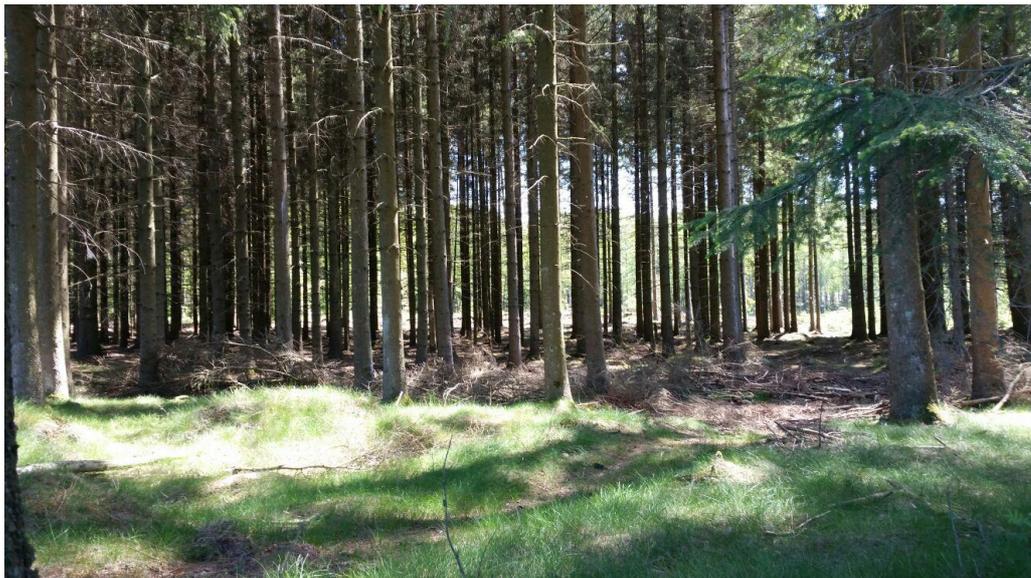


Sustainable forests?

- Values, perceptions and expectations among three stakeholder groups in the light of the Swedish bioeconomy transition

Tove Stenius



Sustainable Forests?

Values, perceptions and expectations among three stakeholder groups in the light of the Swedish bioeconomy transition

Hållbara skogar?

Värden, uppfattningar och förväntningar bland tre intressegrupper i ljuset av Sveriges övergång till bioekonomi

Tove Stenius

Supervisor: Klara Fischer, SLU, Department of Urban and Rural Development

Examiner: Erik Hunter, SLU, Department of Work Science, Business Economics and Environmental Psychology

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”The clearest way into the Universe is through a forest wilderness.”

- John Muir

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Foreword

As this is a master thesis in Agroecology at the Swedish University of Agricultural Sciences (SLU) in Alnarp, Sweden, this foreword aims to reflect upon my own development of agroecological competences throughout the this last semester of research and writing. Throughout my studies, I have felt quite alone in embracing social science issues related to power and governance. At the same time, I have developed much skills and knowledge about ecosystems, biodiversity and how to view food systems in a holistic way. During my thesis work, I grew increasingly confident that all of the above mentioned needs to be addressed when attempting to understand not only food systems, but in fact all systems where human livelihoods rely on nature and natural resources. Moreover, I felt encouraged by what de Molina (2013) highlight about agroecology, namely that agroecology needs to involve in politics and policy issues in order to bring about sustainable change in the systems it researches.

Furthermore, I find an important aspect of agroecology to be its normative standpoint of giving voice to rural people, as issues of social justice, traditional knowledge and economic viability are seen as contributors to sustainable systems. In development projects of all kinds, the people subjected to policy suggestions or development programs are the ones that often know best what is needed, what suggestions are feasible, and which ones are doomed. Too many projects and public policies have failed due to the fact that its authors did not take into account the voices of those who are subject to the project/policy.

However, throughout my program, we have been taught to listen carefully to these people. Thus, when working with my thesis, I was constantly reminded of the interlinkages between what people described in interviews as part of their everyday lives and struggles, ecosystem fluxes and biodiversity, and the suggested way forward laid out in the policy and research documents that I was reading. Hence, I would argue that my ability to think in a holistic way, taking both human and non-human stakeholders into account, has broadened to a great extent during my program studies as well as in my thesis writing.

I hope that the readers of this study will feel like they too can appreciate these complexities of the world, and recognize that complex problems often need complex solutions in order to approach true sustainability. According to me, this complexity is part of the charm with the world, as it implies that we are connected to and dependent on our environment in so many more ways than our post-modern society sometimes admits.

Abstract

This research investigates different perspectives on the current forest bioeconomy investments in the north of Sweden. The research takes its stance from a broad definition of the concept of diversity, transecting both social and natural science, in its attempts to answer the thesis question: What suggested changes in forestry and forest governance follow from different visions of the bioeconomy transition, and what impacts do these have on aspects of diversity in the north of Sweden? The research is conducted in the light of the National Forest Program, which is currently being developed for the government through a series of working group processes, where a transition from a dependency on fossil fuel towards bioeconomy is highlighted as one of the driving motives behind the program. The study embraces an agroecological, holistic approach, as it attempts to capture the biological, socio-economic, and cultural implications that changes in forest governing resulting from the bioeconomy transition might entail. To reflect a variety of trajectories for how the bioeconomy might affect the forest and its users, the study takes a qualitative stance, and zooms in on three interest groups with different stakes in forest governance and potentially different visions for the bioeconomy transition. The interest groups included are reindeer herders, forest owners and forest researchers. The perspectives of these groups are then placed in a wider frame of Swedish forest policy and governance, where possible implications for forest diversity are being discussed. The research concludes that a number of dichotomies can be observed, within both forest governance and the interviewed stakeholder groups, as it comes to forest values, perceptions and expectations. These mainly concern how the concept of sustainability is interpreted, the degree of multifunctionality in future land use, and the extent to which personal relationships to forest were seen as relevant for the professional perspectives on the same. In the conclusions, some suggestions for consideration in the policy-making process surrounding the National Forest Program are given.

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Introduction

In 2015, the Swedish government announced its aim to lay forward its first National Forest Program, and a working group process including a wide range of stakeholder groups was initiated to provide input to this forest policy. The program strategy stresses the importance of building the Swedish bioeconomy, and replace fossil resources with renewable resources. With the aim to create rural jobs, economic development and mitigate global climate change, the government views intensive forestry as one of the primary enablers to carry such a bioeconomy transition through (Government Offices of Sweden 2015b; Government Offices of Sweden, 2016a).

The forestry sector has long traditions in Sweden, and has been industrialized since the end of the 1800's (Beland Lindahl et al., 2015). It is a significant contributor to the national GDP, as much of the production is exported. Furthermore, in the rural north of Sweden, the forestry industry and related service industries employs approx. 200K people (Branteström, 2014, p. 17; Skogsindustrierna, 2012, p. 2; Skogsindustrierna, 2017).

However, forests are also shared spaces, as other actors than the forestry industry use the forest as well. One example of another type of livelihood taking place in the northern Swedish forests is Sami reindeer herding. Moreover, forests are multifunctional landscapes, in the sense that they provide the space not only for human activity, resource extraction and food systems, but also for biodiversity and ecosystem services. This character of the forest to support multiple functions at the same time lies in the very nature of forests, but is compromised by the concentration of land-use that the landscape is subject to (Mander et al., 2007, p. 2 in Mander et al., 2007).

Research statement

This thesis aims to investigate different perspectives on the current forest bioeconomy investments in the north of Sweden. The hope is that by doing so the thesis can provide input to policy makers and researchers working with Swedish forestry policy and/or the bioeconomy transition, regarding some of the values, attitudes and expectations on the bioeconomy transition that can be found amongst three forest stakeholder groups. The research takes its stance from a broad definition of the concept of diversity, which transects both social and natural science. The research is made in the light of the National Forest Program, which is currently being developed for the government through a series of working group processes, where a transition from dependency on

fossil fuel towards bioeconomy is highlighted as one of the driving motives behind the program (Beland Lindahl et al. 2015).

The study embraces an agroecological, holistic approach, as it attempts to capture the biological, socio-economic, and cultural implications that changes in forest governing resulting from the bioeconomy transition might entail. To reflect a span of different trajectories for how the bioeconomy might affect the forest and its users, the study takes a qualitative stance, and zooms in on three interest groups with different stakes in forest governance and potentially different visions for the bioeconomy transition. The interest groups included in this study are reindeer herders, forest owners and forest researchers. The perspectives of these groups are then placed in a wider frame of Swedish forest policy and governance, where possible implications for forest diversity are being discussed.

Thesis Question

The research question guiding the thesis work is:

What suggested changes in forestry and forest governance follow from different visions of the bioeconomy transition, and what impacts do these have on aspects of diversity in the north of Sweden?

In order to answer this question, the following sub-question is focused upon throughout the study:

How do three interest groups (reindeer herders, forest owners and forest researchers) view current forest governance and the future of northern Swedish forests?

Background

This section provides the background knowledge necessary for the reader in order to have a basic understanding about bioeconomy, Swedish forestry and forest governance in a historical and contemporary perspective, as well as about the Sami legacy in Sweden.

Bioeconomy in the World

Some policy definitions of the bioeconomy, including that of the OECD and the US, focus on biotechnology, innovation and research in their definitions of bioeconomy (Growth Analysis, 2015). In Europe, the definitions have come to focus more upon using renewable resources as a foundation of national economies, with the overarching aim to replace current production resources with more environmentally sustainable options. One specific frequently articulated aim is a transition towards less energy dependency on fossil fuels (see for instance European Union, 2017, p. 15; Biomassboard, 2016, p. 1; Natural Resources Canada, 2016).

The European Commission has defined the bioeconomy as:

“[encompassing] the production of renewable biological resources and their conversion into food, feed, bio-based products and bioenergy. It includes agriculture, forestry, fisheries, food and pulp and paper production, as well as parts of chemical, biotechnological and energy industries” (European Union, 2017, p. 15).

In 2012, the European Commission adopted a strategy to promote bioeconomy, with the hope that this would create the preambles for sustainability, food security and sustainable resource management in Europe (Geoghegan-Quinn, 2012). The Swedish Research Council Formas sets out a definition for the bio-based economy of a society in a way that includes the present as well as the future. It is defined as “an economy that takes its standpoint in:

- A sustainable production of biomass, in order to realize an increased usage within a multitude of different sectors in society. The aim is to lower the effects of climate change and the use of fossil raw materials.
- An increased added value of biomass, whereas at the same time, energy use is minimized, and nutrients and energy from the end products are made use of. The aim is to optimize the value of ecosystem services, and their contribution to the economy” [my translation] (Formas, 2012, p. 9).

In a report made by the public research agency Growth Analysis for the Swedish Ministry of Enterprise and Innovation, it is highlighted that the concept bioeconomy is

used more and more internationally, but without a clear common definition. The authors conclude that the definition varies along with the underlying purpose of creating a bioeconomy. These different purposes can, according to the authors, be divided into three broad groups: 1) environmental political reasons, 2) economic growth reasons, and 3) reasons of energy security. Within these intention groups, the products and services that are included within the concept of bioeconomy are differing as well (Growth Analysis, 2015).

At the COP21 meeting in Paris 2015, 195 countries signed a worldwide legally binding climate agreement, commonly called the Paris Agreement. The Paris Agreement aims to provide an action plan for the world's countries to limit global warming to a 2°C temperature rise. It was highlighted that the maximum level of greenhouse gas emissions should be reached as soon as possible, where after measures to support fast reductions in emissions should be undertaken. This part of the agreement could be seen as the climate change mitigation part of the agreement. Governments also agreed to work towards increasing adaptation possibilities within societies. This included empowerment at a local level, as well as increased cooperation at the international level (European Commission, 2017). When talking about the Paris Agreement in relation to bioeconomy, the transition towards a bioeconomy is often seen as a ways to reach the goals of the agreement (See for instance European Innovation Partnership (EIP-AGRI), 2016).

Future bioeconomy transitions have been given attention further north in Europe as well. The Nordic Council of Ministers recently finished a series of research programs aimed to investigate the potential of bioeconomies in the Arctic. This work aims to map and evaluate prospects to bioeconomy transition, as well as potential threats to food security and resource extraction, in the Arctic region (Nordic Council of Ministers, 2016). The Council also has a policy and strategic panel forum for the Nordic bioeconomy, where representatives from Nordic government institutions, research institutes, the private sector and civil society strive to come up with suggestions for a Nordic bioeconomy strategy (Nordic Council & Nordic Council of Ministers, 2017).

