of reindeer in the region (Fieldwork materials, 2010).

In YNAO the number has gradually increased even with the intensive oil- and gas exploitation on the peninsula, lack of development of slaughtering infrastructure and lack of pastures, the number is increasing further. (Jernsletten and Klokov, 2002: 28-31) During

fieldwork in Yamal the observation of the same discussions around the number of reindeer and pastures was going on, as experienced in Western Finnmark. The reindeer herder's opinion on a good quality reindeer has the same indicators in both regions. The lack of pastures in Yamal was seen as the greatest problem by herders which results in conflicts between the state herding enterprises and private herders.

3.2 Who decide how many reindeer an owner can have?

The Ministry of Agriculture and Food in Norway stated recently in a newspaper that “in some parts of Finnmark there are too many reindeer...the situation today is unbearable for the reindeer herders and the community”³⁴. After fieldwork in Yamal, the discovery of similarities between these regions on discussion about number of reindeer is obvious. Large herds are grazing in limited areas in both regions and also industrial developments removing pastures bit by bit create a situation that in Sámi is called *siiddalmasvuohhta*, in other words less space available for the different herds (Sara, 2011: 152; Vistnes et al., 2009: 5).

According to the geographer Benjaminsen and the sociologist Svarstad (2010), pastoralists are herders moving around in search of food and water for their animals. They have often a reputation among modern authorities for being unproductive. Most of the states which have herding people in their territories have policies that are directed at changing herders into farmers. Authorities view herders as being difficult to control and it is difficult to adapt services needed for their use. Benjaminsen and Svarstad (2010) state that there are three main arguments about environment and economy which is at the core for the modernization of pastoralists. Firstly, that the policy around the herding industry is driven by the idea that the use of natural resources by herders generally leads to overgrazing and a deterioration of the land. Secondly, that pastoralism is unproductive, economically irrational and does not largely contribute to the national economy and thirdly, that herders should have more diverse forms of production that gives them a more secure income. (Benjaminsen and Svarstad, 2010: 149)

This could be an explanation for the general view that the nation states have. The view is especially clear in how the mass media presents the high number of reindeer as a catastrophic disaster for the land and this is due to “overgrazing”. The term overgrazing is often used by authorities to state that the number of reindeer is too high. There are other

³⁴ Norwegian newspaper, Finnmark Dagblad 19.2.2011

words which encompass all the *siida* together with animals, people, their rights and way of working.

A *siida* assesses the whole situation and is not only focusing on, for instance, pastures. (Sara, 2011: 153) Benjaminsen and Svarstad (2012: 150) state that some (Sandford, 1983; Ellis and Swift, 1988) mean that to leave an area to itself for a while, without any grazing or use of the land, it will restore the land. Grazing will disturb the growing and in the worst case lead to degradation. It is argued that those who are responsible for the management of this land need to set the carrying capacity in the number of animals grazing. This number should not be exceeded. There is a theoretical difference between two types of overgrazing Benjaminsen and Svarstad (2010) argue. In an ecological sense the pressure of grazing is so high it has negative consequences for regeneration of plants. In an economical sense the pastures do not satisfy the animal's nutritional needs. As they ask; the question is if a piece of land is well grazed is it necessarily overgrazed. (Benjaminsen and Svarstad, 2010: 151-153)

Further these researchers present an example from Africa where the savannas have high resilience and have the ability to recover after drought. These dry areas are dependent on precipitation which varies each year. The people who are dependent on these natural resources in the savannahs have learned that the only thing that is for sure is uncertainty. Living with uncertainty all year around, the ability to be flexible is essential. This uncertainty is not specific to Africa, but for all areas where pastoralists are found. Pastoralists have through centuries developed different forms of adaptation to a fluctuating resource basis. (Benjaminsen and Svarstad, 2010: 150) Neither is this an exception for reindeer husbandry.

Across the Arctic, climate change and industrial development challenge reindeer husbandry in many ways (Vistnes et al., 2009; Oskal et. al, 2009). For instance the extreme weather event *goavvi* (chapter 4) can lead to a loss of reindeer and therefore impact on the economy of reindeer herders and their organization and welfare of reindeer (Magga, Oskal, Sara, 2001; Magga et. al 2011b). The loss of reindeer during a *goavvi* period can have impacts that last up to 5 years according to a Sámi reindeer herder. (Eira, 2012: 71) The adaptive capacity of reindeer herders is large, but their flexibility is dependent on taking advantage of the traditional knowledge reindeer herders have. In the last report the EALÁT project identifies “adaptation to climate change as something happening at the local level, where the actual impacts are felt.” (Magga et al., 2011b: 40) One important key finding in this report is that

Indigenous traditional knowledge, culture, and language provide a central foundation for adaptation and building resilience to rapid changes in the Arctic. Reindeer herding cultures

and traditional knowledge are nested within and inevitably affected by institutional governance, economic conditions and other regulatory practices and conditions. (Magga et al., 2011b: 5)

Every pastoralist knows the land where they herd their animals. The local knowledge herders have gained over the years by using the areas, is perhaps their most important tool when unpredictable critical events occur. In other words, the people who have the best knowledge on how many reindeer a land can carry could be the land users. Reindeer herders have the skill and traditional knowledge to decide on a sustainable number of reindeer for the areas they use. There are other factors addressing the decisions regarding the number of reindeer, as industrial development and climate change and also rules imposed by the state these must also be assessed.

According to the Reindeer Husbandry Act of 2007, the responsibility lies on the reindeer herders to determine a number of reindeer for a district, but within certain limits. The policy on reindeer husbandry in Norway and the Reindeer Husbandry Act of 1978 changed reindeer herder's way of thinking and made the livelihood more focused on meat production, and less on traditional knowledge as the basis for their livelihood (Reinert, 2008: 192-193; Bjørklund 1990: 78; Bjørklund, 2003). In Norway the main goal is to have a fixed number of reindeer for the resources each *siida* has available. This part of the prescriptive rules gives the responsibility to reindeer herders to decide upon a set number of reindeer for their *siida*. By writing the prescriptive rules of usage the number of reindeer is discussed in the reindeer herder's community. Reindeer herders have been using their knowledge when writing the document to decide how many reindeer their reindeer herding area can have.

The criterion³⁵ (2008) was published by the Ministry of Agriculture and Food as a guideline with specific indicators for reindeer herders for how to determine the suitable number of reindeer. The most important factors are slaughter weights, production requirements per reindeer in spring season and yearly variation on reindeer calf percent. This criterion was published one and a half year after adoption of law. According to Area Board member the template on how to structure the prescriptive rules was published only six months before the prescriptive rules were supposed to be approved. It was not possible to deliver the plans to Reindeer Husbandry Administration in time. Though of short time to make the prescriptive rules, the quality of these documents were high, some plans are very detailed while others are more general. The prescriptive rules which are approved are a management

³⁵ "VEILEDER FOR FASTSETTING AV ØKOLOGISK BÆREKRAFTIG REINTALL" Mat- og Landbruksdepartementet, 2008

tool for the *siida* and districts. (Informant C) As Sara (2011) has translated from the criteria the aim was to “develop objective/scientific criteria for ecologically sustainable number of reindeer” (Sara, 2001: 143). This report is the foundation for how authorities want the number of reindeer to be decided. Note that the criterion has been created by reindeer herders, biologists and bureaucrats. Sara (2011) states further that the main objective indicator became the average weight of carcasses for assessing the sustainable number of reindeer and that the reindeer herders traditional indicators of various factors of the reindeer’s condition became just a “subjective additional indicators”. (Sara, 2011: 143).

In December 2011 a new report from the Ministry of Agriculture and Food was published (Meld.St.9 2011-2012) about the policy this ministry will pursue the following year. This report stresses the role of reindeer husbandry in taking responsibility for their industry. Through various provisions the industry should participate and take responsibility for securing that the practice of reindeer husbandry is ecologically, economically and culturally sustainable (Meld.St.9 2011-2012: 181). The main goal concerning reindeer husbandry and the number of reindeer is to maintain a sustainable reindeer husbandry where number of reindeer is adapted to the pastures, losses are reduced and production is increased. It also highlights that in areas where the number of reindeer is high, it must be reduced (Meld.St.9 2011-2012: 178) and the Act of 2007 is a better tool to address this type of problems (Meld.St.9 2011-2012: 180).

In parts of Western Finnmark the establishment of common areas for autumn-, winter- and spring pastures changed the pasture use from an old *siida* based nomadic system to a land use change made by the Reindeer Husbandry Act of 1978. This change also brought changes to the number of reindeer. This has in some cases caused conflicts (Meld.St.9 2011-2012: 181). As the responsibility now lies with herders, the decision making process around the number of reindeer is difficult. There are certain rules and limits for how reindeer herders in Norway can decide on a set number of reindeer according to the Act of 2007. In the prescriptive rules of usage the number of reindeer should be presented (article 60). The number suggested by district must be approved by the Area Board. The Reindeer Husbandry Board must make the final decision on the number of reindeer for the different districts if the Area Board is not able to make a decision or does not approve the suggested maximum number of reindeer from a District.

On Yamal peninsula there is no such decision making process on the number of reindeer as there is in Norway. The number of reindeer is only restricted by slaughtering where authorities decide on a number of reindeer which must be slaughtered and will be paid

meat subsidy³⁶ for. The economist of the Yarsalinskoe enterprise used an example to present how the system work; if the department which decide how many reindeer is supposed to be slaughtered, one year say 300 tons meat, then subsidy will be paid for that amount. If enterprise delivers 320 tons, the 20 tons over the limit will not be subsidized and will then not be profitable for the enterprise. This means that the number of reindeer for slaughter and the number of reindeer on the peninsula are not stabile and in other words the number of reindeer in Yamal will increase since subsidy is not paid for every reindeer which is slaughtered. (Informant 8) The impression from fieldwork in Yamal was that authorities on municipal and regional level and enterprise Yarsalinskoe tried to use other methods to reduce the number of reindeer. Instead of using strategies which force reindeer herders to reduce the number of reindeer, different improvements on slaughtering infrastructure, subsidies and more products for reindeer meat are presented to motivate reindeer herders to sell more animals.

3.3 Reindeer herders view on number of reindeer in Western Finnmark

In Sámi reindeer herding society high status is earned by having a large reindeer herd. A big herd is a symbol of wealth, fortune and the owners' good skills. There have always been different amounts of reindeer between families and pasture locations. The clue is to have a good connection between number of reindeer, pasture use and the herders' skills working with the herd, and *boazolihkku*, "reindeer luck". Sámi philosopher, Nils Oskal, states that a person has "reindeer luck" if his or her herd survives and has survivability. If the females have calves and the herd is large and beautiful, then a person has good "reindeer luck". A beautiful herd is when the reindeer are in different categories, but the herd have to be functional (Oskal, 1995: 128) Reindeer luck is connected to the herders being around his or her herd and the connection with the land this herder's reindeer graze on (Andersen, 2008: 234). Having a herd with all the different categories of reindeer, both black and white and multicolored (Oskal, 1995: 129) is the beautiful herd that signals good reindeer, good pastures and the skill of the herder. Usually when an older reindeer herder explains what a "beautiful herd" is, then he will say that it is a herd with all types of reindeer; females, calves, young reindeer and both non-castrated and castrated males which are strong snow diggers in the winter. Another point is that the whole herd is in good condition in general.

³⁶ In Russia the reindeer herders get subsidies per reindeer they sell included in the price of per kilogram meat. The subsidies are decided by the Russian State on federal level.

It seems that today the understanding of a *čáppa eallu*³⁷ is not the same as earlier. Herders aim to produce more calves and females. There is less focus on the creation of a functional and diverse herd. A beautiful herd is not the same as a productive herd, is Oskal's thinking (Oskal, 1995: 167). Nowadays it seems like the focus is mostly on a productive herd where meat production have been main focus the last 20-30 years in Norway. Anyhow it must be stated that reindeer herders in general aim for a herd which has reindeer in good condition. Labba et al. (2006: 46) has claimed that the situation with too many reindeer for the available pastures is an indication of that the policy around reindeer husbandry in Norway has been wrong, or that the implementation of the policy has failed.

Sara (2011) claims that "reindeer herding Sámi have never cared about the precise number of reindeer in herds...They have traditionally concentrated on herd size, based upon continuous assessment of ability of the land to support its animals" (Sara, 2011: 153). He draws an example where he says that snow can reduce the grazing in one area compared to previous years. By this he means that some years in a specific area the reindeer might not be able to graze because there is so much snow in there. This way there is natural "saving" of this part of land, since it was not accessible. Sara also means that the condition of reindeer is not only based on their access to pastures. It is assessed all the time during herding throughout the year. The herd's condition is a result of climatic variations, but also a result of decisions made by the herders. (Sara, 2011: 153)

Number of reindeer has in the last decades, after the Act of 1978, become an often theme discussed within reindeer husbandry and also from outside. For instance, how many reindeer a person can have to earn subsidies from state, who has too many reindeer for earning subsidies and who should reduce the number? Traditionally, a large herd has always been a subject in a Sámi reindeer herding society, more or less connected to a certain person and area and people were also known widely if having many reindeers.

According to informants in Western Finnmark, they valued traditional methods to decide the total reindeer numbers and the experiences of old reindeer herders were seen as important. The informants' opinions on how to set a number for a *siida* or district are based on traditional knowledge, but the requirements from the Norwegian state are also taken into account. One of the informants stated that the objective of determining the highest number of reindeer for a district should be the size of the pastures the district has available. The herders

³⁷ "Reindeer herders have traditionally maintained high levels of phenotypic diversity in the herds. The Sami concept of a 'beautiful' herd of reindeer incorporates an understanding of diversity, which the antithesis of monocultures of modern agriculture" (Magga, Oskal, Mathiesen 2011:140 in *The Norwegian Contribution, International Polar Year 2007-2008*).

must assess how much reindeer their areas can have and at the same time keep up the quality of the reindeer meat. (Informant O) It is also important to take the previous year's numbers into account when deciding the highest number of reindeer for a district.

There exists many opinions among reindeer herders on what is the right way to estimate the correct number of reindeer, but the goal should be to have reindeer with high weight. (Informant S) The basis of reindeer herder's knowledge is experiences gained from working with reindeer all their lives and their knowledge around number of reindeer is significant. (Informant A) Valuing the old reindeer herder's knowledge which is based on deep local knowledge is important. Their knowledge gained throughout time experiencing both good and bad years in their areas and then assessing the animal's condition has an important meaning. Reindeer herders know through experience which herding system produce the best conditions for reindeer (Kemi, 2008: 43). The number of reindeer is not the only indicator for good or bad reindeer. Reindeer herders mean that by assessing the whole year or decade the herding system has a saying for the health of their herd.

I analyze the informants meaning that having both indicators in mind, traditional and scientific, is the best basis for deciding a set number of reindeer. When then having climatic changes in mind, is a set number the best solution for maintaining good pastures? The variations through years will impact on the number of reindeer either in a positive way or in a negative way and this depends on the herding system. A fixed number of reindeer gives a district a possibility to show their yearly production, in number of reindeer and in slaughter weights too. For instance when having a good herding system and good production the district is able to show with these results that they could have a higher number of animals as decided.

Reindeer herders understand the consequences of having too many reindeer. One of the informants said that a determined number of reindeer would not change so much in their district. It is clear that the herd will be smaller in number but on the other hand there will be better reindeer, which are heavier when slaughtered. For the people in the *siida* it will not mean great changes and there is always a generation shift going on, older reindeer herders become pensioners and youth take over. (Informant S) With generational shifts new thoughts and ideas are implemented. These changes and new ideas of the youth could be affected by modern reindeer husbandry where meat production is the primary focus. This is not a negative, because reindeer husbandry must also follow the time, but the status of traditional knowledge might be less important. There exist multiple individual opinions between reindeer herders just as for example in an office such as the Reindeer Husbandry Administration. Internal contradictions exist in reindeer husbandry, but it is not often expressed.

The criterion is discussed between reindeer herders and also others such as scientists (Joks et al., 2006) where some agree or not. Sara (2011) also analyzes critically the report made by the working group who was developing the criteria. In the report the traditional knowledge of reindeer herders became “marginalized to second-line importance” and the biological expert’s analyses where carcass weight from previous years were forming the criteria. He states that local knowledge from the reindeer herders was not considered to be of importance of the Norwegian states authorities. (Sara, 2011: 144) The indicators should be both traditional and scientific as the informant states.

I think that a reindeer herder is having both factors in mind when choosing reindeer for slaughter. He or she would like to remove the reindeer from the herd that might not be a productive animal in future. Then herder is considering the reindeers shape, condition, its behaviour in herd and its possibility to survive the next winter. Herder also chose to slaughter older animals which have been productive for a time and keep the younger animals for the next year. Then he or she think of the yearly production and with that basis chose how many reindeer is supposed to slaughter. Sara’s (2011) point was to show that having carcass weight as main indicator when deciding a number of reindeer for a district might not be the best indicator. The point is to show that a reindeer herder think of several aspect when choosing reindeer for slaughter and that will influence on the whole herd’s welfare for the next years. The criteria should, in my opinion, have even a stronger focus on all factors and not only highlight the biological indicators as carcass weight as Sara has observed. Carcass weight is a good indicator for calves, but it can be discussed whether it is a good categorization for older reindeer.

The informants were of different opinions around the criteria to reach the sustainable number of reindeer. One said that their district had been looking at the criteria, but were not only focusing on it. They were taking other issues into account too, such as the pastures they have available and the previous year’s number of reindeer. (Informant S) While another informant stated that the norms in the criteria should be even higher in order to reach a sustainable number of reindeer. For their district the criteria is actually beneficial and that is why it does not fit their system. (Informant O)

The knowledge of reindeer herders must be valued when deciding a number because they know their own areas best and have the best knowledge in making decisions around the number of reindeer. To have a fixed number of reindeer for a *siida*, it means it will be static regardless the evaluation of the years. Reindeer herders are used to a changing climate and unpredictable events can occur which might reduce or increase the number of reindeer.

According to an informant a fixed number of reindeer will not change the system within their district; the herd will decrease and reindeer become heavier (weight), but it will not change much according to the members of the district. He meant there are different opinions on this issue between the older reindeer herders and the youth. (Informant O)

If there is a *siida* which have too many reindeer according to the authorities' decisions³⁸ then the *siida* must make a reduction plan to reduce the number of reindeer as stated in Article 60 in the Reindeer Husbandry Act of 2007. The number of reindeer must be decided on the capacity of pastures, both summer and winter pastures where the winter pastures in Western Finnmark is the minimum factor. The Act of 2007 suggests the same reduction percent for each reindeer owner regardless on the amount of reindeer if a *siida* or district is not agreeing on a set number of reindeer. For example if a reindeer herder has 100 animals, the reduction must be 40 % for his herd as the same for the owner who has 1000 reindeer. (Informant C) This means that the person, who has more, will be left with more animals anyway and be able to manage the reduction easier. It can be discussed whether it should be a same reduction percent for every reindeer owner, or should it be assessed by the owners working capacity and production with reindeer and that way decisions made how many reindeer each *siida*-share can have.