The kinds of suggested bioeconomy transitions have been criticized for a number of reasons, most of these relating to whether such transitions would actually contribute to sustainability. For instance, Pülzl et al. (2014, p. 387) argue that the discourse on forest bioeconomy in Europe is contributing to “reframing a small number

of forest-related discourses, while discourses on deforestation, sustainable forest management, biological diversity and illegal logging seem to lose their importance”.

The discourse surrounding bioeconomy stands, according to Pülzl et al., (2014) in stark contrast to the types of theoretizations that stem from radical environmentalism and criticism towards the ways the economic system is organized. The authors refer to Levidow et al. (2012, p. 98-99), who claim that the overall bioeconomy narrative (not only referring to forest bioeconomy) is the opposite of agroecological principles and systems. Agroecological systems are designed to use as few external inputs as possible. Instead, they rely on (and actively support) internal ecosystem flows and functions in order to increase yields, soil fertility, and to carry out weed and pest management. The concept of bioeconomy, on the other hand, is according to Levidow et al. (2012, p. 117-120). technocratic, driven by multinational companies, and excludes social movement such as smallholder farmers and civil society.

The concept of sustainability in the bioeconomy discourse is, according to Levidow et al. (2012, p. 118), “equated with more efficient inputs and processing methods for using renewable resources”. The authors contrast this with the discourse that can be found in the agroecology movement, where sustainability is “equated with farmers’ knowledge of natural resources as means to reduce dependence on external inputs” (Levidow et al., 2012, p. 118).

Pülzl et al. (2014) highlight three underpinnings that can be found in the bioeconomy discourse. These are 1) the use of ‘doomsday’ rhetoric, 2) the proposal of technocratic solutions, and 3) the use of neoliberal economic rhetoric. They question the sustainability of that economic growth is still given priority over environmental sustainability within the forest bioeconomy discourse, and they point out that social sustainability is given very limited attention. Furthermore, they question the lack of attention given to public participation and influence in bioeconomy governance issues.

Because of this, Pülzl et al. (2014) suggests that the discourse on forest bioeconomy does not include anything new or groundbreaking, but that it is merely a reframing of the industrial values that have governed the forest and forestry discourse during the past century. Here, “[f]orests are seen as industrial production site of forest residuals and woody biomass, while CO₂ neutrality is maintained, thus contributing to climate mitigation” (Pülzl et al., 2014, p. 391).

Bioeconomy in Sweden

In a press release by the Swedish Government Offices of Sweden in 2016, the Minister of Enterprise and Innovation Mikael Damberg stated:

“Everything that you can make out of oil, you can also make out of forest. I therefore want to increase the bioeconomy part of the Swedish economy, and I see great potentials” [my translation] (Government Offices of Sweden, 2016a).

Furthermore, Minister of Rural Affairs Sven-Erik Bucht stated:

“Forestry and the products that are created with the forest as a resource are dominating the Swedish bioeconomy, and are a key in order to reach the goal of a fossil free Sweden” [my translation] (Government Offices of Sweden, 2016a).

Increasing the bioeconomy part of the total economy is of high priority to the Swedish government, and the government sees the forestry industry as a potentially great contributor to this mission (Government Offices of Sweden, 2016a). It is made quite clear from the Ministers’ statements above that Sweden sees a bioeconomy transition as a something that is not only necessary from a global warming point of view, but also something that can be made to benefit for instance the GDP, international trade, and innovation.

At the same time, one of the environmental initiatives that Sweden signed at the COP21 meeting was directly connected to forests, aiming “to reduce deforestation, restore degraded forests and secure communities’ rights to sustainably use the forests they live and work in” (Government Offices of Sweden, 2015a). All in all, the Swedish standpoint could be said to point towards two priorities, which could potentially work in opposing directions. On the one hand, the government aims to increase forest production in order to decrease the amount of production that is based on non-renewable resources. On the other hand, it has committed to maintaining and restoring the qualities of forests, reducing deforestation, and making sure that rural communities can use the forest for their livelihood.

These potentially opposing priorities are made even clearer when looking at the neighboring country Finland, who has just recently decided upon a national

bioeconomy strategy. Finland and Sweden are similar in the sense that they are both strong forest nations whose governments see great benefits in the bioeconomy sector. They also have similar boreal forests (Raito, personal communication, 2017-03-30). In 2017, 68 Finnish researchers signed a letter where they expressed worry over the Finnish Government's bioeconomy strategy (Lepikko, 2017). According to the researchers, the realization of the bioeconomy strategy would mean an increase in forestry production and thereby an increase in deforestation, which would increase climate change and have negative impacts on biodiversity (BIOS, 2017). The reasons for this, according to the researchers, is that the bioeconomy strategy carries with it the notion that a transition to bioeconomy would mean an increased harvesting of forests, which would limit the prospects of forest carbon sequestration. In other words, there would not be enough forest left to store the carbon. Moreover, the researchers object to the fact that most of the deforested material is intended to be used for production of perishable goods with short life cycles, such as paper, pulp and biofuels. This will not help to lower CO₂ levels in the atmosphere, according to the researchers (BIOS, 2017).

Moreover, the researchers point to that biodiversity will suffer from the increased forestry that will follow the bioeconomy transition. Forestry in Finland today makes forests younger as a result of deforestation and reforestation. According to the researchers, the current techniques and extent of forestry leads to shrinking old growth forests and the disappearing of dead wood. Even if forestry would remain at the same level as today, many species are threatened by extinction during the coming decades (BIOS, 2017).

It is interesting for this thesis to see what priorities arise as Sweden, like Finland, is now developing their own National Forest Program: What aspects are pushed for? What overarching values are held as important? This will in the end create the policy preambles that steers the use of Swedish forestland, and due to this, it is highly relevant for this research to provide a background to Swedish forestry and forest governance. Therefore, this is given in following two sections.

Swedish forests and forestry

Out of the geographical area that makes out Sweden, 70 % is covered with forest (Skogsindustrierna, 2017). In 2010, this area was estimated to 28 million ha, then

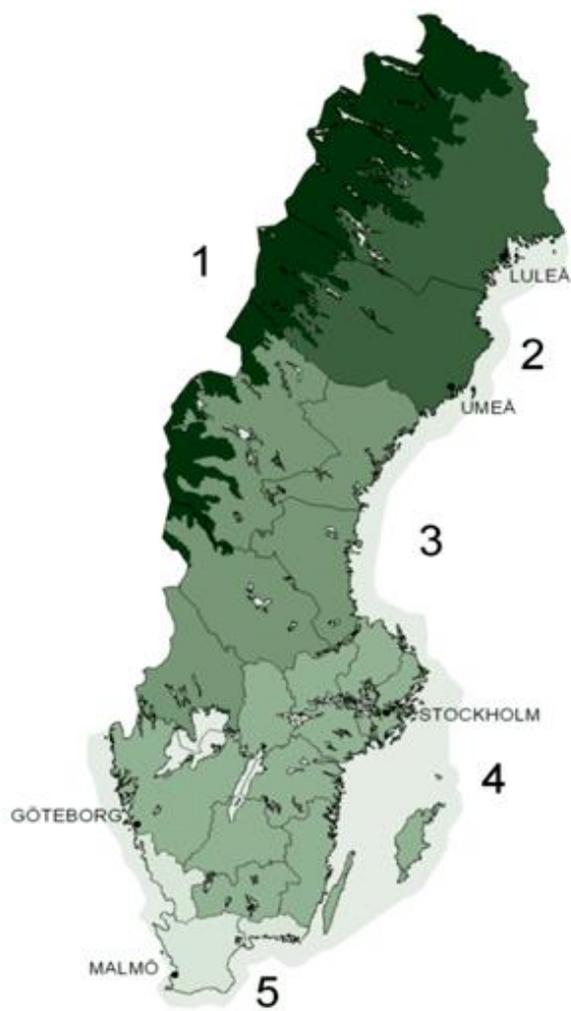
including mountainous birch forests (Branteström, 2014, p. 17), constituting an area slightly larger than New Zealand.

The different kinds of Swedish forests are shown in Figure 1 below.

Figure 1: Forest types in Sweden

Legend:

- 1) Mountains, mountainous birch forest
- 2) North boreal forest
- 3) South boreal forest
- 4) Boreonemoral forest
- 5) Nemoral forest



Source: Swedish Environmental Protection Agency, 2016;

Legend added by author.

Shown in Figure 1 are the different forest types that are found in Sweden. The nemoral forests in the south (the area marked as number 5 in figure 1) are dominated by broad-leaved deciduous trees. In the boreonemoral forests (number 4), mixed forests are most common. However, conifers (firs in particular) are getting increasingly common here due to forestry (Swedish Society for Nature Conservation, 2011). The biggest areal of Swedish forestland is dominated by the boreal forest (number 2 and 3), as it covers the northern half of the country. This boreal forest can in turn be divided into south boreal and north boreal forests (Swedish Environmental Protection Agency, 2016).

In Sweden, 80 % of the forested land is subject to forestry. Forestry is thus an important part of the Swedish industry. It employs 70k people directly, and 200k people indirectly (through for instance transportation services). Sweden is also one of the largest exporters of forest products in the world, as 80 % of the total production goes to export. The exported products are mostly made up of pulp, paper and wood products. Bioenergy taken from the forest contributes with 15 % of the total electricity use in Sweden (Branteström, 2014, p. 17; Skogsindustrierna, 2012 p. 2, 4; Skogsindustrierna, 2017). The large apparatus that makes out the Swedish forestry is supported by a variety of research institutes, university research and education, as well as governmental institutions. Every year, more than \$450 million is invested into research and development by the Swedish state and forestry companies (Skogsindustrierna, 2017).

More than half of the Swedish forestland is privately owned. Regarding the other half of the forestland, about ¼ is owned by stock listed companies, and ¼ is owned by the state, state owned companies, counties, or municipalities (Branteström, 2014, p. 21). According to a national survey made in 2015, the five biggest forest owners (individually owning the largest areas of land) were: Sveaskog Förvaltnings AB (stock listed, with the Swedish state as the majority owner), SCA (stock listed), Bergvik Skog Väst AB (stocklisted), The National Property Board Sweden (governmental), and Holmen AB (stock listed) (LRF Media, 2015).

One important development that has taken place during the past century is the fact that forests have become notably denser. That is, Sweden has “more and bigger trees in the same area compared to the beginning of the previous century” [my translation] (Branteström, 2014, p. 19). Because of this, there is a substantial estimated growth in forest reserves during the coming 90 years (ibid). The most common tree species are (in mentioned order) spruce, pine and birch. In the north of Sweden, pine

trees – including the North American Contorta pine – are the most common species (Branteström, 2014, p. 22).

Forest governance in Sweden

As a result of Sweden's large forest reserves, forestry has been vital to Swedish industrialization and economic development since the late 1800's. Sweden established its first forestry act in 1903. According to Beland Lindahl et al. (2015), the aim of this act was to ensure a growing supply of forest resource in the forests that the state did not own itself. The act was – as many industry/state acts traditionally have been in Sweden – based on consensus and cooperation. This meant that the law was quite vague as it came to imperative action, and rather relied on diplomacy between industry and the state. In 1948, the Swedish Forestry Act had been reinforced multiple times and the industrialization of Swedish forestry was a fact. Forests were seen as an important industrial supply, and the forestry act now included regulations supporting for instance even-aged forests in order to be able to attain high yields. By 1979, the forestry act was extended to encompass not only the privately owned forests, but also publicly (Beland Lindahl et al., 2015).

The current Swedish forestry model is based on revisions in the Swedish Forestry Act that took place in 1993. Here, the parliament agreed to make forestry regulations less strict and to hold on to former goals of maintaining high forestry production. At the same time, the parliament established environmental forest goals (Beland Lindahl et al., 2015). In other words, the government now started to also prioritize environmental forest values in policy, but held the environmental forest goals separate from the goals aiming towards maintaining a strong forest industry.

The underlying principle that guided these relaxed forestry regulations mentioned by Beland Lindahl et al. (2015) is commonly called 'freedom under responsibility'. This principle has more or less become a slogan to define the Swedish forestry model, meaning that forest-owners have significant freedom as it comes to forest management. Freedom under responsibility is still standard in forest policy today. Beland Lindahl et al. (2015) highlight that due to the strong industrial forestry tradition in Sweden, the industrial wood production-goal have a policy advantage over the environmental forest goals. This has been widely criticized by for instance the Swedish Society for Nature Conservation and the Swedish Environmental Protection Agency, who claims that the model is unsustainable and fails to meet environmental goals.