3.4 Number of reindeer on Yamal peninsula

The informants in Yamal also expressed problem with too many reindeer on the pastures. The enterprise herds are very big where also private-owned reindeer of the enterprise workers are grazing with the state reindeer. In Brigade no. 17 it was said to be between 8000 and 10 000 reindeer where approximately 2000 reindeer was owned by the enterprise. (Informant 12) This means that most of the reindeer was private-owned. A herd belonging to an enterprise which has more private-owned reindeer than state-owned reindeer the herders in the brigade has agreed with the enterprise to have less salary but more of their own reindeer. The salary is dependent on the amount of state reindeer in the brigades herd. (Informant 8) Private herds that are not connected to any enterprise are smaller; approximately 200-300 reindeer in each herd (Informant 7).

A private herder who visited the brigade the first days after my arrival to the tundra stated that the pastures were becoming worse and the number of reindeer increased anyway.

³⁸ "VEILEDER FOR FASTSETTING AV ØKOLOGISK BÆREKRAFTIG REINTALL" Mat- og Landbruksdepartementet, 2008.

The permafrost is melting which makes the pastures sandier, according to the visitor. The brigadier, leader of brigade, told that nowadays there is no controlling body for number of reindeer as during the Soviet time. Today there is anarchy when everybody can go where he or she wants to and can have as many reindeer as her or she want. (Informant 12) I experienced during fieldwork in Yamal, that there are restrictions on number of reindeer to a certain degree, but not as strict as during the Soviet times. An informant, private herder staying with Brigade no. 17 the summer of 2010, approves the brigadiers' statement, and also my observations, that there is no restriction on number of reindeer, not as under the Soviet time when there were strict regulations on number of reindeer. A family could have approximately 150 reindeer per family and the rest belonged to the state. When the collectivization started, the family could keep 250 reindeer and the rest of their herd was collectivized and they had to work as fishermen and hunters to manage. In the past all the reindeer were counted, but today a herder can decide himself if he wants his private reindeer to be counted when state reindeer is counted. (Informant 13)

As presented in a previous section, the Sámi reindeer herders see it as a high status to have a large herd, and this is not different within the Nenets reindeer herders. The reindeer herd is the bank account of the Nenets reindeer herders (Informant 13) and similar thing is often heard in a Sámi community when someone, usually an unknown person asks a reindeer herder how many reindeer he has, the answer is answered with a question; how much money do you have in your bank account. There exist same understandings between Nenets and Sámi reindeer herders of the value of a reindeer herd.

As mentioned in the previous section, the YNAO authorities and enterprise try to make better slaughtering conditions for the reindeer herders. These changes are made to stimulate reindeer herders to slaughter more reindeer and that way ease the pressure on the pastures. By building new slaughter houses adjacent to the reindeer herds and also increasing the subsidies should influence the herders. The system with salesmanship will reduce the number of reindeer. In the same time the quality of meat will be better since reindeer herders get a new attitude for the health of reindeer when following the standards in the new slaughterhouses. (Informant 1)

The economist in the enterprise stated that if reindeer herders delivered less reindeer for slaughter, it meant less money for the herder. If herder slaughter more reindeer, that means more money. This is controlled by the subsidy for each kilogram meat a herder delivers. She also mentioned the same as an informant in the municipal department, that the infrastructures are improved by building new slaughterhouses nearby the migration routes of reindeer herds

(Informant 8). The authorities also try to develop new products of reindeer meat to offer to the meat market which might tempt customers and increase the popularity of reindeer meat.

(Informant 16) The system in YNAO motivates reindeer herders to slaughter more reindeer to reduce the number of animals since it is one of the main problems in this region including loss of grazing land.

3.5 Reindeer numbers – a critical question depending on the view of the landscape

The change in governance systems brought changes which also affected number of reindeer in Western Finnmark and on Yamal peninsula. The Norwegian government published criteria as a solution to deal with the high numbers of reindeer where using carcass weights as indicators. According to Sara (2011) the indicators should be additional to the herders own categorization of reindeer. If reindeer herders traditional observations and evaluations had been accepted as the primary determinants “this would necessitate certain decisive management rights and responsibilities be turned over to the *siida*” (Sara, 2011: 143-144).

In Russia, reindeer herders do not participate in decisions around the number of reindeer the same way as in Norway. The regions Administration decides upon a number for slaughter every year. The reindeer herders can chose to slaughter more or less, this depends on their economic needs, as more reindeer slaughtered means more money for reindeer herder.

The findings show that when a *siida* or district is deciding on the number of reindeer both traditional knoweldge and the government’s criteria are taken into account. It has resulted in some cases that the decision made by the *siida* or district is overruled by the Norwegian state through decisions in Area Board and Reindeer Husbandry Board, according to informants. This approves that reindeer herders knowledge is not confirmed by the state authorities in Norway.

Reindeer herders have a quite different view on the number of reindeer in Finnmark than the Norwegian politicians have. The politicians see that as a problem. Reindeer herder’s generally state that first and foremost it is the climatic conditions which decide how many reindeer can survive the winter season. If the pastures are “locked”, then reindeer might starve and die (Benjaminsen and Svarstad, 2010: 160). Climatic factors considerably influence the general condition of reindeer, which also reflects the owner’s decisions around the number of reindeer (Sara, 2011: 154). Reindeer herders understand the consequences with high number

of reindeer, but as the Act of 1978 changed the family-based reindeer husbandry, it also changed some reindeer herder's attitude towards economy. It can be argued that this could be one of the reasons for increasing number of reindeer according to the pastures and competition and need for pastures becomes high. In addition the problems with infrastructure when concerning slaughter of reindeer have affected the number in Norway. I think that the Norwegian government should follow the example from Yamal Municipality, by adapting the slaughtering infrastructure to the needs of the different districts.

Herders use traditional indicators to choose reindeer for slaughter, a process which they still fully control. Today this is also influenced by the herders view on a *čáppa eallu*, "beautiful herd" and the understanding of the landscape. To elaborate on this, a perspective from philosopher Jakob Meløe (1988) will be of relevance. He means there are differences between the understanding of how a landscape is seen and by who sees it. He writes that the two landscapes in Northern Norway are the landscape of the reindeer herder and the fishermen. These two livelihoods mirror two landscapes which the people use. Reindeer herders are experts on the land they practices reindeer herding on while the fisherman is an expert on the sea, and his fishing grounds. This expertise is exceptional and as Meløe has observed "that is the landscape he has wedded his life to" (1988: 388). He means that if someone who is not familiar with the landscape comes to the fishing areas of the fisherman, he will not see the same values as the fisherman does. By this, Meløe contemplates that there is a need to see the world as the land users see the world e.g. as reindeer herders see their land. Meløe confirms the existence of the traditional management model where in an indigenous society there is a different worldview as in the Western understanding of the world. The way reindeer husbandry and number of reindeer is viewed, can in Sara's articles be assessed as his background have a saying in the understanding of reindeer husbandry. Especially it is possible to see in the discussion on number of reindeer.

Traditional knowledge and the authorities' amendments can be combined by assessing the previous years and experience together with reaching the criteria's goals. Therefore I think a *siida* and district should have the possibility to take responsibility to decide the number of reindeer. By having a fixed number and then have a test period to evaluate the decision is right or not. After for example five years the *siida* could evaluate the decision in the prescriptive rules of usage and make changes if needed. This way the reindeer herders would be able to prove their traditional knowledge.

Decisions in understanding the number of reindeer are understood differently in the two perspectives. The state governance perspective represents the number of reindeer as a

fixed number is the only solution for maintaining good pastures, expressed on the fourth level. The fixed number must be decided on the basis of biological indicators. The traditional management perspective, as expressed on the first and second level of the model, take traditional knowledge into account where experiences and previous years' number of reindeer are important factors to assess when deciding a number if reindeer. Including to traditional knowledge the criteria is also taken into account. This shows an interaction between the two perspectives.

The next chapter will examine what solutions are used in an extreme weather event called *goavvi*, according to reindeer herders' knowledge and the prescriptive rules of usage.

4 HANDLING GOAVVI: AN EXTREME WEATHER EVENT

*What is important is the autumn season. The very first snowfall. On what kind of ground does it fall on? Is it warm or frozen ground? It is very common that if the snow comes when the ground is still warm, it is not good. That can create bad grazing conditions in the winter.*³⁹
(Informant P, Sámi reindeer herder, Western Finnmark)

Goavvi can be sometimes predicted to a certain degree, but mostly not at all. This condition is most common toward the end of winter, but already in autumn *goavvi* can be predicted by herders by assessing the weather changes they experience. *Goavvi* refers to when there is either so much snow that reindeer are not able to get through it to the bottom or there has become a layer of ice on the ground underneath the snow. This can have serious ramifications for reindeer because it is difficult for them to reach the pastures beneath the snow. Using the example *goavvi* might show how reindeer herder's handle a critical event and if traditional knowledge is central. It is in the same time important to highlight how governance of reindeer husbandry supports this and if there are other solutions used, especially in the prescriptive rules of usage.