The Swedish Forest Agency was established in 1941, with the mission to function as a central office to the various Forestry Boards that were responsible to assisting in law implementation, and to give advisory support to forest owners (Beland Lindahl et al, 2017). Today, the Swedish Forest Agency is working under the Ministry of Enterprise and Innovation with the function to uphold Swedish forest policy, and to make sure that both production- and environmental goals are strived for (Swedish Forest Agency, 2017). However, Beland Lindahl et al. (2015) point to that the current Swedish Forestry Act uses more stringency in its wordings as it comes to the policy sections regarding how to maintain a strong forestry industry, whilst environmental goals and aims are addressed more vaguely.

This perspective can be seen in how the Swedish government phrases their overall forest politics, where (sustainable) production, rural jobs and less dependency on fossil fuels through forest a transition to bioeconomy can be depicted as the primary targets. The government highlights the importance of a long-term forest policy that encourages economic growth as well as sustainability, and highlights that forest management and innovation should signify Swedish forests. Through this synergy, the government states, fossil fuels should be replaced, CO₂ emissions lowered and rural job opportunities created. The need for the upcoming National Forest Program is emphasized. The government further highlight that the production goals and the environmental goals of Swedish forest policy are equal, and that cultural values, together with the aesthetic and social values of forests, should be protected (Government Offices of Sweden, 2016b).

It is reasonable to agree with Beland Lindahl et al. (2015) in that there exists an overall vagueness in wordings relating to social and environmental sustainability compared to the industry- and production aspects of forests. Despite the fact that the government claim that the environmental- and production goals are equal, issues of ecosystem resilience, biodiversity and the cultural values of forest landscapes are mentioned with wordings such as “biodiversity and genetic variation in the forest should be secured. The cultural values of the forest, as well as its aesthetic and social values should be protected” [my translation] (Government Offices of Sweden, 2016b). Hence, environmental goals are highlighted, but there is no information regarding how this securing and protecting of the environment should be carried out.

Meanwhile, the Environmental Quality Objective “Sustainable Forests” which was established in 2005 expresses a far more diverse vision on Swedish forests. This

policy was to guide the work of the Swedish Forest Agency until the year of 2010, and was later widened and extended until 2020. “Sustainable Forests” highlights 13 environmental goals related to forests, and is unique in the sense that it includes a more diverse, holistic set of forest goals, especially as it comes to biodiversity. This policy is meant to be partly incorporated into, and then replaced with, the National Forest Program (Beland Lindahl et al., 2015). More specifically, “Sustainable Forests” aims to ensure that:

- “the physical, chemical, hydrological, and biological qualities and processes of forest land are maintained,
- ecosystem service of forests are preserved,
- the biodiversity of forests is preserved in all natural geographical regions and species have the opportunity to spread within their natural range as a part of a green infrastructure,
- habitats and naturally occurring species associated with forest areas have a favourable conservation status and sufficient genetic variation within and between populations,
- threatened species have recovered and habitats have been restored in valuable forests,
- alien species and genotypes do not threaten the biodiversity of forests,
- genetically modified organisms that can threaten biodiversity are not introduced,
- the natural and cultural heritage values of forests are preserved and the conditions for continued preservation and development of these values are in place, and
- the value of forests for outdoor recreation is safeguarded and maintained” (Swedish Environmental Protection Agency, 2017).

The Swedish Forest Agency highlights that these environmental goals are not possible to reach within the year of 2020, since the degree to which environmental care, protection and conservation management is carried out in Swedish forests today are insufficient for this (Swedish Forest Agency, 2017b).

On the notion of forest bioeconomies and the current governmental aims to transition towards a bioeconomy, there also seems to be a recent governmental shift

from the “Sustainable Forest” goals towards promoting forestry as a part of a Swedish bioeconomy transition, with the main aim to mitigate climate change. This is especially notable as it comes to how environmental problems are framed and formulated. For instance, Beland Lindahl et al. (2015) highlights a bill issued in 2007, that emphasizes the importance of increasing forestry production in the light of increased demand for forest produce (both wood products and biofuels) that is estimated to take place in the future. This bill recommends that a commission should be put in place, in order to investigate prospects for intensive forestry in Sweden. Industrial forestry methods (such as plantation of foreign tree species, fertilization and stump harvesting) are depicted as possible promising solutions that should be further studied.

This bill has been followed by other bills, that on the one hand highlight the importance of biodiversity and ecosystem resilience, but on the other hand emphasizes the importance of supporting a growing bioeconomy. This makes out a confusing mixture of policy suggestions, where bioeconomy with intensive forestry as one of Sweden’s biggest advantages is framed as mutually reinforcing with biodiversity and ecosystem resilience. Beland Lindahl et al. (2015) coins it a ‘more of everything’ strategy, where economic production is still given priority over environmental and social sustainability.

As for other stakeholders’ take on Swedish forest policy and forestry, the views go apart. For instance, in the National Association for Swedish Sami (SSR)’s forest policy, a number of requirements are highlighted that would improve the relationship between reindeer herding and forestry. The three most notable can be summoned as follows: 1) adjusted production goals in areas that are important for reindeer herding activities, 2) consultation meetings between reindeer herders and forestry representatives that make it possible to negotiate how the land will be used, and 3) altered forest management methods. The policy highlights that today’s forest policies do not respect reindeer husbandry needs to a satisfying extent, and that neither production goals nor environmental goals take the needs of reindeer husbandry into account (SSR, year unknown).

LRF Skogsägarna (the Federation of Swedish Family Forest Owners) (hereafter called LRF), highlight the freedom under responsibility principle as a fundamental part of forest policy. The right to independently own and manage property is a given in a democratic society, according to LRF. Due to the freedom that the freedom under responsibility principle gives, a number of expectations (responsibilities) on forestry

come as well. Because of this, LRF argues, forestry companies and forest owners in Sweden make efforts to contribute to both of the overarching forest political goals; that is, both the production and environmental goals (LRF, 2017c).

Moreover, LRF highlight their contribution to the work preceding the National Forest Program, and the overall transition towards a bioeconomy. Regarding the National Forest Program, LRF are positive that they can contribute to creating rural jobs as well as economic growth. As for the bioeconomy transition in general, LRF highlight that the climate use of forests relies on growth in forests, and the fact that production that relies on fossil resources can be substituted with renewable resources, such as forest (ibid).

Reindeer herding and Sami legacy in Sweden

As mentioned in the introduction, this thesis aims to investigate different forest stakeholders' perspectives on forest bioeconomy investments in the north of Sweden. One stakeholder group represented in this research is reindeer herders. In Sweden, reindeer herding is managed by Sami, which are the indigenous people of Sweden. Hence, this section provides some background knowledge on the Sami and reindeer herding.

The indigenous people of Finland, Sweden, Norway and the Kola Peninsula in Russia are called the Sami. The land area that they traditionally have inhabited is called Sápmi. Today, about 10 % of Swedish Sami make their living out of reindeer herding. This constitutes in between 2500-3000 people. However, as the Sami Parliament highlight, many more people with Sami descent own reindeers that are part of a herd which an active reindeer herder manages (Sametinget, 2016). In the Nordic countries, reindeer husbandry has its roots in the north of Norway, Sweden and Finland. It is carried out in the mountains or in the forest (Nordregio, 2015).

The reindeer, and reindeer herding, is central to the Sami community, culture and cultural heritage. This relationship between human and animal has evolved during millennia. The reindeer still migrate freely all year round between winter and summer pastures. The migration paths have often been used by the reindeer for centuries, and are rooted into the herd's collective memory (Samiskt Informationscentrum, 2016b). Reindeer herding in Sweden has evolved a lot, especially during the past 50 years or so. Today, herding is done with the help of snowmobiles and motorbikes. However, the herders still follow the reindeer all year round (Samiskt Informationscentrum, 2017c).

A reindeer herding community in Sweden is called a 'sameby' – Sami village. The members of a Sami village need to be Sami, and take part in and have reindeer herding as their main profession. Spouses and children to active reindeer herders, as well as retired reindeer herders, are also included in the Sami village (Rennäringslagen 1971:437). It should be highlighted here that many reindeer herders have other professions on the side to support their livelihood (Sametinget, 2014, p. 10), and other family members related to a Sami village can work with whatever they prefer.

One is allowed to join a Sami village if one is Sami, owns reindeer and intends to become a reindeer herder. Because of this, a Sami village typically consists of a number of families. The distribution of access to pasture land between Sami villages is made by the Sametinget (the Sami Parliament) (Sametinget, 2017). Other Sami villages and property owners can appeal against this distribution of access to pasture lands (Rennäringslagen 1971:437). The Sami Parliament in Sweden works both as a popularly (Sami) elected parliament and an administrative authority under the Swedish government. The Sami Parliament highlight that rather than operating as a de facto parliament, it rather functions as advisor and expert to the government in Sami related issues, such as issues of reindeer herding and Sami culture (Sametinget, 2017).

Apart from the Sami villages, there are also so called concession villages in the east of the region of Norrbotten. According to the Sami Parliament, Sami reindeer herders can get permission (concession) to herd reindeer below the jurisdictional reindeer pasture land borders. In order to get this permission, the area should be subject for year round grazing, and Sami needs to have traditional presence at the land (Sametinget, 2017b).

As for most indigenous peoples around the world, the formation of the nation state Sweden brought "colonisation, exploitation and industrialisation" (Borchert, 2001, p. 30) to the Sami. Some examples of Sweden's colonizing activities on Sápmi were the prohibition of Sami religion in during the 15th century, where Samis were instead forced to attend Christian church services. This was followed by State acquisitions of Sami land in the 16th century. Later on, the 17th century European craze for 'racial biology' made the Sami subjects to various 'scientific' examinations and racist theorizing. In the 18th century, the use of Sami languages was banned in schools. Due to this, many Samis then made their heritage a secret and denied their Sami identity (Samiskt Informationscentrum, 2017e). Today, this has led to that many Swedes have Sami heritage, but few identify themselves as Sami. In other words, many Swedes have

Sami descent, but few now have access to their heritage through knowledge about Sami culture (Sametinget, 2016). Samiskt Informationscentrum (the Sami information centre) highlight that due to this assimilation pressure, many Sami languages are threatened by extinction today (Samiskt Informationscentrum, 2017d).

It was not until 1977 that the Swedish government first mentioned the Sami as an indigenous people, and in the 1990's, Sami languages were granted minority status. Sweden's western neighboring country Norway ratified the ILO convention on Indigenous Rights in the year of 1990. During 1995-96, the Norwegian law was altered in such a way that reindeer herders did no longer have to prove that they had had a long term presence at specific reindeer migration paths or pasture lands in order to be able to use it. Today, if a Norwegian landowner objects to that the land is used for reindeer herding, he or she has the obligation to prove that the Sami has no traditional connection to the land. This is not the case in Sweden, as Sweden has not ratified the ILO Convention on Indigenous Rights. Instead, reindeer herders have to prove that they have had a presence at specific places in order to be able to use them (Samiskt Informationscentrum, 2016; Hamilton, 2003, p. 5). This is often hard to prove, since reindeer herding does not leave long lasting signs in nature, and since written testaments are rare (Hamilton, 2003, p. 7).

These kinds of legal issues that arise in land use conflicts, and the effects that this has in Sami reindeer herders in Sweden, have gained international criticism. For instance, United Nation's Committee on the Elimination of Racial Discrimination (UNCERD) writes in their concluding statement 2009 concerning the human rights status in Sweden:

“[T]he Committee remains concerned at the limited extent to which the Sami Parliament may participate in the decision-making process on issues affecting land and traditional activities of the Sami people /.../ The Committee is concerned about de facto discrimination against the Sami in legal disputes, since the burden of proof for land ownership has been placed wholly on Sami claimants. The Committee also notes that, although legal aid may be granted to individuals who are parties in civil disputes, no such possibility exists for Sami villages, which are only legal entities empowered to act as litigants in land disputes in respect of Sami lands and grazing rights” (UNCERD, 2009, para 20).

Conflict management

This section aims to provide the background knowledge needed to grasp how conflicts over land between reindeer herders and the forestry industry are managed in Sweden, as this is related to aspects that are brought up further on in the findings of this thesis.