The quotation above is an evaluation based on reindeer herder's traditional knowledge made by a Sámi reindeer herder where he assesses what can create bad grazing conditions in the winter. It demonstrates the herder's experiences and knowledge in envisaging what can create a critical situation for his herd. This chapter discusses solutions for handling such critical event. The chapter is structured by firstly explaining the situation with *goavvi* and secondly presenting solutions for this type of critical event in reindeer husbandry from the traditional and political perspectives. Concluding with analyzing the solutions and how traditional knowledge is used in resolving such challenges. Note that fieldwork in Yamal was in the summer season, but in general discussions with reindeer herders also touched themes from the winter period.

³⁹ Translation from Sámi to English by author: "Dat mii lea dehálaš lea dat čakča. Dat vuosttaš muohta maid bidjá. Makkár eatnan ala dan bidjá. Leago liegga vai galbma eanan? Lea dábálaš ahte jus dat liegga eatnama ala bidjá muohttaga, de lea hui heitot. De sáhtá dáhkat heitot guohtundálvvi."

4.1 Goavvi – an extremely critical event for reindeer

The Sámi have 10 different languages and dialects spoken and written in Norway, Finland, Sweden and Russia.⁴⁰ The languages contains a large specter of words and Northern Sámi is rich in terms which explain nature, topography, weather, snow conditions, reindeer's hair colors, and the form of reindeer antlers and so on. There is a rich terminology of snow words that describe various snow types and snow conditions in Northern Sámi (Magga et al., 2011a: 140). Eira's (2012) recent research concluded that 318 snow terms are used in the Guovdageaidnu area in the winter. She stated that "the use of snow concepts reflects the reindeer herders' traditional knowledge of the management of the herd on snow-covered ground and how herders deal with these complex systems using mental models and rules of thumb" (Eira, 2012: 80, 159). Each condition has its own meaning and is connected to weather, time of year, wind and the context.

Goavvi is a term that Sámi reindeer herders do not use every day (Eira, 2012: 69). Eira has been studying snow concepts and defines *goavvi* "as extremely bad grazing conditions with starvation, loss of reindeer and adverse impacts on herders' economy and organization" (Eira, 2012: 146). This extreme event is hard and challenging both for reindeer and herders and the seasonal movement between different pastures contains a "crucial mapping of pasturing alternatives (or constraints)" (Paine, 2009: 13) which is highly important in such critical event where knowledge about the different pastures is decisive. The term *goavvi* is used mostly in the season of *gidásdálvi*, spring-winter and in *gidđa*, spring. Sara (2001) mentions *goavvedilli*, a very critical situation during a period of time that can appear if the temperature rises and falls between snowfall in *čakčadálvi*, autumn-winter. It can become *bodneskárta*, which is an ice crust on the ground underneath the snow, or *gaskageardni*, an ice-layer in snow, that can be critical for reindeer in the winter period. With this type of grazing conditions reindeer move more around and can easily be mixed into neighboring herds. (Sara, 2001: 68) This is accumulated knowledge that reindeer herders have gained over time. Over a period of 100 years it has been established that *goavvi* has appeared 12 times in Guovdageaidnu area (Eira, 2012: 146). Precipitation and temperature are the most important factors through the winter which controls the access of pastures (Benjaminsen and Svarstad, 2010: 160). There can be many stages of this condition and over a shorter or a longer time. According to Eira's analysis of historical descriptions there are shown different

⁴⁰ <http://www.samediggi.no/Giella/Faktadiedut-sami-gielaid-birra>

levels of *goavvi*. She uses *nealgedálvi*, starvation year, *goavvejahki*, *goavvi* year and *goavvigidda*, *goavvi* spring, to explain the different stages (Eira, 2012: 148).

An informant explained that *goavvigidda* is a long spring with a lot of snow and a long period with cold temperatures and no sign of an increase in temperature which is critical for reindeer. Reindeer herders are waiting for the temperature to rise so that the snow melts and some bare spots would appear, facilitating easier grazing. This would make it easier for reindeer to find food since in the spring; reindeer are weaker after a long winter. In the worst case scenario of *goavvi*, it can be so fatal that the weakest reindeer die and the pregnant females start aborting due to a lack of nutrients. The animals would be walking around most of the time not able to find anything to graze. (Informant P) When moving constantly around, the reindeer lose energy. This kind of situation can be very stressful for the herder too. Herders must be with the herd all the time and they can see how their reindeer are starving. This all depends on the condition the reindeer are in during the winter when *goavvi* hits, what kind of topography there is in the winter area, how herders have been arranging the herd according to the pastures during the winter and the size of herd and herd structure.

The worst level of *goavvi*, according to Eira's analysis, was in the winter of 1917/18 when reindeer starved to death, the so-called *nealgedálvi*. Other remarkable years with such extreme events were in the winter of 1967/68 and 1968/69 when it was *goavvijahki* and there was *goavvigidda* in the winter of 1996/97. (Eira, 2012: 149) Bjørklund (1990) also mentions two cases of "disaster-like breakdowns", in the same years that Eira presented, that affected reindeer husbandry in the Guovdageaidnu area in the winter of 1917/18 and 1967/68. He explains that the grazing conditions were poor because "rainfall early in the winter was followed by a series of frost and thaws. The reindeer were consequently not able to break through the ice cover for food". In the winter of 1918 the result was starvation and a third of all reindeer died. (Bjørklund, 1990: 79) These catastrophic years are well-known by older reindeer herders in the Guovdageaidnu area.

On Yamal peninsula the Nenets also experienced critical weather conditions. There are several reports that in the middle of 1950s even in January the Ob Bay did not freeze well enough for the herds to cross it. The elders remember that year, since reindeer herders could not reach the winter pastures and stayed on the peninsula. (Informants 6, Informant15, Informant18) In 2002/03 the pastures were locked because rain on the snow resulted in a thick ice cover. In 2006/07 pastures froze again due to rain in late autumn. (Turi, 2008: 66; Forbes et. al, 2009: 4)

Overall, when using the word *goavvi* it explains the unpredictable (or predictable) critical event and everyone in a reindeer herding society understands the challenges and consequences. It must be remembered that *goavvi* can appear in the autumn too although another term is used, but this thesis will focus on the situation in the spring-winter and spring season.

4.2 Reindeer and pastures – adaptive strategies

In the practical work with reindeer, herders evaluate the grazing conditions and the availability of pastures every day in the winter and spring. The main focus is always to find the best pastures for the herd and be herding the reindeer in a way which gives them the best conditions for survival. This way the herders in a *siida* always plan how to use the available pastures in their winter area. They have a common understanding, a mental model, of where the herd should be grazing in different periods of the winter. It is customary to save e.g. the tundra areas for the spring-winter and spring seasons. Valleys and areas where snow will accumulate later in the winter should be grazed in the beginning of the winter season. This understanding and knowing, the traditional knowledge, is an important part of their daily lives.

A *siida* usually has a herding-plan, unwritten or written, for when each herder should be herding, and it is often arranged that a young herder and an older herder are herding together. This is common to make sure that there is always a person herding who knows what to do in every situation. It is also important for the young herder to learn from the old reindeer herder's experiences. They often explain how to arrange the herd to a specific area, how to herd, what to look for and where to find good pastures, what is good pasture and so on. This way the young herder is "learning by herding". The older reindeer herder's experiences and elaborations could provide an additional dimension to the youths learning (Sara, 2011: 140). It is important that the herding youth get responsibilities in herding and gain experience by making decisions by themselves according to the herd.

4.2.1 Traditional solutions

If bad grazing conditions arise in one area, traditionally a solution has been to move the herd to another part of the winter area as an adaptive strategy. It might not always be the same conditions all over the winter area, just in some concentrated areas. Then it is easier to avoid it by moving the herd to another place that herders in the *siida* must decide on. (Magga, Oskal

and Sara, 2001: 13) Other traditional adaptive strategies are to let the herd graze freely without controlling it or migrate to summer pastures. One of the informants in Guovdageaidnu explained that traditionally there are unwritten rules if needed to use neighboring *siida* areas. Communication and planning between neighbors is common (Informant S).

Another informant said that traditionally it is allowed to use another *siida* area when migrating through their pastures. Usually a *siida* can stop the herd for a short while or the time it takes when migrating through the area. (Informant O) There is a common understanding between reindeer herding people on how far a reindeer herd can move during a day. There are no questions asked if a herd has stopped in a particular area during migration. This is a rule-of-thumb in a reindeer herding community.

The previous Act of 1978 required a district plan where migration routes were specified⁴¹. The Act, I assume, focused on that the existing traditional rules within reindeer herding, also when unpredictable critical events occur, were maintained through this district plan. In the Reindeer Husbandry Act of 2007 the prescriptive rules of usage suggest making land usage rules⁴² on the pasture use. These rules should contain agreements with other *siida* if same pastures are used by both of them. An agreement like this can make it possible to avoid *goavvi* nowadays by following the traditional adaptive strategy by moving the herd to another area, even though it is another *siida* pastures. This means that the *siida* must have a deal with the neighboring *siida* and get permission from them to move the herd into their areas. Today this is generally only possible if such agreements are made because there are many herds concentrated in the same areas. Earlier, when there were fewer and smaller herds and more pastures available for each herd, the agreements were made orally. There was no need for written agreements because such understanding existed between neighboring *siida*. This is still found today, though only to some extent (informant S).

If a *siida* have large areas available, it would be easier for them to find better pasture. If *goavvi* hits in late spring then it is difficult to find available pastures. Usually in spring the herd has been grazing all over the available pastures. Some *siida* might already be using the same areas for the second time. There are multiple reasons why some areas must be grazed several times. It can either be that the area is small, or the pastures are locked with an ice-layer or there is too much snow. The availability of pastures is connected to the size of herd, available pastures for the specific *siida* and also weather conditions. The winter areas have

⁴¹ Lov 9. juni 1978 nr. 49 article 8a

⁴² Lov 15. juni 2007 nr. 40 article 59

decreased today because of bigger herds and more winter *siida* sharing the same area. Many *siida* neighboring to each other in Northern Sámi is termed *siiddalmasvuohhta* which mean less space available for the different *siida*. Sara (2011: 152) explains further that “the term is commonly used in situations where several *siida* lie close together, which may lead to herd mingling and disorder. This can occur even though the *siida* remain on their usual migration routes or seasonal pastures.” Loss of pastures to industrial and other development is not the primary problem in the winter area in Western Finnmark, but is more extensive in the summer areas.

Another traditional solution which is more common today is to divide the herd into smaller herds. For example one family separates their animals from the main herd of the *siida* and moves to another area. This depends on the availability of pastures, and to what extent the extreme weather event *goavvi* has spread. If it is only in some concentrated areas, then this solution would be the best. It is always easier to find pastures for a smaller herd than for a larger herd. On the Yamal peninsula only traditional solutions work, as presented later in the chapter.

4.2.2 Herd structuring in Western Finnmark

Traditionally, the herd has been structured by having all categories of reindeer in the herd. Strong bulls were needed for transportation, which also helped to prevent against harsh winters as by having castrated males in the herd. It is said that the herd was more resilient against bad grazing conditions and *goavvi*. The bulls were strong snow diggers that made the access to pasture easier for calves and smaller reindeer. Nowadays in Norway there is not such need for the castrated bulls anymore. On the other hand, Norwegian authorities do not allow reindeer herders to castrate a males, this must now be done by a veterinarian. The most common transportation in the winter season is the snowmobile. The herd structure today is focused on having mostly females and only enough males for the rut, and fewer calves. The structure of a herd has traditionally been an insurance policy against the effects of harsh winters.

The diversity of the reindeer herd structure reflects a strategy that is aimed at reducing the vulnerability of the herds to the consequences of unfavourable – and unpredictable – conditions...For example, in the 1960s reindeer herds in Finnmark (which today are found in YNAO) typically comprised up to 50% adult males, many of which are castrated. (Magga et al., 2011a: 140-141)

This demonstrates how herd structuring has changed over the last 30 years in Western Finnmark. There are several reasons for this and Reinert (2008: 192) states that the Norwegian governments' mismanagement of reindeer husbandry during a twenty-five year period. From being an unregulated livelihood to a "planned economy", the annual negotiations between the government and the reindeer herders (NRL) changed the focus of the livelihood. The Reindeer Husbandry Act of 1978 stimulated meat production and focused on the cash economy, altering completely and the importance of having different categories of reindeer. Since the herd structure has changed from having 50% of herd with males to 10% males (Magga et al., 2011a: 141) this can have an effect on the herd survival rates through the winter. Again it is important to highlight that there are several reasons for that, such as the use of pastures, a higher number of reindeer and the most important point how the whole year in general has been for the herd.

4.2.3 Adaptive strategies used today in Western Finnmark

If it becomes *goavvigidda*, a reindeer herder must have a certain plan on how to deal with the challenge. As earlier stated, traditionally the main solution to survive a *goavvigidda* was to maneuver the herd to another area where herder could find better grazing conditions. In an extreme example the herder could not find better grazing conditions anywhere and was facing a catastrophe with reindeer starving and dying. Another solution presented is to start migration to the spring and summer areas but this idea is dependent on the whole situation, and also on how the conditions in the coastal areas are. In the coastal areas it might be worse since the coastal areas are far more unpredictable in relation to weather. If someone from the *siida* went to check the coastal areas and found better conditions, the best solution would be to migrate to the coast with the herd. Moving the herd to another place or dividing the herd into smaller herds was the two traditional examples on how to find solutions for surviving *goavvi* in Western Finnmark.

Today the use of pastures has changed in reindeer husbandry. Reindeer herders are not able to migrate to a "better place" in the winter area anymore because of *siiddalmasvuohta*. Now there are larger herds, more cabins and more traffic that reduce and limit the use of pastures as earlier. One strategy could be to migrate towards the spring- and summer pastures earlier than usual. Another strategy might be to try to find better conditions on the migration route when there are bad conditions in the winter area.

Article 61 in the Reindeer Husbandry Act of 2007, states that there is a need to protect the seasonal pastures and therefore the agronomist or the Area Board must give permission to migrate earlier to the summer area if needed. Today a *siida* must get dispensation from the agronomist in the local Reindeer Husbandry Administration office to be allowed to migrate to the summer areas before the time limit has been reached. When applying for dispensation, someone from the local office must inspect the winter-*siida* areas. After inspection the person must consider if there is a need to migrate before the time limit and then give permission to the *siida* to migrate. This might take several days, a delay that can be fatal for the weakest reindeer.

Another factor to avoid *goavvi* nowadays, or at least prepare a reindeer herd to handle such climatic challenge, is to provide extra feed to reindeer artificially in the form of pellets or grass. The possibility to resolve such situations traditionally has changed and feeding is sometimes necessary. This is a result of the authorities' interference in the traditional reindeer husbandry. The number of reindeer and areas that have diminished in size is also a reason for this change. This is discussed more detailed later in the chapter.

A question then arise, can a *siida* prepare for *goavvi*? In Guovdageaidnu one of the informants brought up the issue about risk analysis in the prescriptive rules of usage. The informant was pointing out in particular *goavvi* in the winter period, and how the *siida* were including such events in the prescriptive rules. Reindeer husbandry is an unpredictable industry as the Sámi saying stated in the second chapter⁴³. This represents the unpredictable and uncertain changes reindeer herders are used to live with. The informant stated that it seemed like reindeer herders were afraid of writing the prescriptive rules in such a detailed manner. If something happened which was directly connected to the herd that the *siida* did not predict in the rules, it could have serious consequences for them afterwards. The Act of 2007 does not mention risk analysis in the prescriptive rules, but this *siida* has taken it into consideration anyway. An example would be if there were bad grazing conditions in winter the *siida* needs to handle it somehow. They need the flexibility to herd in another way than would be usual. Then the general plan as explained in the prescriptive rules is not possible to follow if the herding system had to be changed to handle an unpredictable critical event. Room should be left to make changes in the usual herding plan and every *siida* have it in mind when making the prescriptive rules. (Informant A)

⁴³ *li leat jahki jagi viellja.* (Gaski and Solbakk, 2003: 132)

Other Sámi informants said that their *siida* have been taking unpredictable events into account by creating an emergency fund for the *siida*. The *siida* are depositing an amount of money towards the emergency fund. The state will then deposit its share (Turi, 2008: 63). The *siida* saves money into this fund, and make certain rules concerning the use of the fund. The fund will only be used if a crisis arises, and the *siida* need to purchase extra artificial feed for the reindeer. (Informants O, Informant S) It must be noted that the informant above who mentioned the risk analysis also mentioned this emergency fund.

An informant said that written agreements between *siida* and districts make everything much clearer around the use of the land. A written agreement secures the *siida* right to use the specific area for the agreed period. For instance an agreement is signed for five years, and after five years the districts have a meeting where they go through the agreement again and make changes if needed. This way the changes in using the land and other issues can be included. The experiences this district had with the agreement with neighboring district have been positive so far and misunderstandings have been avoided. (Informant O) Traditionally herders have agreed between themselves how to resolve a problem without written agreements (Jonassen and Kalstad, 2003: 16). This tradition is still practiced to a certain degree, especially in the winter pastures where the borders between *siida* are not yet set. This is the task of the Board of each range which forms the prescriptive rules for the winter areas.

4.2.4 Adaptive strategies used on Yamal peninsula

On Yamal peninsula, the situation is different from today's Western Finnmark. Firstly the areas are geographically larger on the Yamal peninsula, nevertheless *siiddalmasvuohta* where several herds are concentrated in the same areas. According to informant from municipality the pasture use has historically been allocated to enterprises, since the times when the land tenure system was established by the Soviet authorities. It is important to highlight here that this land tenure system had been arranged in accordance with traditional migration routes. From a representative of Yar-Sale administration' point of view, the disagreements that exists on pasture use today is a municipal issue, meaning that this problem can be solved at the municipal authority's level. These disagreements are caused by several facts. Firstly, spring, summer and autumn pastures locate at the territory of Yamal municipality, while winter pastures in Nadym municipality. There is a need for official agreement between the two municipalities on the issue of pasture use. Secondly, the disagreements were caused by seasonal grazing where different herds use the same pasture in different season. Thirdly, there

is both regulated and non-regulated pasture use for herds on the Yamal peninsula. As mentioned above, the land is officially allocated for the large enterprises (former *sovkhozes*) so brigades belonging to an enterprise have regulated areas for their use from summer pastures to winter pastures. Private herders do not have the same land use rights but they use the land anyway. (Informant 1)

According to Jernsletten and Klovov (2002: 36) private reindeer herders “have the most complicated situation in terms of the use of land. This was also confirmed by an informant on the tundra who stated that private reindeer herders have harder living conditions than brigades, because of better pastures in winter area nearby Nadym but also because of the economic situation (Informant 7). Private herders herd their reindeer on the pasturing territories of public and state enterprises, sometimes within the herds of the main land user, sometimes by separate herds.” (Jernsletten and Klovov, 2002: 36) This means that the private reindeer herders are not actually allowed to use the pastures since they do not have any agreement with the authorities, as the enterprises have. At the same time, after the Soviet Union collapsed, there are no prohibitions for herders to exercise herding and no restrictions to the number of reindeer. There is political understanding in the YNAO, that the herders have been there since times immemorial and do have a customary right to use that land (Informant 17).