There is one national forum with the purpose to find solutions to conflicts of interest between forestry and reindeer herding in Sweden. This forum is called Centrala Samrådsgruppen ('the central consultation group'). Here, representatives from the Swedish Forest Agency, the Swedish Board of Agriculture, LRF Skogsägarna (the Federation of Swedish Family Forest Owners), the Swedish Forest Industries Federation, the National Property Board Sweden, representatives from the common lands associations, the Church of Sweden, the Swedish Union of Forestry, the Sami Parliament, Renägarförbundet (the Swedish Association for Reindeer Herders), the concession villages, and Svenska Samernas Riksförbund SSR (the National Association of Swedish Sami) have the task to see to conflicts of interest, increase knowledge and understanding of each other's businesses, provide input to policy formation and statements, and more (Hamilton, 2003, p. 8-9).

The group meets at least two times per year. They can also be summoned in acute cases. During 2009-2010, interviews were made to evaluate the success of the work made in this forum. The study showed that participants representing both forestry and reindeer herding saw the forum as important as it comes to knowledge exchange and learning. However, the views concerning what issues should be discussed, and what mandate that the group should have when it comes to decision making, were divided. Also, the Sami representatives experienced a great frustration about not being able to influence processes in the forum (Berggren et al., 2012, p. 8).

Local consultation meetings between forestry agents and reindeer herders can also be held in cases of planned deforestation that are expected to affect reindeer herding pastures. According to the Forestry Act (Skogsvårdslagen) in Sweden, consultation meetings between Sami villages and landowners should be held if the landowner intends to deforest in order to plant, or in order to build roads within the area of a Sami village's border. This law applies to all landowners who own more than 500 ha of forest, or if the intended deforestation area is larger than 20 ha (Hamilton, 2003, p. 5-7).

In Sweden, most large forestry-companies are certified under the Forest

Steward Council (FSC), which means that they have agreed to respect indigenous peoples right to land. Smaller landowners are often certified through the Pan European Forest Certification (PEFC). This certificate does not include the same responsibilities towards indigenous peoples and access to land. However, LRF has a policy for increased cooperation between Sami villages and landowners. As Hamilton highlights, consultation meetings prior to exploitation between Sami villages and landowners are almost exclusively held between Sami villages and the big forestry companies today. Meetings with private landowners are rare (Hamilton, 2003, p. 5-7).

According to a survey sent out to members of all Sami villages in Sweden, as well as forestry companies, public land managers and those affiliations of the Swedish Forest Agency that are active in lands where reindeer husbandry is found, it was found that many respondents from the Sami villages experienced a lack of understanding for reindeer herding in the consultation meetings. All in all, the Sami villages highlighted the following issues as the primary problems with the consultation meetings between reindeer herders and the forestry industry:

- “Ground preparation
- Understanding
- Many Sami villages are experiencing the consultation meetings as one-way information from the forestry industry
- The forestry companies motivate this with that they have to deforest a certain volume/year, and lost job opportunities, if the Sami villages reject deforestation
- No power to stop deforestation
- The Forest Act is stronger than the Reindeer Herding Act
- There is no such thing as consultation meetings. The forestry companies do not have any obligation to hold meetings in the licensed area” [my translation] (Hamilton, 2003, p. 15).

On the other hand, some of the issues that the forestry industry highlighted were fertilization, the winter grazing pastures, some Sami villages do not attend consultation meetings, and that boundaries between Sami villages were sometimes unclear (ibid).

Some of the known recent conflicts between the forestry industry/forest owners

and reindeer herders are for instance the cases of Härjedalen and Nordmaling. In the case of Härjedalen, forestry companies together with 700 private landowners filed a lawsuit against five Sami villages in the regions of Härjedalen and Dalarna in the beginning of the 1990's. According to the lawsuit, the Sami villages had not had a historical presence at the land located below the mountainous areas. In 1996, the court found that two Sami villages could not prove a historical presence. Hence, these villages lost access to their winter grazing lands. In the Nordmaling case, 100 landowners filed a lawsuit against three Sami villages in 2005 for letting their reindeer graze on their lands. In this case, the Sami villages won the case, as the court found that the Sami did have historical presence on the lands (Samiskt Informationcentrum, 2017). However, the landowners appealed against this decision, and the case was pending until 2011. Then, the Supreme Court decided to the Sami's advantage (Samiskt Informationscentrum, 2017b).

In 2010, before the Sami villages won the Nordmaling case, newspaper Dagens Nyheter reported about it. In this interview, a forest owner claimed that the reindeer destroyed newly planted forests by trampling and grazing on pine sprouts, while a reindeer owner expressed that some forest owners were directly racist against Sami, by saying that Sami were unable to read and write, and calling them *tattare*¹ (Larsson, 2010).

Conflict over access to land between reindeer herders and forest owners are highlighted by Borchert as a major threat to the survival of reindeer husbandry in Sweden. Trials are often costly for the Sami villages or the individual reindeer herder (Borchert, 2001, p. 2-3), whereas forest owners are often members of LRF, which is Sweden's biggest farmer and forestry association. LRF thus has a considerable influence in national forest policy issues (Borchert, 2001, p. 36). For instance, there are trials where forestry associations have stepped in and promised economic support to individual forest-owners, in order for these to be able to appeal against court verdicts. This was the case in the Nordmaling conflict (Klint, 2006).

Reindeer herding is mentioned in the 1993 Forestry Act. Here, it is referred to in a way that makes the forest owners the primary agents in the forest, whereas reindeer herders becomes secondary. Forest owners should “take account of” essential reindeer husbandry requirements and it is “desirable” that the Reindeer herding communities be

¹ A derogatory old Swedish word used against ethnic groups with low social status.

given annual access to grazing areas” (Beland Lindahl et al., 2015, p. 48). Malin Brännström, director of the Swedish National Union for Sami People, highlight that forestry constitutes major challenges for access to reindeer grazing lands (in Barklund, 2007, p. 9-10). Borchert (2001, p. 39) highlights the controversy in the fact that on the one hand, the Forest Act emphasizes the principle of multiple use in Swedish forests, but on the other hand, the same laws are binding to a very low extent and policy is implemented through soft means such as education and communication efforts.

Raito (personal communication, 2017-03-30) points out that the dominant problematic issues for reindeer herders in areas where forestry is also happening is 1) Contorta pine plantations, 2) fertilization and 3) logging of lichen rich old-growth forests. Contorta pine is a foreign species in the Nordic boreal forest, originating from North America. The problem for reindeer herders with Contorta is that it is planted and grows densely, which makes it impossible for the reindeer to get through the forests. The problem with fertilization as a means for ground preparation for planting is that it stimulates fast growth of slug, which pushes out lichens. Lichens are the primary food for reindeers (see also SSR, year unknown).

The National Forest Program

As shown so far in this thesis, Swedish forests can be seen as spaces that inhabit different uses and users of forests, and the forest thus holds many stakeholders with partly conflicting interests. While attempting to maintain high yields to what is intended to be a strong forest industry, the Swedish government is also embracing environmental goals. This ultimately turns forestlands into arenas of power struggle and future visions, something that the government needs to address through policy. This final section of the background chapter aims to describe some of the processes behind the new National Forest Program, which is intended to guide the forest bioeconomy transition.

The vision of the National Forest Program that the Swedish government intends to bring forth is:

“The Forests – the green gold – will contribute with jobs and sustainable development in all of the nation, as well as to the development of a growing bioeconomy” [my translation] (Swedish Ministry of Enterprise and Innovation, 2015, p.1).

According to the Swedish government, the aim of bringing forth and implementing the National Forest Program is to strategically stimulate climate and environmental goals, rural development, industrialization, export and tourism (Swedish Ministry of Enterprise and Innovation, 2015, p. 1-2). The work that precedes the National Forest Program is done within four working groups that include representatives from the forestry industry, forest owners, civil society, tourism representatives, forest researchers, and others. The four working groups are divided according to the following themes:

- “Growth, multi-use and value-adding of the forest as a resource
- Wood production, additional ecosystem services and the limitations of nature
- Promoting biobased products and energy, smart transportations, a world-class forestry industry, and increased exports
- International forest issues” [my translation] (Government Offices of Sweden, 2015b).

The National Association of Swedish Sami has one representative in the second group (Government Offices of Sweden, 2015c). In September 2016, the working groups handed in their research reports to the government. The second group, “Wood production, additional ecosystem services and the limitations of nature”, includes representatives from for instance the forestry industry, environmental organizations, forest researchers and the National Association of Swedish Sami. In Chapter 7 of this group’s report, topics that the group had not been able to reach a unified recommendation on are presented, and suggestions for continued process is given (Berglund et al., 2016, p. 61).

In paragraph 7.1, the forestry owners argue that the criteria for what constitutes a key biotope is subjective and unreliable, and carries the risk of exposing individual forest owners to great economic loss. Other actors claim that the definitions of what constitutes key biotopes are in fact clear, and that designation of key biotopes is highly important. Both agree that no systematic inventory has been done to see what key biotopes exist (Berglund et al., 2016, p. 61-62). In paragraph 7.2, the group could also not give full recommendations on “suggestions for additional production stimulating measures within the limits of nature” [my translation] (Berglund et al., 2016, p. 62).

Here, the representatives had differing views on “foreign tree species, fertilization and stump harvesting/biomass extraction” [my translation] (Berglund et al., 2016, p. 62).

Instead of one collected recommendation, two different alternatives were put forward. In the first alternative, the forest industry has expressed their view on foreign tree species, fertilization and stump harvesting, stating that: 1) Swedish forest policy will remain restrictive to foreign tree species, especially invasive species, but they are still seen as an important additive to forestry. This as they contribute to increased forestry production, and therefore contribute to lowered CO₂ levels. 2) Fertilization in forestry is the most cost-efficient way to increase growth. It has been studied and proved internationally that Swedish fertilization measures hold top standard. Environmental risks can therefore be estimated as low, and the regulations that Sweden has today are sufficient. Factors such as low environmental risk, coupled with economic growth and job opportunities, make a good case for an increase in forestry fertilization. 3) The effects of stump harvesting and how to ecologically compensate this are well researched. The risk for negative effects (such as soil acidification and nutrient loss) should be contrasted with the fact that the Swedish Forest Agency has recommended that the use of biomass can and should increase. There is great potential to increase stump harvesting, if one involves environmental researchers and makes sure to have a conscious and adaptive management strategy (Berglund et al., 2016, p. 62-65)

In the second alternative, a different reality is projected, where 1) “introduction of foreign species often lead to unpredicted consequences” [my translation] (Berglund et al., 2016, p. 63). The group argues that these consequences often go unnoticed until decades later. Globally, invasive species are the major threat to biodiversity, and the costs for controlling these species are high. Despite the environmental goals laid out in “Sustainable Forests”, the forestry industry uses *Contorta*, which is classified as an invasive species by the Swedish Environmental Protection Agency. *Contorta* has a proven negative impact on biodiversity, due to its rapid spread. For reindeer husbandry, *Contorta* plantations are a problem since they on the one hand strike out lichens, and on the other hand are physically hard to trek through due to the thickness of *Contorta* forests. This also affects activities such as hunting and recreation negatively. Regarding 2) fertilization, this group highlights the negative effects of fertilization such as acidification of lakes and rivers. They also highlight that the Baltic Sea will be negatively affected by increased fertilization. Moreover, fertilization negatively affects mushrooms, lichens, and blueberry and lingonberry bushes. At the same time, it

increases grass growth. Hence, wild animals (including reindeers) get less access to food, and biodiversity is also negatively affected. As for 3) stump harvesting, this affects biodiversity negatively as dead wood is the habitat for many insects, and possibly also lichens. In forestry, stumps are a rescue habitat for some species that move between stumps and trees depending on whether the forest is deforested or growing. This natural resilience is therefore put to danger if stump harvesting would increase. Also, from a climate mitigation perspective, this group argues that research shows it would take up to 25 years before the efficiency in using stumps could be comparable to the use of fossil gas. Moreover, they emphasize that some studies indicate that stump harvesting initially can create higher CO₂-emissions than fossil fuels, since CO₂ is also harvested in root systems (Berglund et al., 2016, p. 62-65).