The two unpredictable weather events in 2002/03 and 2006/07 were also discussed by Turi (2008: 62). The winter pastures were locked with the ice layer. In 2006/2007 there were two ice layers in addition to unusual thick snow pack on the winter pastures near Nadym. The reindeer herders in Yamal had to change strategy. The solution of handling the locked winter pastures in 2002/03 was to stay on the spring, autumn and even summer pastures for the winter. During fieldwork 2010, the winter of 2002/2003 was specially instanced by herders and workers of reindeer herding enterprise Yarsalinskoe as a major critical period. A big area of winter pastures near Nadym were locked by ice in addition to the fact, that a large territory had been ruined by fire in the beginning of 1990s and had not restored yet. As a result, only three brigades spent winter on the traditional pastures, on the right side of the Ob Bay. The rest of the brigades went north towards their spring and autumn pastures when the slaughter activities were finished in December. (Informant 9)

The other bad winter of 2006/2007 was also concerning locked pastures but on the migration route. Since the winter pastures were good the decisions was to continue migrating over the locked pastures and arrive to the very winter pastures earlier than usual. Such decisions can be made on the very local level, in the brigade and would be supported by

enterprise leadership, as it is the herders' duties to manage the herds in the best way and not to lose reindeer from starvation and other effects of critical events. (Informant 9, Informant 10).

In the Yarsalinskoe enterprise each brigade has their areas available ranging from the forest-tundra area around Nadym to the coast of the Kara Sea. Brigade no. 17 also has such allocated area, and migration with the Brigade no. 17 in July 2010 was happening according to assigned migration route. However, this land use can be changed and the decisions can be made by the herders themselves. One of the informants, a private herder, explained that there exists a traditional rule in the tundra that Nenets herders all know. The rule is "if there is someone in need of other pastures, and this could be connected to a critical situation in an area, regardless what kind of person it is, you should help him out of his misfortune. He should explain his situation to the people he comes to. Nobody can forbid herders to use other pastures, while the herders shall not want to graze in someone else's areas without a real need." (Informant 6) The discussion with this person was about moving the herd to another area and how to get permission to move or come to an area that others are already using.

It seems to be a common understanding between both Sámi and Nenets reindeer herders that relocation to other pastures is approved through personal communication. It is not accepted to move to areas where others already are located, if there is no critical event happened, like *goavvi*. This private herder also explained that if reindeer herders discover ice on the pastures in their migration route they need to decide immediately what to do. Changing the plan of migration route will change the use of the land. (Informant 6) This testifies the flexibility and adaptive strategies that reindeer herders have in this region, by being able to change plans immediately if something such as *goavvi* occurs. The decision making depends on the available grazing elsewhere that must be assessed. The herders need to possess a great deal of knowledge about landscape and weather conditions to understand immediately in which other areas the good pastures most probably are situated. (Informant 9) This management strategy is maintained by accepting that unexpected events can occur which is a natural part of nomadic life of reindeer herders (Turi, 2008:68).

During fieldwork on the tundra a negative example of not using flexibility in migration has been presented. This example was about a private herder in Novy Port area who could not find better pastures in the winter of 2009/2010 for his herd of 300 reindeer. Many reindeer died during the cold winter and he was left with only approximately 100 reindeer (Informant 15). In Soviet time, this herder, as well as others in that area, was employed in the enterprise as a hunter, and got his primary income from delivering furs and also had some small herds for their private use, like transportation to small distances during hunting, etc.

This business does not exist anymore. All the workers, who used to be employed as hunter had to increase their herds, as they could only get their income from reindeer. The so-called “hunting brigades” also used to have certain areas assigned for them and that was rather small, but comprised of good hunting grounds. One has to conclude that during decades of Soviet collectivization and state land management, some herders got accustomed to the new land use, and did not change it even when they had to increase the herds for thriving. Avoiding conflicts with the neighbors could be another reason why private herders in Novy Port area did not migrate the long distances as brigades, but merely within a certain area. (Informant 13)

The winter 2009/2010 was particularly cold which made grazing conditions extremely bad. A respected older reindeer herder pointed out that this private herder was lucky to have 100 reindeer left after such a winter, when he did not “move”, “You have to be always ready to move, looking for where it is possible to survive and looking for better and available pastures at the moment” (Informant 18) The older reindeer herder expressed that the key to success in reindeer husbandry is the free thinking, constant migrations and ability to change the planned migration and pasture use dramatically and immediately when a critical event realized.

In Yamal the herds can be also more resilient against harsh winters due to the herd structure (Magga et al., 2011a). The Nenets herds have more castrated bulls in the herd, up to 40 %, because the need for transportation. A very important factor in coping to rain-on-snow events is such herding strategies as using strong castrated male reindeer to access the pastures, which would not be available for weaker female and calves, which cannot go through as thick ice layer as castrated bulls can. (Informant 12) As compared in the previous section, Western Finnmark had the amount of males in the herds in the 1950s as Yamal has now.

A change of pasture use is the solution if something happens in Yamal. Even in the summer they can decide to relocate to other pastures (Informant 11). The above mentioned strategies are based on traditional knowledge about environment, weather, animal welfare, etc. as well as on freedom of decision-making at the very local level.

4.3 The state governance of reindeer husbandry and *goavvi*

Goavvi is a word known and used by the Sámi reindeer herders. In other arenas as for instance in official offices it can be referred to as an extremely bad grazing condition for reindeer in the winter. This is, I think, because the main language in the various administrations is not the

same language that reindeer herders speak. Traditionally it was not possible to provide extra feed for the reindeer. The only feeding was of *hearggit*, castrated males that were used for transportation who were fed with moss and lichen. In the Reindeer Husbandry Act of 2007 article 57 states that the *siida* must allocate the funds and designate a part for urgent matters. The solution for handling unpredictable or predictable critical event as *goavvi* in the administrative level is to give a *siida* the opportunity to create an emergency fund where the state also puts its share. Since there are no available pastures to offer to the *siida*, a solution is to provide extra feed for the reindeer and in that way avoid hunger in the winter.

Today the traditional solution is no longer the most suitable because of the pressure on the pastures in the winter area and that there are no other accessible areas. It is an expensive task to provide artificial feed to a reindeer herd. It is time consuming and the herder uses a lot of energy and money on the process. Firstly herder needs to apply for the money in the emergency fund, secondly find a farmer who can sell hay and make sure that the hay is suitable for reindeer. Thirdly, herder needs to fetch the hay and bring it to the herd. The herd needs, in the same time be watched and placed to an area where extra feeding can be organized properly. By feeding reindeer, they gain more energy and this makes them less vulnerable to poor grazing conditions. It also has positive effects on pregnant females. As mentioned, some *siida* already start extra feeding in early winter to make sure that their herd is more resilient against harsh winters and spring. Traditionally the best solution would be to manage without extra feeding and use the available pastures they have.

The winter areas in Western Finnmark are divided into three ranges; the Eastern, the Middle and the Western range (see chapter 2). Each range has a Board of reindeer herders from the member *siida* which is responsible for making the prescriptive rules for the winter area including all the *siida* within the range. Each *siida* have the traditional winter areas, and the Boards task is to adapt all the different *siida* prescriptive rules. An informant from the regional level said that the prescriptive rules must be written in a way so flexibility is incorporated. This flexibility gives the *siida* opportunity to change the use of pastures in their area if needed. If it becomes poor conditions for reindeer, the Board of the range must assess the situation and if necessary give permission to migrate north. (Informant B) The Board of the Western range had their prescriptive rules approved by the Area Board of Western

Finnmark⁴⁴ and the rules were made cooperatively between the six different *siida* in the Western range⁴⁵.

The situation in Yamal today can be mirrored as the former situation in Western Finnmark around the 1950s and 1960s. The best solution is to migrate to another area inside their regulated area. The only reindeer that are fed are those that are in very bad shape, which can then be slaughtered after approximately three weeks of feeding (Informant 9). Extra feeding in Yamal is not really a viable option and it is rarely used. The distances are huge compared to Western Finnmark. To avoid hunger when *goavvi* hits in Yamal the authorities try to affect reindeer herders to slaughter more reindeer. There is a connection between pastures, number of reindeer, herd structure and the environment in question and the slaughtering of more reindeer would ease grazing of the pastures. (Informant 16, Informant19). This encouragement intensified with the rapid industrial development on reindeer pastures of Yamal, as authorities expect more pressure on the pastures when oil and gas extraction would take full speed (Informant 19, Informant 20) However, allowing flexibility in migrations and land use, and more importantly decision-making at the level of brigades shall be named as the most vital governance of reindeer husbandry in Yamal, when it comes to developing adaptive and coping strategies to weather critical events. Such “non-interfering” policy at the family and brigade level facilitates the use of both traditional and modern knowledge in developing reindeer herders’ adapting strategies to the critical weather events.