In November 2016, the Sami Parliament filed a statement to the Ministry of Enterprise and Innovation, regarding the released reports from the four working groups within the National Forest Program. The Sami Parliament stated that the reports were of high technical and detail level, but requested a stronger focus on making sustainable use of resources:

“In the future, monoculture forests will be of increasing importance for reindeer herding since grazing lands in general are diminishing due to the heavy exploitation of our forests that is currently happening. Valuable ecological links must be taken into consideration. At the same time, knowledge about the negative effects needs to be realized for biological diversity, water and climate” [my translation] (Sametinget, 2016b, p. 2).

The Sami Parliament recommends a holistic perspective that includes all the values of the forest, and that makes room for long-term planning. They question the current lack of consequential analysis, as well as the overall lack of knowledge about reindeer herding within the working groups as well as in the forest industry (Sametinget, 2016b).

Theoretical background

This section presents the theoretical background that supports this study. Firstly, a section on soft constructivism is presented, as this represents the approach held towards truth and power throughout the thesis. Secondly, agroecology as a social movement and discipline is described, and it is also described how it is found here to be applicable to

forestry and forestland use. Thirdly, I account for a broader definition of diversity, which works as the main theoretical tool in this study, and which to a large extent can be said to go hand in hand with agroecological views. Lastly, I discuss power and governmentality, and in what ways these can influence processes of forest policymaking.

Soft constructivism

At the philosophical level, this thesis takes a constructivist approach, in the sense that it strives to attain the viewpoints and feelings of stakeholder groups, and acknowledges that knowledge and (knowledge about) reality is locally constructed within the self, as the self mirrors and relates to its surrounding. The study thus acknowledges that no human holds definite truth about the world, but truth is in fact created and recreated through discourse and power relations (FitzGibbon, 2016). Our perception of the world is a result of the phenomenological – or sense-making - discourse that we constantly take part in as humans (Connolly, 1985).

According to Ison and Paschen (2014), constructivist views are widely accepted among many disciplines. Furthermore, they highlight that it is possible to see this kind of intentional discursive framing in for instance politics and the media (Ison & Paschen, 2014). This thesis also agrees with the idea that people make their own sense of the world and hold differing realities depending on whom they are and what they experience.

However, science sometimes debates whether constructivism is as strictly applicable on ecology as well. As Robbins highlight (2012, p. 128), when investigating how non-human “actors and processes (like soil, trees, and climate)” are influenced by human sense making, it is hard to argue that there is no such thing as definite truth. Trees and soil are influenced by human activity, but they are influenced in a certain way because of their inherent characteristics. Hence, many political ecologists embrace what Robbins calls soft constructivism. This soft constructivism “holds that our concepts of reality are real and have force in the world, but that they reflect incomplete, incorrect, biased, and false understandings of an empirical reality” (Robbins, 2012, p. 128).

The phrasing ‘having force in the world’ as used by Robbins (2012, p. 128) is especially relevant for this study as it implies that the realities that people and groups make for themselves result in actual discursive and material implications, and thus carry

power to produce actual change. With regard to this study, this means that when stakeholders with different social status and possibilities to produce change frame the bioeconomy in particular ways, these ways of framing the bioeconomy will have actual effects on how the bioeconomy develops, and this is partly affected by social power relations. The ‘objective’ truth, or reality, regarding environmental change such as soil erosion, nutrient loss, changes in the ecosystem, extinction of plant- or animal species, or climate change is therefore not being questioned in this thesis. Rather, the focus here is to visualize some of the values and perspectives that drive social processes (which then in turn affect the environment).

Agroecology

The theoretical framework applied here has been inspired by agroecology as an overarching frame. Within this wider frame, aspects of diversity, power and governance, are all concepts that link well with the wider agroecological framework, and represent important tenets of agroecology.

As the Food and Agriculture Organization of the United Nations (FAO) puts it, “[a]groecology is a scientific discipline, a set of practices and a social movement” (FAO, 2017, §1). Moreover, Francis et al. (2008, p. 100) define it as “the integrative study of the ecology of the entire food system, encompassing ecological, economic and social dimensions”. Previous definitions of agroecology have focused much upon ecology and agriculture, and how to make farms sustainable. The wider academic focus upon food systems has tended to focus strongly upon how to make farms sustainable and yet increase their production. According to Francis et al. (2008, p. 101), such definitions and focuses ignores the fact that “[s]tudy of the ecology of food systems can provide insight on how to deal with questions at the systems level and contribute to development of sustainable societies”.

Using agroecology as an overarching frame in this study is not uncomplicated, as the narrower definitions of agroecology as a practice, an academic field and a social movement tends to ignore or rule out the importance of power and governance on a higher level than the local. As de Molina argues, today’s active agroecologists could be roughly divided into two crowds. The first one tends to be made out by NGO’s and academics, and focuses on local sustainability-building experiments on individual farms or in rural communities, using for instance participatory methods as the primary tool. The other one is ruled by academics and is more technocratic in its approach,

focusing on green technology and innovation. De Molina highlights that both of these branches are useful, but neither of them truly embrace politics and power as analytical tools to create change within the wider institutional or policy sphere. This despite the fact that agroecology also is “a powerful tool to achieve change in the food system /.../ a massive redesign of the economic structures that govern our food systems” (de Molina, 2013, p. 46). The result is, according to de Molina, that agroecology continues to create either just isolated local islands of sustainability, or a false belief that technological innovation alone will lead to sustainability. Hence, agroecology must engage with politics (de Molina, 2013), and this is what this thesis attempts to do.

This research primarily embraces the social movement aspects of agroecology as highlighted by the FAO, which “pursues multifunctional roles for agriculture, promotes social justice, nurtures identity and culture, and strengthens the economic viability of rural areas” (FAO, 2017, §1). The research thus adopts the normative standpoint that some agroecological research adheres to regarding sustainability and social justice. This is done through the viewing of sustainability as a balancing act between environmental, economic, social and cultural sustainability, where high productivity is not automatically argued for as a superior goal. Rather, the focal points in this thesis are diversity and resilience. Moreover, a lot of focus has been put upon lifting marginalized or ignored voices as it comes to public and policy discussions on the transition to a forest bioeconomy. This goes hand in hand with what Mendez et al. highlight about agroecology as the transdisciplinary discipline that it has evolved into, namely that agroecology critiques on the political and economic systems that govern food systems today, and tries to redirect these systems towards sustainability (Mendez et al., 2013, p. 4-5).

Industrial forest production is in many ways similar to conventional agriculture. Forest production systems can, in a full state of industrialization, be organized in such a way that forests are planted in monocultures, harvested through clear-cutting, and then replanted and fertilized. The difference between conventional agriculture and industrial forestry is the growth cycles, as trees grow slowly whereas a farmer harvests on a yearly basis. Applying an agroecological lens to forestry can help visualizing aspects of diversity and resilience. For instance, on the notion of agroecological farming methods, Altieri et al. (2012, p. 8) highlights that productive soils with a lesser dependency on external inputs such as fertilizers and pesticides show “enhanced soil fertility and higher biodiversity”. In agroecology, external production inputs are

replaced with internal methods, building on local knowledge about the land, and local solutions to promote resilient systems that stay productive in the long-term perspective (Altieri et al., 2012, p. 8-9). This is relevant in forestry too, as trees, like agricultural crops, are sensitive to unhealthy soils, pests and erosion. For instance, Lambert et al. (2000, p. 151) highlight that “[f]orest plantations are susceptible to a wide range of pests and diseases which directly affect the productivity and the quality of the crop”. Moreover, as in farming, soil quality is important for the forester when it comes to predicting future yields (Schoenholtz et al., 2000), and like in agriculture, the effects of tillage methods, fertilization and the use of organic matter are researched within forestry (see for instance Fox, 2000).

Furthermore, if zooming in on cultural diversity through for instance the encouraging of traditional and local knowledge about the land, agroecologists argue that this is very much connected to resilience against natural hazards and the effects of climate change. Traditional knowledge has been defined as:

“a systematic way of thinking applied to phenomena across biological, physical, cultural and spiritual systems. It includes insights based on evidence acquired through direct and long-term experiences and extensive and multigenerational observations, lessons and skills. It has developed over millennia and is still developing in a living process, including knowledge acquired today and in the future, and is passed on from generation to generation” (Inuit Circumpolar Council Canada, 2016, §4).

Hence, traditional knowledge is a holistic type of knowledge that encompasses “language, culture, practice, spirituality, mythology, customs and even social organization of the local communities” (Alaska Native Science Commission, 2017, §9). Berkes et al. (2000) state that traditional ways of managing the land has proven to include “multiple species management, resource rotation, succession management, landscape patchiness management, and other ways of responding to and managing pulses and ecological surprises” (Berkes et al., 2000, p. 1251). Moreover, from a social diversity point of view, the utilization and promotion of traditional knowledge is also argued to encourage knowledge spread, strengthen local institutions, as well as strengthen and revitalize local cultures (Berkes et al., 2000).

Lastly, forests are not only spaces for forestry, but also make out spaces for food systems (such as animal herding, hunting, and berry- and mushroom picking), as well

as for recreation (tourism, physical activity and providing a place of contemplation and solitude). Due to this, forests could be said to become an arena for power struggles. This makes forests relevant landscapes of study in an agroecological perspective, and particularly applies to the social movement part of agroecology mentioned previously, where multifunctionality, social justice, economic viability and cultural diversity are encouraged.

Diversity

As previously mentioned, the concept of diversity has been given a broader definition here, transecting both natural and social sciences. This section therefore aims to pinpoint this broader definition of diversity. The concept of diversity is viewed here as a prolongation of the applied aspects of agroecology, where diversity is seen as one important aspect for building resilience. Resilience is often defined as by Walker et al. (2004, §1): “the capacity of a system to absorb disturbance and reorganize while undergoing change so as to retain essentially the same function, structure, identity, and feedbacks”, and building resilience is thus a method to build sustainable systems.

Diversification is, in economic terms, known as a means to deal with – and mitigate - uncertainty and risk (Ellis, 2000, p. 14-15). Furthermore, one could say that if an individual, a community or an ecosystem is able to deal with uncertainty and risk, one is resilient (Jacobson, 2013, p. 57). For a system to be sustainable, resilience is often a prerequisite. This goes for all kinds of systems; economic, social, and environmental.

For instance, as Jacobson (2013, p. 57) points out concerning livelihood diversity, households can “diversify by relying on a multitude of assets and activities”, whereas especially smallholder and/or organic farmers uses crop diversity as a means to secure themselves against crop losses (ibid). For individuals, families and communities, this kind of risk spreading is key to building a financially and socially sustainable society.

Secondly, on the notion of multifunctionality, or diversity, in the landscape itself, Mander et al. (2007) highlight that diverse, cultural landscapes work to support a multitude of functions such as production, habitat, ecosystem services (such as regulation and through this climate change mitigation), as well as social and economic functions. A heterogenic landscape like this thus has the capacity to “support various, sometimes contradictory functions simultaneously” (Mander et al., 2007, p. 1 in

Mander et al., 2007).

Finally, on the notion of biodiversity, Mijatović et al. (2012, p. 96), argue that plant, animal and micro-organism biodiversity is closely connected to food and agriculture, in the sense that the degree of biodiversity provides food and agricultural systems with ecosystem services as well as resilience. “By providing a buffer against environmental and economic risks and enabling adaptation to changing climate and land use conditions, agricultural biodiversity also contributes to landscape resilience, that is, the ability to sustain functioning and productivity when subjected to stresses and shocks”.

Livelihood diversity, multifunctional landscapes and biodiversity are all expressions of diversity in the relation between human society and the environment. As previously stated, diversity and sustainability are interconnected by resilience. It should be highlighted here that sustainability (social, economic, cultural or environmental) is not a state that is reached, but an ongoing political process (Demeritt et al., 2011). Further elaborated by Leach, democratic sustainability processes are directly connected to diversity, as a society that embraces aspects of diversity “enables sensitivity to varied ecological, economic and cultural settings” (Leach, 2012, p. 23). Here, the issue of democracy comes into the diversity concept as well, as it implies giving voice also to marginalized, or non-resource-strong, groups. By putting local experiences and knowledge, as well as the values regarding what kinds of future changes we wish to see, at the center of innovation and technology regarding landscape management and policy, Leach (2012, p. 26) argues that it is more likely to reach a state of social, environmental and economic sustainability.

Forests are traditionally multifunctional landscapes as they provide and create the base for biodiversity, environmental fluxes, recreation and production. According to Mander et al. (2007), the degree to which a landscape is multifunctional depends on the intensity of land-use. The authors argue that in order for biodiversity to thrive in multifunctional landscapes dominated by human activities, there also needs to be large-scale connected networks of ecosystems present in the landscape as well. These networks are the premier guarantors of multifunctionality, and in human-dominated forests, conscious design-efforts are needed in order to maintain these. This is further complicated by the fact that Western countries have prioritized the facilitation of production efficiency in forestry and agriculture since the beginning of the 1900's, leading to homogenized landscapes which to a larger extent than before brought with it

unwanted side-effects, such as “environmental degradation including soil erosion, nutrient losses, groundwater pollution, a decrease in biodiversity and landscape scenic values” (Mander et al., 2007, p. 2 in Mander et al., 2007).

Hence, some societal values and goals have been given priority over others as it comes to forest management, thus causing others to suffer. On the one hand, the protection of recreational use of forests has a strong heritage in Sweden due to the law of All Mans Right (Allemansrätten), where freedom to engage in recreational activities such as hiking, berry and mushroom picking and camping in all forests and other natural landscapes is protected since the 1940’s (Kardell et al., 2014). On the other hand, despite the fact that multifunctionality has some priority in the National Forest Program, it is not necessarily defined what this multifunctionality should include. According to Kardell et al. (2014), we see a new era of forestry and forestlands today, where the recreational aspects of forests make out some parts of the perceived uses but the industrial production keeps its stronghold. The authors highlight that the future views upon the multifunctionality of forests, and what aspects are put into the Swedish definition of multifunctionality or multi-use, is unclear (Kardell et al., 2014).

Furthermore, policy makers tend to overlook local traditional knowledge systems as it comes to creating solutions for the future. Mijatovic et al. (2012) highlight that ‘old’ practices are seldom included in new sustainability solutions, despite the fact that traditional agricultural communities have managed biodiverse and multi-use agricultural lands for centuries. As shown in the background section of this thesis, Swedish forest governance and forest policy are no different. In the discourse surrounding the transition towards a forest bioeconomy, a lot of the focus on how to arrange such a transition is put on the industry, focusing on innovation and high technology instead of traditional knowledge, local voices or stakeholders without the same capacity to produce at a large scale. In an overall perspective however, Mander et al. (2007, p.2 in Mander et al., 2007) sees a potential shift in value focuses, as issues such as biodiversity, conservation, natural capital and recreation are increasingly influencing public agendas. The authors recognize a wish within societies to “decouple economic growth from environmental degradation”. However, there is often a lacking concept of multifunctionality as it comes to forestry and agriculture, and because of this, policy measures and design tools are lacking as well (ibid).

Finally, as for democracy and influence in forest related policy, Murray Li (2007, p. 268) argues similarly to this study that forests are sites of land struggles, due

to the fact that all stakeholders involved are in fact “forest guards, only they wear different colours”. All actors have an interest in making sustainable use of the forest, as all actors are relying on forest resources. However, the rights to resources in the modern world have often been tied to (measurable) performance and productivity, which works as discriminatory towards for instance forest dwellers, indigenous groups and other subsistence users of the land. A common mistake is over-simplification in the descriptions of social processes in forestry programs. Rather than simplifying actors and their social interlinkages, she claims that it is of vital need in policy planning to investigate closely which stakeholders are there, what their needs are and what their interactions with the land are (Murray Li, 2007).

Thus finally, this study very much agrees with Murray Li (2007)’s opinion that in order to ensure the rights of those stakeholders who cannot show a direct and measureable performance-rate, forest governance is needed, which might also mean that forest governance might have to be improved as well as adjusted to new values and goals.

Power and governance

This study adopts the premise that power structures exists between individuals, groups and institutions in the world. These power structures are enforced and re-enforced through a constant social discourse and practice. Burns (2016) argues that when an agent gains power, the agent influences the institutional and cultural systems of society. Building onto the soft constructivism embraced previously, truth in human society can therefore be assumed to be created and re-created through discourse and practice, and ‘truth’ is thus intimately related to power. Through societal processes, the ruling truth is further incorporated into institutional and cultural systems of society.

As Arora-Jonsson puts it, “[a]ll knowledge claims are local /.../ but some are more powerful than others, appearing to be universal or commonsensical, in ‘how things are or who needs to do what’” (Arora-Jonsson, 2013, p. 33). The same thing goes for discourses on forests as a resource, as a place or as a habitat, as well as forests as an arena for power. What we perceive and act on as a problem, an urgent need, as good, bad or simply unimportant, is shaped by what the greater society - fuelled by media and politics - perceive. As Kamenova (2014) highlights, the media have an important role in creating and recreating truths, which in turn shapes social values and attitudes, and thereafter comes to affect the ways we react and behave.

Forest issues are no different here. As global media, together with large parts of the research community and international politics, highlight the dangers of climate change as the main global environmental problem, it is natural that an industrial nation such as Sweden turns its focus towards ways to handle it. A transition towards forest bioeconomy is a way to approach this problem. However, it is also a way for the government to exert, establish and re-establish power over public environmental work, together with other influential actors. In a progress report from the Swedish Ministry of Enterprise and Innovation from 2016 on the work with the bioeconomy transition, it is for instance stated that “The transition shall promote sustainable growth, increased competitiveness, employment opportunities within the entire nation, while also contribute to fulfilling the environmental goals” [my translation] (Swedish Ministry of Enterprise and Innovation, 2016). Hence, by initiating forest bioeconomy through strengthening the forest industry, intending to promote trade, growth and rural development as by-products of this transition, the government frames the problem in a way that aligns with the reality it holds, with methods to approach the problem that re-establishes already existing power structures.

As indicated, public policy-making works to frame problems. This naturally means that some aspects and realities are left outside the frame. As Bacchi et al. (2010) highlight, most people assume that policies are developed to solve a problem or issue. However, the authors argue that instead of assuming that policies are “designed in *reaction* to pre-existing problems, /.../ policies and policy proposals *create* or produce policy ‘problems’ as *particular kinds* of problems, with important ‘shaping’ effects for social subjects and social relations” (Bacchi et al., 2010, p. 114). Hence, policies and policy proposals are of the inherent quality that they produce in-people and out-people, as well as in-problems and out-problems, in the sense that they frame who is included in the policy debate, what issues are brought up, who is subject to the policy and in what way, and who is affected by the policy and in what way (Bacchi et al., 2010, p. 116).

Forests are spaces that inhabit different livelihoods, animal habitats, ecosystems and production systems. Hence, the issue of diversity, how diversity in forestlands is translated, and how it is or is not embraced by the government in the National Forest Program, as well as in the values and attitudes held by different stakeholder groups, becomes of crucial importance to what the future holds in a Swedish transition towards a forest bioeconomy.

Methodology

This sections aims to account for the methods that have been used throughout this research. In the first section, the concept of qualitative methods is presented. Thereafter, I argue for the reflexivity and validity of the study, as awareness and self-criticism are crucial parts of qualitative methodologies. Thirdly, I justify the use of semi-structured key informant interviews, and how these fits into the intended research. Here, the issue of data-collection and analysis is also accounted for.

Qualitative methods

As indicated, this study is a qualitative study that aims to investigate attitudes, feelings and values related to forest governance and the future of northern Swedish forests among three interest groups. This is done in the light of the National Forest Program and the forest bioeconomy transition.

Qualitative methods are useful when investigating ‘softer’ issues such as feelings, attitudes, values, relationships and opinions within specific groups (Yates et al., 2016). Examples of qualitative methods are for instance key informant interviews, focus groups and participatory exercises (Cummings, 2016-09-13), and are due to their investigating nature an appropriate way of attaining knowledge that may not show through quantitative methods.

As Huy (2012) highlights, qualitative studies often take an inductive stance towards their findings. This means that rather than testing an already stated hypothesis using the collection and analysis of data to prove or disprove the theory (deductive technique), inductive technique implies collecting the data without a fixed hypothesis about the final result, and then using the data itself as the basis for theory building or theoretical discussion. This is especially useful if the phenomena is fairly un-researched, or when studying issues such as stakeholder feelings and values in a particular setting. Both of these aspects are true for the case of stakeholder feelings, values and perceptions in relation to northern Swedish forests in the light of the forest bioeconomy transition. Hence, this study embraces an inductive attitude towards its data.

Semi-structured key informant interviews

The study used key informant interviews as its primary source of empirical background material. In its step-by-step guide on how to conduct key informant interviews,

UNICEF states that a key informant is a person with deep knowledge about an issue (UNICEF, 2006, p. 198). USAID states in a similar guide that “[k]ey informants should be selected for their specialized knowledge and unique perspectives on a topic” (Binnendijk, 1996, p.2).

Within this study, the key informants were representatives for the LRF Skogsägarna (the Federation of Swedish Family Forest Owners), Swedish forest researchers, and reindeer herders that are representatives of the Svenska Samernas Riksförbund SSR (the Swedish Sami Association)’s forest group. The interviews were conducted during the months of January to March 2017. Interview guides were tailored for each stakeholder group. All interviews were made on Skype, due to limited resources and far travel distances. In this study, the individuals that have been interviewed have been chosen due to their expertise and function within their representative stakeholder group. Of course, their values and attitudes are ultimately their own, but they also give voice to their experiences based on belonging to each respective stakeholder group. Therefore, they can also be said to represent their greater community. Each stakeholder group will be presented in the section ‘Stakeholder groups and their relation to Swedish forests’ further down.

The interviews were semi-structured, and lasted for about one hour each. Semi-structured interviews imply that the interview questions have been pre-written in the shape of an interview guide before the interview itself, but that some room have been left to ask follow-up questions relating to what the respondent has talked about, or letting the respondent fill in with aspects or comments that they want to highlight. This interview format “allows respondents to raise issues that the interviewer may not have anticipated” (Flowerdew, 2005, p. 111). As the respondents were selected due to their expertise and experience within a specific field, they often had knowledge and input about related topics that I as a researcher had not thought about or was unknowing of. Therefore, I felt that this interview format suited the study well.

As Flowerdew et al. (2005, p. 111) emphasize, the results of semi-structured interviews cannot be replicated. This as they make out the informant’s thoughts and perspectives during the time when the interview was made. Also, they are a product of the specific questions and the personal impressions onto the informants that the researcher has made. Hence, these results should be viewed as extractions of images and visions of the future of Swedish forest based on the experiences and knowledge of the respondents during the period when the interview was conducted. As the

respondents have been handpicked due to their expertise and their role as representatives for their respective communities (i.e. they are key informants), it is reasonable to argue for some generalization to the wider group represented by the particular key informant. This since their thoughts, feelings and values about bioeconomy and future forests can stand as a representation for the everyday lives they experience within their respective group.

The respondents were also invited to, by the end of the interview, take part in a participatory exercise that included drawing the future forest as in how one imagined it to look and function in twenty years time. It is important to note here that this study has not been a fully participatory process, since the topic, methods and analysis has been chosen and carried out by the researcher alone.

All in all, this sort of participatory exercise, together with the semi-structured key informant interviews that were conducted, forms a basis for a kind of narrative analysis. According to Ison et al., this kind of inductive narrative analysis puts its prime focus on the respondents, and tries to understand what meaning they give to their versions of truth and reality. Narrative research is thus “a qualitative methodology that complements conventional approaches, such as surveys, questionnaires or targeted interview catalogues, by its self-reflective and practically applicable dimensions” (Ison et al., 2014, p. 1085). By asking participants in this study to tell about how they view and value the forest, different narratives were given that can be compared and analyzed as it comes to the future implications, goals and visions that these narratives, or realities, hold.

Reflexivity and validity

Yates et al. (2016) mention the controversy in the fact that the qualitative researcher is supposed to be objective (keep an emotional distance from the research topic, and not steer the respondents in any direction), whereas the qualitative researcher at the same time acknowledges that science is never truly objective. This since reality is by large a social construct that is interpreted and reinterpreted in different ways depending on who we are, where we come from and the people and events we encounter on our way. Hence, even though this study clings to the type of soft constructivism described in the theory-section above, having a critical lens towards myself as a researcher and my own role is of great importance in order to conduct reliable and transparent research.