4.4 *Goavvi* is a challenge for the *siida* and the brigade

Is there a connection between the climatic condition *goavvi* and the high number of reindeer when looking at solutions for handling it? A *čáppa eallu*, a beautiful herd, with all categories of reindeer in the herd might provide protection against harsh winters by keeping strong bulls in the herd. Through several interviews with older reindeer herder’s⁴⁶, I perceived that there can be a relation between high number of reindeer and protection against hard winters. Informants meant that there exists two ways of thinking about this; 1) when the herd is big, then the herder is more resilient against bad winters in the sense that if he loses some reindeer then he will still have reindeer left and will be able to manage. 2) If a herder builds up a herd

⁴⁴ Områdestyret i Vest-Finnmark

⁴⁵ Sámi newspaper, Ávvir, 6.10.2011

⁴⁶ These were interviews I conducted when working for the EALÁT project where reindeer herding youth were documenting traditional knowledge in reindeer husbandry in the Western Finnmark region, Norway.

which has reindeer in good condition and astute structuring, then the herder does not necessarily need to have a high number of animals and manage the bad winter anyway.

It is important to highlight that there are many stages of *goavvi* and it cannot be claimed that a herd will make it if it is in good shape. Many other reasons play a role too. Sara (2001) explains that *jahkodat*⁴⁷ explains the connection between reindeer and pasture and how weather conditions and nature are connected throughout a year. He means that one weather condition is not devastating for a reindeer but the whole *jahkodat* may be. (Sara, 2001: 74) It is all connected to how the whole year has been, the knowledge of the herder and the way he or she herds, the practice of excluding bad reindeer from the better ones when choosing reindeer for slaughter, herd structure and also what solutions a *siida* intend to use.

To slaughter the reindeer which are in poor condition in the autumn could be a way to protect against *goavvi* in case the coming winter is harsh. With the skill of assessing the reindeers condition, reindeer herder is able to determine which reindeer will be productive the following year, which have good properties and is worth saving and which reindeer do not have the best qualities for thriving and can then be chosen for slaughter. If a reindeer herder maintains this skill he or she will be rewarded with a healthy herd.

The same use of traditional knowledge is found in Yamal, for example it was told that females that not give birth every year are chosen for slaughter since they are not so productive. In general reindeer in bad conditions are chosen to be slaughtered to prevent the whole herd's health.

The importance of traditional knowledge in the *siida* is especially significant, as expressed on the first and second level of the traditional management model for Sámi reindeer husbandry. The herders' skill in evaluating the situation is of great importance when *goavvi* occurs. The herder must always be aware of the signs from the reindeer, nature and weather to be able to assess the situation and make decision on what to do. Today the traditional solutions are not always useful because of there being less space on the tundra. However, it can be stated that the status of traditional knowledge is central and is the basis for the knowledge that the herders rely on. The feeding of reindeer provides extra nutrition on top of what is available in the pastures. I understand that in my community the common opinion about feeding is that it is not necessary if there is not a need for it. This is a decision every winter *siida* do within their internal organization regardless of what a neighboring *siida* does.

⁴⁷ The term covers all weather and nature conditions that have a connection to the reindeer through a whole year. E. g. very good conditions in summer, not so good in fall and better again in winter (for the reindeer).

The use of traditional knowledge is not so significantly expressed on the third level, in the Reindeer Husbandry Administration. The solution for handling an unpredictable critical event such as locked pastures is by feeding reindeer artificially. In Norway this is resolved by creating an emergency fund for each *siida* and the money can be used when crisis occurs. In Yamal such funds do not exist and the solutions are more traditional. It must be noted that the traditional solutions are only useable to a certain degree. By this I mean that there are many factors affecting this. One central factor is that there are not so large areas available anymore. This is a result of larger herds, more herds and more people in the winter areas. In other cases the Norwegian governance of reindeer husbandry, for instance when a district is deciding on number of reindeer, has supported traditional knowledge to a certain degree.

There is a different understanding from the traditional management perspective and the state governance perspective. Firstly there are no extra pastures available, secondly the traditional solutions in a sense are not suitable anymore and thirdly there is a connection between slaughtering and preparation to handle an unpredictable event such as *goavvi*.

The division between traditional management perspective and state governance perspective are interacting with each other to find a solution to *goavvi*. The interactions are found on all levels. In the fourth level the solutions are suggested, as funding which interacts with the traditional management perspectives since other solutions are not available.

Modernization and lack of pastures force reindeer herders to think of new solutions dealing with *goavvi*, as extra feeding which is also a preventive issue against this unpredictable critical event for Sámi reindeer husbandry. The findings represent a new way of thinking because the traditional solutions are not as convenient as earlier.

5 TRADITIONAL KNOWLEDGE, UNPREDICTABLE CRITICAL EVENTS AND STATE GOVERNANCE OF REINDEER HUSBANDRY

The departure of this thesis was analyzing the use of traditional knowledge in Sámi and Nenets reindeer husbandry in response to unpredictable critical events. Furthermore a discussion on how the governance of reindeer husbandry supports use of traditional knowledge in responding to these events. The conclusive chapter will first analyze the findings regarding the use of traditional knowledge in the two regions investigated. Secondly how the traditional management model for Sámi reindeer husbandry has extended my perspective of traditional knowledge. A comparison between the Sámi reindeer husbandry in Western Finnmark and Nenets reindeer husbandry on Yamal peninsula increased the understanding of the use of traditional knowledge. One example is how Norwegian governance of reindeer husbandry affected the Sámi livelihood after 1978, and developed a more detail-controlled system than reindeer husbandry in Yamal.

A qualitative research method was used to answer the research questions where interviews of reindeer herders were conducted during fieldwork in Western Finnmark and on Yamal peninsula. This method highlighted reindeer herders' insights in use of traditional knowledge. During fieldwork I gained new experiences about traditional knowledge as an outsider in Nenets reindeer husbandry on the Yamal peninsula. On the other hand, by not speaking the language of Nenets reindeer herders the communication was constrained without interpreter. The pros being an insider doing research in own community in Western Finnmark was that the background information about the Sámi reindeer husbandry was known and speaking the language as the reindeer herders provided detailed knowledge about governance and the importance of traditional knowledge. The cons might have been the lack of ability to discover important mechanisms which is in daily use in Sámi reindeer husbandry.

The use of traditional knowledge is significant when handling unpredictable critical events both in Sámi and Nenets reindeer husbandry, like traditional understanding of pasture use, herd structure and the welfare of reindeer (Magga, Oskal, Sara, 2001; Eira, 2012). After 1978 traditional Sámi reindeer husbandry changed totally in Norway, with strong assimilation with the Norwegian society and power of money (Gaup, 2010). After the new Reindeer Husbandry Act of 2007 the Sámi reindeer husbandry can to a certain degree include traditional knowledge in the official planning of the herding practice. For example in the

matter of deciding a fixed number of reindeer for each *siida*, the informants expressed that the decisions have to be based on old reindeer herders' traditional knowledge as well as the western science. Sámi informants meant that herder's knowledge about land is as important as carcass weights when determining the number of reindeer. The herders know their areas and through mental modeling, rules of thumb and previous experiences they can approximately estimate how many reindeer an area can carry. A combination of herder's traditional knowledge and western knowledge are used in respond to *goavvi* in Sámi reindeer husbandry today. If not traditional knowledge was used in response to unpredictable critical events, reindeer herder's society might have been less resilient to change. According to Eira (2012: 73) resilience in a Sámi perspective is the ability of a *siida* to recover after an extreme event, such as *goavvi*, but not changing character. The previous experiences with such critical events are of importance in ensuring that reindeer husbandry can survive during and after such harsh events. Traditionally, a change of pastures has been the primary solution to avoid effects of bad grazing condition during *goavvi*. To divide the herd was another solution which still works today. Nowadays *siiddalmasvuohta* makes a change of pastures difficult to respond to conditions because there are many neighboring herds. Extra feeding with hay, grass or pellets and migration to spring- and summer areas are the main solutions today in Western Finnmark. The thesis discuss the limitation of use of traditional knowledge in case of *goavvi*, and how the official state governance system of Norway has provided a system to financially support each district in emergency funding in case of preventing critical loss of animals.

Unpredictable critical events, like the effects of the former Norwegian law on reindeer husbandry from 1978 changed the practice of family-based reindeer husbandry and also the numbers of reindeer in Norway. The intention of the new Reindeer Husbandry Act from 2007 in Norway was to return the responsibility back to the *siida*. According to Sara (2011) and several of the informants, this was done only in the name and not in practice. The decisions made on *siida* level can be overruled by the state authorities. According to findings the intention of the prescriptive rules of usage in the new law in 2007 was to give traditional knowledge a more central role in the governance of Sámi reindeer husbandry, but this was only partly implemented.

It is difficult in Western Finnmark to maintain the use of traditional knowledge in Sámi reindeer husbandry in particular related to unpredictable critical events, to the same extent as in Nenets reindeer husbandry on Yamal peninsula. The Norwegian governance model of reindeer husbandry interfere all the way down to the smallest details concerning on how the livelihood is carried out. Despite the long distances between Yamal and Western

Finmark my analysis showed many similarities concerning the use and practice of traditional knowledge related to effects of unpredictable critical events. The differences in the management of reindeer husbandry in these two regions are large, but the importance of reindeer and land use is remarkably similar. The intention was to demonstrate that in both Western Finnmark and on Yamal peninsula the herders use traditional knowledge unpredictable critical events.