In qualitative research, this is handled through reflexivity and triangulation (Yates et al., 2016). Reflexivity can be described as a process that is carried out by the researcher throughout all of his/her work, which aims to critically reflect on the self and how his/her viewpoints, feelings and behaving effects the research. For a qualitative researcher, being reflexive towards oneself is an unavoidable criterion for making the process and end results of the study transparent and credible (Darawsheh, 2014). As for the primary data collection in this study, the aim was to make respondents talk freely about how they viewed the future of the forest, forest use, and forest as a primary source of bioeconomy in Sweden. Hence, the interview-guides were designed to suit each respondent group in a manner that would be appropriate to the respondents' individual expertise and background. This way, the respondents got to talk about what they knew the most about, hence aiding a non-hostile and comfortable interview setting. Furthermore, I was careful not to steer the respondents in any direction during the interviews. This was done through being quiet, or simply commenting "thank you" after a given response. If something the respondents said was unclear to me, I answered with a statement: "I understand it as if what you are saying is... Am I correct then?"

Reflexivity also includes being reflexive upon personal attributes within the researcher that may affect the respondents in interviews, the choice of research topic and the design of the research process. All of these aspects naturally affect the end results (Darawsheh, 2014). Age, gender, origin, appearance, academic background and personal views are examples of attributes that I am aware may have affected the topic of interest, how I have chosen to go about the topic, and how the respondents have viewed me. I strive to be open with the fact that I chose this topic due to my interest in northern issues of natural resources, sustainable development and conflicting interests in land use. I also have the viewpoint that most conflicts can be solved through dialogue and legislation, something that may have affected the conclusions made throughout the study. Furthermore, my perception is that being a Swedish young female student was a strength throughout the interviews. Also, being connected to the university, and not to any interest organization, gave me a rather neutral role. My analysis is that these features connected with me in combination made the respondents perceive me as a person that it was easy to talk freely to and that my questions were perceived as non-hostile. I noticed that all the respondents opened up, talked freely and took time to explain their arguments and thoughts.

This study has used triangulation in order to strengthen the validity of the findings. According to Hales, triangulation is “widely accepted as a way to improve the analysis and interpretation of findings from various types of studies” (Hales, 2010, p. 13). Triangulation can be done in various ways, for instance through data triangulation (using different types of data to support your findings), methodological triangulation (using different methods to study your case), or theory triangulation (using different theories to study the case) (Hales, 2010, p. 14-15). In this study, data triangulation and methodological triangulation has been used. Data triangulation is used as different stakeholder groups with differing experiences and interests in Swedish northern forests and forest governance have been interviewed. This is backed up by an extensive background chapter, which draws on previous findings from other researchers.

As for methodological triangulation, the methods that have been used are inductive coding of transcribed interviews and the participatory visual exercise. These methodologies will be described below.

Data analysis

This section aims to give a short and concise overview of how the data was analyzed.

Inductive coding

The analysis of the interviews drew on inductive color-coding. This coding was done by hand after the interviews had been transcribed, and aimed to detect value expressions and specific topics that had been touched upon. A number of themes mentioned by all the stakeholders were found, and will be presented and discussed in the results and discussion section. The thesis used ‘diversity’ and ‘conflict’ as sensitizing concepts throughout the interview-coding phase. A sensitizing concept is, in opposition to a definite concept, not a concept that defines precisely what to look for in the data. Rather, it suggests a general direction for the researcher to search for structures and cohesion (Bowen, 2006).

Moreover, in order to shine a light upon how different stakeholders expressed problems in forest governance and future challenges in the forest bioeconomy transition, the methodological question ‘What is the Problem Represented to be?’ (WPR) as presented by Bacchi et al. (2010, p. 111-115) also proved to be a useful tool for analyzing the data. Bacchi et al. use this question to disentangle inherent and taken-for-granted values in policy analysis. They highlight a couple of dangers inherent in

policy and policy proposals, were the WPR-question can function as a useful tool to make these dangers visible:

- “discursive effects (limiting what can be said)
- subjectification effects (the kinds of political subjects produced in and through discourse)
- lived effects (the material impact on people’s lives)” (Bacchi et al., 2010, p. 115).

Bacchi et al.’s WPR-question has not been used as a specific method throughout the data analysis, but together with the sensitized color-coding it functioned as a practical way to stay critical, yet open, to all the values and viewpoints expressed throughout the interviews.

Participatory visual exercise

In this exercise, I asked the respondents to draw how they imagined the forest to look like in 20 years. More specifically, they were instructed to draw how it would look when they entered the forest, what kinds of species there would be, what animals, what plants, which people would use the forest and for what.

Smith et al. (2011) highlight, due to the inherent complexity of multifunctional landscapes, that experimental exercises can help attaining a more holistic picture of landscape characteristics and the tradeoffs that can be found here. The intention of using a drawing exercise as a tool for making the respondents visualize the future can be seen as a tool to, as Smith et al. (2011) state, further aid the respondents to draw from their concrete experiences and pre-knowledge, and put it on paper.

It should be said already here that these pictures resulted in various expressions. Some respondents chose to draw the forest more as they wished it to look and function in the future, whereas some made estimations drawing from the knowledge they had and what they experienced were the forest/forestry trends today. Hence, the drawings still say something about the values and perspectives of each respondent, but they are not standardized.

All in all, regarding both the pictures and the interviews, they represent stakeholder perspectives that are outspoken to varying degrees due to the format of the data. It is impossible to triangulate a perspective, as each perspective is legitimate and

true for each stakeholder. Thus, it should be highlighted again that the aim here is not to say that any perspective is closer or further away from an ‘objective truth’, but rather to see some of the perspectives that exist.

Stakeholder groups and their relation to Swedish forests

Six people were interviewed for this study, representing three different stakeholder groups; Forest researchers, forest owners and reindeer herders. In this section, the stakeholder groups, and their relation to the Swedish forest, is presented. In every stakeholder presentation, a brief presentation to the individual key informants is also given, together with a justification of why they were selected to represent that particular stakeholder group.

Forest Researchers

The reason why I chose to include forest researchers in this study was that I wanted their scientific views upon the future of Swedish forests in relation to bioeconomy. Academic research, particularly the kind of research that is connected to governments and intergovernmental forums, can be said to have an influence as it comes to policy formation and providing recommendations prior to policy formation (see for instance Fenge and Funston, 2015, p. 18; Young, 2017). Furthermore, researchers may study situations from more of an outsider perspective and not be directly affected as stakeholder groups that i.e. are depending on the forest for their livelihood. This might potentially influence researchers’ ability to think beyond current situations, and think more freely about possibilities and risks. Hence, hearing the views and values expressed by researchers with a background in forest research made sense to this study.

The forest researchers interviewed for this study were recommended to me by Nordic Forest Research (SNS), a “cooperating body financed with Nordic funds under the auspices of the Nordic Council of Ministers” (SNS, 2017, §1) which promotes research related to sustainable forestry (ibid). The forest researchers have connections to SLU, Umeå University, SNS and the Swedish University of Agricultural Sciences (SLU) program Future Forests. The researchers differ in the sense that one of them has a strong natural science base, whereas the other one’s main focus is forest policy. The first one has been involved as an advisor in different political settings, and is also has an active advising role in the Swedish Forest Agency as well as in the work preceding the National Forest Program. The second respondent is a senior researcher, who both

teaches and researches forest policy issues in Sweden. She has previously done research on land conflicts, ecosystem services, forest values and attitudes, and more.

Forest owners: The Federation of Swedish Family Forest Owners (LRF)

LRF, commonly known as the Federation of Swedish Farmers, is “an interest and business organization for the green industry with approximately 150 000 individual members” (LRF, 2017, §1). The organization works as a cooperative with seven sub divisions (ibid). These sub divisions are active on local, region and national levels. On the international level, LRF are involved in several EU connected organizations, as well as several international, high and intergovernmental forums such the FAO and the Worlds Farmers Organization (LRF, 2017b, p. 2).

The forestry sub-division of LRF is called LRF Skogsägarna - The Federation of Swedish Family Forest Owners - and represents about 112 000 members in four regional owner associations. The central office is located in Stockholm (LRF Skogsägarna et al. 2017, p. 3). As mentioned, and as highlighted by the federation itself, small private landowners own more than 50 % of the total forestland in Sweden, and contribute with 60 % of annual forest yields to Swedish forestry production (LRF Skogsägarna et al., 2014, p. 2). The reason that I chose to interview representatives from LRF is that I wanted to see how these representatives – representing a large part of Swedish forest owners – view and value forests, and how they see the bioeconomy transition which the Swedish Government strive for. It should be highlighted here that the aim of interviewing these respondents was not to attain material for describing a polemic between forest owners and reindeer herders. The representatives from LRF were never asked questions about their viewpoints or sentiments regarding reindeer herding.

The forest owners are represented in this study by two representatives from LRF. One of the respondents is employed within the central organization, and can therefore be seen as having a broader, overarching perspective on the organization and its interests. This person frequently meets with politicians on a national and international level, and has a previous background in the Swedish Forest Agency and the Ministry of Enterprise and Innovation. The other respondent is since long time employed at a central function at the regional office LRF Skogsägarna Norra, hence representing a more regional perspective with northern forestry issues as a central, specific focus.

Reindeer Herders

There are several reasons why I chose to include reindeer herders as one of the stakeholder groups. First of all, reindeer herders are highly dependent on the nature for their livelihood, work in close connection to nature, and directly experience changes in the nature as well as in the climate through their everyday work (Furberg, 2016, p. 9). As Borchert highlights, "[r]eindeer herding is not a "job", but a way of life central to the foundation of the Sámi identity, characterised [sic!] by following the reindeer like brother and sister" (Borchert, 2001, p. 23). Since the Swedish Government highlight multiple-use in the Forest Act, as well as in the work preceding the National Forest Program, it is reasonable that such a multiple use principle would strive to take reindeer herding viewpoints into account as well. Secondly, the Sami are the indigenous people of Sweden, and since their culture and community is closely connected to their ancient lands as well as to reindeer herding (which partly takes place in productive forests). Hence, there is a point in including them in the forestry debate, since Sweden – being a democratic nation that promotes human rights – should seek to safeguard the culture and community of its indigenous people.

The reindeer herders that were interviewed in this study were recommended to me by Svenska Samernas Riksförbund (the National Association of Swedish Sami). Both of these are active reindeer herders in forested areas. One of them works full time as a reindeer herder, whereas the other has grown up with herding and is now studying forestry. This latter reindeer herder representative plans to get into herding again as soon as her studies are finished. Both of the respondents have experience from representing Sami interests, and/or their Sami village in consultation meetings between the forestry industry and reindeer herders.

Results

As a reminder, the thesis question posed in this study is:

What suggested changes in forestry and forest governance follow from different visions of the bioeconomy transition, and what impacts do these have on aspects of diversity in the north of Sweden?

In order to answer this question, a sub-question has been posed to further aid the analysis:

How do three interest groups (reindeer herders, forest owners and forest researchers) view current forest governance and the future of northern Swedish forests?

This section aims to present and discuss the findings found in the data analysis.

Definitions of bioeconomy and the bioeconomy transition

Throughout the interviews, respondents tended to define bioeconomy as well as the transition towards a bioeconomy in different ways. One group saw bioeconomy as a transition from a fossil fuel dependent economy towards an economy that is based upon and driven by renewable resources. However, the more traditional definition of economy, meaning the planned and conscious management of resources, was mentioned by one of the forest researchers. This definition of bioeconomy implied a transitioning towards an economy that relied upon natural resources that are sustainably managed. The reindeer herders were both critical to bioeconomy as a concept, as they saw it as implying an expansion of forestry for wood production and biofuel purposes, and thus a threat to reindeer herding as well as other values in the forest.

The definitions of bioeconomy and what a bioeconomy transition should entail in terms of its functions, products and services are, as seen previously, unclear and have differed over time and space between states as well as other agents. As noted in the report for the Swedish Ministry of Enterprise and Innovation made by Growth Analysis (2015), agents therefore tend to use the concept of bioeconomy intentionally (Growth Analysis, 2015),

This tendency could be seen here as well. Forest owners embraced bioeconomy as a great opportunity for forestry expansion and development through innovation and technology, and highlighted that forests were a renewable resource that could aid the world in the attempts to avoid climate changes. Furthermore, it was stated that Sweden, being a forest nation that used forestry methods that should be seen as sustainable in comparison to some other states, has a global responsibility to spread climate change mitigation. Using Bacchi et al.'s (2010, p.111-115) methodological question of 'What is the Problem Represented to be?', the problem represented here is global climate change, and the solution given is using Sweden's forest reserve and longstanding

engagement in forestry to mitigate climate change. As noted in the background section of this thesis, this problem formulation - that sees forest as a sustainable resource pool for wooden products and biofuels - is by large shared by the Swedish government.