It is challenging to make an in depth comparison between the Sámi and Nenets reindeer husbandry. However, when looking at the differences, the fundamental difference is in the governance models that impact reindeer husbandry. The historical changes have caused two different governing models to develop in Russia and Norway. The fall of Soviet Union affected the Nenets reindeer husbandry on Yamal peninsula and provided an opportunity for those reindeer herders with private ownership to reindeer, less detailed control and use of traditional knowledge in the family-based reindeer husbandry. However, the state enterprise Yarsalinskoe does follow up with issues concerning the reindeer husbandry in the different brigades. As informants expressed, there is certain rules to follow such as migration to the corral on the day that reindeer are supposed to be slaughtered whatever weather condition must be done. This also applies that the number of reindeer are counted when the enterprise its state-owned reindeer in the same herd. The number of reindeer is also a point of discussion on Yamal peninsula and each year the enterprise is told by the regional Administration how many reindeer they should slaughter. This demonstrates that Nenets reindeer herders have a plan which is not written down or not demanded by the Russian state authorities to the same extent as in Norway.

5.1 Traditional knowledge in the different levels of the traditional management model of Sámi reindeer husbandry

The analysis model used in this thesis originated from Berkes' traditional knowledge model as presented in the first chapter. The Cree resource management is based on fuzzy logic, mental modeling, and rules of thumb and is also an important part of Sámi reindeer husbandry (Eira, 2012). The four level model of Berkes which I have named traditional management model for Sámi reindeer husbandry (Figure 2) is recommended to be a future tool to include traditional knowledge in state governance in Norway. The traditional management model for Sámi reindeer husbandry in this thesis comprise of a traditional management perspective and state governance perspective. The model was used as an aid to discover the traditional knowledge

in governance of reindeer husbandry. After the Act of 1978 in Norway changes occurred in Sámi reindeer husbandry like the family economy (Reinert, 2008).

The new Reindeer Husbandry Act of 2007 implemented among other changes the *siida* concept which indicates that the Norwegian state increased their acceptance of traditional knowledge in Sámi reindeer husbandry. The intention of the *siida* concept was to reintroduce parts of the old system which existed before the Act of 1978. The herders were included in the work with the amendments for the new Act and one can argue that traditional knowledge became more significant at the top level, in the state governance of reindeer husbandry, the fourth level in the traditional management model. The Norwegian Reindeer Husbandry Administration, the *siida* and reindeer herding district was included at the third level in management model. The Act of 2007 mandated the reindeer herding district to make prescriptive rules for their own system, in cooperation with the *siida*. The task of the Administration was to implement the new law in reindeer husbandry by following up the prescriptive rules. In this perspective they also should suggest solutions for dealing with critical events as discussed in this thesis. The Reindeer Husbandry Board in Norway decides the total number of reindeer using biological indicators, while the Area Boards can propose solutions for dealing with *goavvi*.

The second level of the management model represents the daily work with the herd. Reindeer herders in a *siida* have a plan based on their traditional knowledge, on how to practice reindeer herding within their district. The intention of the Act of 2007 was that these mental models for practical reindeer herding should be written into the prescriptive rules. The Sámi reindeer herding family has their herd, with private ownership to each reindeer which is the basis of their economy, as expressed in the first level of model. Since the Act of 1978 changed the family-based reindeer husbandry, transformation in the passing of traditional knowledge to the youth was difficult. Furthermore the genders balance working with reindeer changed since the law marginalized the previous role of women and their traditional knowledge in Sámi reindeer husbandry. Therefore, the family-based reindeer husbandry is not the same as before 1978 which complicated the transmission of knowledge between the different levels expressed in the model.

When writing the amendment to the law, reindeer herders were included in the work which indicates an interaction between the traditional management perspective and state governance perspective (fourth level). As I have observed, five years after the implementation of the law, traditional knowledge in Sámi reindeer husbandry seems not adequately supported in the state governance of reindeer husbandry in Norway. The use of Sámi reindeer herder's

traditional knowledge could be more used in decisions around number of reindeer and in preparation to handle *goavvi* according to international declarations (see chapter 1).

In Russia, on the other hand, there is no interaction between the traditional management perspective and state governance perspective since reindeer herders have not such amendments as in Norway. Around decision on number of reindeer in Russia, there is less interaction between the two perspectives since reindeer herders seem not to be included in the decision making around number of reindeer in Yamal. When weather events cause an unpredictable critical event for reindeer husbandry, the interaction is important in the different levels.

In both regions, Western Finnmark and Yamal, the use of traditional knowledge is maintained, as a cornerstone for the nomadic livelihood in its handling of different unpredictable critical events. For example, in Yamal flexible use of pastures during *goavvi* is a traditional response to bad grazing year in the winter. Before 1978, a similar flexibility characterized the Sámi nomadic reindeer husbandry in Western Finnmark. After 1978 it seems that the traditional use of land is constrained because of lack of legal support of traditional knowledge in the state governance. However, the socio-economic reform in Sámi reindeer husbandry in Norway after the Reindeer Husbandry Act in 1978 might have weakened the use of traditional knowledge in practical reindeer husbandry in Western Finnmark, and could be one explanation why reindeer numbers has increased in this region. On the other hand, the intention with the Act of 2007 was to highlight reindeer herder's traditional knowledge. Likewise, the lack of states recognition of traditional knowledge in the governance of Sámi reindeer husbandry might explain why the effects of bad grazing in some winters had fatal consequences for reindeer husbandry.

This thesis indicates that the use of traditional knowledge could have been more supported in the Reindeer Husbandry Act of 2007. Traditional knowledge should be strengthened in state governance of Sámi reindeer husbandry to prevent effects of unpredictable critical events to maintain a future sustainable reindeer husbandry. It is an advantage to be able to see how other indigenous societies have organized their governance of the resource management. Berkes (2008) work on modeling traditional knowledge of the Cree society could have some benefits for future discussion on how traditional knowledge should be to a larger extent used in the governance of Sámi reindeer husbandry.

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APPENDIX 1: List of informants

Informant	Gender	Area	Position
Informant A	Female	Guovdageaidnu	Reindeer herder, secretary of a district
Informant B	Male	Guovdageaidnu	Employee in Administration of RH in Western Finnmark
Informant C	Female	Guovdageaidnu	Member of Area Board, Western Finnmark
Informant O	Male	Guovdageaidnu	Reindeer herder, leader of district
Informant S	Male	Guovdageaidnu	Reindeer herder, leader of district
Informant M	Female	Guovdageaidnu	Reindeer herder (EALÁT)
Informant P	Male	Guovdageaidnu	Reindeer herder (EALÁT)
Informant 1	Male	Yar-Sale	Head, Department on Natural Resource regulation, Yamal Municipality Administration
Informant 2	Male	Yamal tundra	Private herder, who temporary migrated with the Brigade no. 17
Informant 3	Male	Yamal tundra	Veterinary assistant, Brigade 15
Informant 4	Male	Yamal tundra	Reindeer herder, Brigade no. 17
Informant 5	Female	Yamal tundra	Chum worker, Brigade no. 17
Informant 6	Male	Yar-Sale	Private reindeer herder, Bovanenkovo area
Informant 7	Female	Yamal tundra	Chum worker, Brigade no. 17
Informant 8	Female	Yar-Sale	Economist, reindeer enterprise Yarsalinskoe
Informant 9	Male	Yar-Sale	Chief animal technician, reindeer enterprise Yarsalinskoe
Informant 10	Male	Yar-Sale	Chief animal technician on breeding, reindeer enterprise Yarsalinskoe
Informant 11	Male	Yamal tundra	Reindeer herder, Brigade no. 17
Informant 12	Male	Yamal tundra	Reindeer herder, brigadier in Brigade no. 17
Informant 13	Male	Yamal tundra	Private reindeer herder, Novy Port area
Informant 14	Male	Yar-Sale	Leader of NGO-organization "Yamal"
Informant 15	Male	Yamal tundra	Reindeer herder, Brigade no. 17
Informant 16	Male	Salekhard	Specialist on reindeer husbandry, the Department of Agriculture, YNAO
Informant 17	Male	Yar-Sale	Historian, lawyer
Informant 18	Male	Yar-Sale	Leader, the unit of private herders
Informant 19	Male	Yar-Sale	Head, Department on affair of the peoples of the North, Yamal Municipality Administration
Informant 20	Female	Yar-Sale	specialist, Department on affair of the peoples of the North, Yamal Municipality Administration

APPENDIX 2: List of Sámi terms used in thesis

Sámegiella	English
Boazolihkku	reindeer luck
Bodneskártá	an ice crust on the ground underneath the snow
Čakča	autumn
Čakčadálvi	early winter or late autumn, autumn-winter
Čakčageassi	early autumn or late summer, autumn-summer
Čáppa eallu	a beautiful reindeer herd, a diverse herd with all categories of reindeer
Dálvi	winter
Gaskageardni	an ice-layer in snow
Gápmagat	Sámi traditional boots made of reindeer's leg skin
Geassi	summer
Gidásdálvi	late winter, spring-winter
Gidásgeassi	early summer, spring-summer
Gidda	spring
Goavvi	extreme weather event with bad grazing conditions for reindeer
Goavvedilli	a very critical situation during a period of time that can appear if the temperature rises and falls between snowfall
Goavvigidda	Extreme weather event in spring
Goavvijahki	Extreme weather event all year
Guovdojohtolat	the Middle range
Hearggit	castrated males (reindeer)
Jahkodat	a term which is central when explaining the connection between reindeer and pasture and how weather conditions and nature are connected
Lávvu	Sámi traditional tent
Nealgedálvi	Starvation winter
Nealgejahki	starvation year
Nuortabealli	the Eastern range
Oarjjabealli	the Western range
Siida	a group of reindeer owners and families practicing reindeer husbandry jointly on certain area and is a traditional form of Sámi herding society organization
Siiddalmasvuolta	Many herds in a concentrated area, less space available for the different herds