This governmental and forestry industry perspective on forest bioeconomy and bioeconomy transition could be argued to be the dominant 'truth' expressed in Sweden today. It could also, as Pülzl argues, be seen as a reframing of the discourses on forests, that leaves out agroecological principles of for instance biodiversity, the use of local or traditional knowledge, and the strive to gain independence from external inputs (as also mentioned by Levidow et al., 2012, p. 118).

Furthermore, as Pülzl (2014) highlights, this perspective does not criticize current forest government or management systems. Rather, it maintains status quo through the use of arguments of doom (global climate change), and argues that a strengthening of the current political-economical system through the use of market-incentives, technology and innovation is the way to avoid this doom.

From the perspective of Bacchi et al. (2010, p. 115), seeing this problem formulation as a definite truth, without asking the WPR-question, carries the risk of 1) overlooking alternate discourses surrounding the same phenomena, 2) subjectifying some subjects, and 3) creating externalities that affect the lives of some groups or people (and here we could also add nature). In the reindeer herders' translation of bioeconomy and the bioeconomy transition, the bioeconomy itself becomes a threat to their livelihood and culture, as well as to the surrounding environment. This perspective could be argued to be a reaction on the previous formulation of bioeconomy, which largely excludes the interests of the Sami. Indeed the interviews revealed a strong frustration among the two reindeer herder representatives over unsuccessful consultation meetings between the forestry industry and reindeer herders, a sense that the government does not look after Sami interests, and the experience of seeing other reindeer herders work hard against financial and political odds.

Forest governance

All respondents touched upon conflicts over land as a present and future challenge in relation to multiple-use or multifunctionality of forest landscapes. Also, almost all respondents highlighted that there was insufficient and unclear forest policies in Sweden today, and that this meant a problem for them in relation to other forest stakeholders.

The forest researchers held differing views on what the core of the problem was, but they both highlighted an inherent policy conflict between forest conservation and forestry production, and the fact that multi-use of forests poses a challenge to forest policy. This ties back to the fact that Sweden has a divided forest policy, where production goals run in parallel with environmental goals since 1993 (Beland Lindahl et al., 2015). One of the forest researchers argued that this inherent conflict could however also be viewed as something positive, as it works to keep policy discussions and the balance between conservation and production active to a higher extent.

In the overall perspective, a discrepancy between the respondents appeared between those who believed in the freedom under responsibility principle that protects private ownership and trusts forest owners as it comes to managing the land (represented by the forest owners and one of the forest researchers), and those who believed that such free market solutions discriminate against other forest uses and values and thus needs to be governed harder (reindeer herders and one of the forest researchers). Within the first group who embraced the private ownership perspective, there was an outspoken irritation with environmental policy interferences by regional government agencies in forest management procedures, as these were seen as non-predictive, thus creating a feeling of risk and uncertainty among private forest owners. Classification of key biotopes by for instance the Regional Board was seen as something that could happen sporadically, and not always with a guarantee that the individual forest owner would be compensated for the financial losses of putting their business on hold. The suggested solution here was to create incentives for forest owners to actively manage the land, for instance through a market based quota system where ecosystem services become market-priced, as well as involving forest owners more in policy processes rather than creating restrictions for them without prior consultation.

The second group, who meant that clearer command-and-control functions were needed in order for forest policy to acknowledge the many uses and values that exists in the forest, placed more emphasis on the (lack of) power experienced by some stakeholder groups (such as, but not only, the reindeer herders) and democratic influence over policy processes. The forest researcher who joined with this group argued that issues such as democratic influence, and the acknowledgement of public values and attitudes, were lacking to a great extent in Swedish forest policy, including the work preceding the National Forest Program, and that creating multi-functional forests becomes impossible if one does not know in what ways the public values the

forest. The reindeer herders expressed that consultation meetings between the forestry industry and Sami villages prior to exploitation tended to result in ‘a terrible feeling of powerlessness’ for the Sami delegates.

The reindeer herders problematized practical as well as legislated policy procedures relating to reindeer herding and forestry sharing land resources. For instance, one practical aspect brought up was that delegates sent to represent the forestry industry in consultation meetings lacked the authority to influence their party to meet the Sami villages halfway. Some legislative issues mentioned were 1) that there are only some forestry companies that are obliged to take part in consultation meetings, depending on if they are FSC or PEFC certified, 2) that the obligation to take part in consultation meetings only applies when deforestation is to take place on the all-year-round grazing lands, which means that winter-grazing lands are not included, and 3) that the Sami villages have to seek subsidies in order to finance fodder, despite that the need to use winter fodder for reindeer (who are normally feeding themselves) stemmed from deforestations made by the forestry industry and encouraged by the state. In order to solve policy issues, they wished that the Swedish Forest Agency would get clearer mandates and resources to act in issues of forestry and land conflicts.

This discrepancy is visible on a higher level as well, when comparing the National Association of Swedish Sami (SSR)’s and LRF’s forest policies that were presented in the background. Here, SSR argues for limited production goals, altered forest management methods, and increased possibilities for reindeer herders to influence negotiations during consultation meetings (SSR, year unknown). LRF on their behalf argue that it is a forester’s democratic right to own and independently manage the land, and that this freedom brings with it a responsibility to see to that environmental concerns are taken (LRF, 2017c). However, as Beland Lindahl et al. (2015) argued in the background chapter, forest production is given a governmental policy advantage over the fulfillment of environmental goals, due to the strong tradition of industrial forestry that Sweden has.

Biodiversity

In the participatory exercise, almost all stakeholders drew the forest to look similarly like they saw it today. Here, the human uses of forests were many and diverse, different animal species were drawn, as well as a variation of different tree species. In some of the drawings, exotic tree species were included. Interestingly, neither the forest owner

representatives nor the forest researchers thought that Swedish forestry in the future would use other tree species than today. One explanation given to this was that Swedish forestry is an old industry, which is not risk-prone and thus relies on the plantation methods that it knows works. This related especially to the private forest owners, whereas the big forest companies (who were not interviewed in this study) were said to be able to think differently.

Both of the forest researchers believed that Sweden is moving in a direction where forests have two functions: forest production and recreation. They believed that future forests will be geographically divided according to these functions, where recreational forests would be located close to the larger cities and the rest of the Swedish forests would be used for production purposes. These recreational forests were expected to be managed to produce high natural values, whereas the production forests were expected to be denser than today. One worry that was expressed by one of the forest researchers was that Sweden would see an increase in abandoned and unmanaged lands that turn into sluggish forests, due to increased urbanization and the flight of young people in working age from the countryside. Active management of land was highlighted by both forest researchers as something important from a perspective of biodiversity and producing high nature values. It was also stated here, that if the Paris Agreement were to be achieved, Sweden would probably have to raise their forest production with up to 50 %.

The forest owner agreed on that the Swedish forestry industry has an environmental sustainability responsibility to increase forest production and make it more efficient, in order to contribute to climate change mitigation efforts. This as Swedish forestry according to the representatives is sustainable managed and has great potential to expand. The fact that Sweden has natural reserves where forest production could be done was questioned from an environmental sustainability point of view, as growing forest (as in planted) was said to be more efficient as it comes to carbon sequestration. They however mentioned protecting biodiversity as one of the purposes of forests, and did not believe Sweden would experience the same intensive forestry that is seen in some tropical countries. The reason that was referred to was the long growth cycles of boreal forests.

In this latter interpretation of sustainability, sustainability is equalized to the ability to mitigate green house gas emission and capturing CO₂. This goes hand in hand

with the ruling definition of bioeconomy and what a bioeconomy transition should mean, which is by large held by the government as well as the forestry industry.

As for the reindeer herders, they expressed a different view upon sustainability and the purpose of forests as being able to provide habitat to the reindeers as well as forests having the ability to satisfy many values. Both reindeer herders talked about the negative effects of Contorta pine plantations and fertilization on reindeer grazing possibilities, as described in the background section in this study. Both of the reindeer herders also highlighted that they use traditional knowledge in their daily work with the reindeer, which helped them ‘read’ the landscape and the health-status of the animals. Furthermore, one of the herders stated:

“Everything is a correlation between the forest and the animals. /.../ If you are observant you see something every day, signs on something that you have learned from someone else. /.../ But meanwhile, with today’s forestry as it looks today, the land is changing all the time. So you almost do not get a chance to learn how the reindeer moves in different lands, because it looks different every year”.

Livelihoods and cultural diversity

On the topic of livelihoods and cultural diversity, all stakeholder representatives highlighted the value of multi-use forests, especially in the sense that forests should be accessible to the public as a recreational space. As mentioned in the background section, the law of All Mans Right (Allemansrätten) has a long history in Sweden as it was put down already in 1940. As Kardell et al. (2014) point out, this law which gives public access to hiking, camping and berry- and mushroom picking in all forests has been running in time-parallel with the most industrial phase of forestry. Thus, it makes out the only solid part of the Swedish definition of what multi-use should include, whereas the remainder of the Swedish definition of multi-use (mångbruk) remains largely undefined. This law of All Mans Right is quite unique in a global perspective, whereas it is also generally taken for granted by Swedes to have recreational access to forests. This could function as an explanation to why this was mentioned as important by all stakeholders from a forest multi-use perspective.

The respondents were asked during the interviews to list the purposes of forests. The answers are listed in Table 1 “forest Purposes” below.

Table 1: Forest Purposes

Stakeholder group:	
Forest researchers	<ul style="list-style-type: none"> • Renewable resource stock • Creator of rural jobs • Balances our GDP through export of forest produce • Recreational source • Multi-use (economic, environmental and social values) • Ecosystem services (carbon sequestration) • Aesthetic values • Existential values
Reindeer herders	<ul style="list-style-type: none"> • Supporting all forest activities (hunting, reindeer herding, berry- and mushroom picking, forestry). • Giving life, protection and food to animals and humans.
Forest owners	<ul style="list-style-type: none"> • Contributing to a good society, with a high living standard. • Multi-purpose (recreation, mental health, hunting, reindeer herding). • Economic development through refined produce and trade.

Source: Author

One interesting observation here was that there appeared to be a discrepancy between how some of the stakeholders talked about the forest in terms of what purpose it filled to themselves as individuals as compared with how they talked about the forest in their professional role. All respondents sooner or later during the interviews came to talk

about the importance of forests, in terms of the forest being their personal source of solitude, meditation and recuperation from an otherwise stressful life. Here, the same group of respondents (the forest owners and one of the forest researchers) who tended to rely more on the freedom under responsibility solution to forest governance issues, all excused themselves while bringing these aspects up. This as they assumed that this did not count as a purpose of forests, as they considered those kinds of aspects a part of their private life. The other group (the reindeer herders and the other forest researcher) discussed aspects of individual solitude, meditation and recreation on the same level as they discussed forest purposes on a national and international level.

When being asked which people were using forests, most respondents highlighted that the users of forests where in fact almost too many to mention. This was especially the case when respondents started to talk about people who used products that came from the forest. The forest researchers and the forest owners expressed worry about growing urbanization, and the effects that can follow from this as it comes to knowledge about and connection to the forest. Furthermore, Sweden's changing demographics were highlighted, as Sweden has a growing population of 1st and 2nd generation of immigrants. How to increase the connection and knowledge about forests among young people and immigrants was seen as an important future challenge.

The fear of this experienced public disconnection to forests was that it could create a growth-ground for knowledge gaps. One of the forest researchers said that these knowledge gaps were counteracting the mission of creating sustainable societies based on, for instance, informed consumption of goods and services. The forest owners talked about how the urbanization among young people also affected the current generational shift in forestry. This as private forest owners were said to have migrated to a greater extent from the countryside to live in urban settings, but still owning forestland. These urbanized forest owners were said to not have the same relationship or knowledge about the forest as their ancestors, who grew up close to the forest and were dependent on it. The forest owners also highlighted the challenge of getting the public to spend time in nature in order to get a general understanding for forestry.

These respondents all highlighted that Swedes use forest products in their everyday lives (such as milk cartons, Wettex cloths and toilet paper) but that few people are aware of and appreciate what the forest gives. The forest owners expressed irritation in that EU-politicians discussed the downsides with forestry in terms of limiting deforestation in meeting halls that were all built and furnished with wooden products.

In Sweden, it could be argued that the issue of cultural diversity in the forest is not so much about livelihoods as it is about the diversity of activities taking place in the forest. As shown in the background section, Sweden has a lot of production forests and a lot of forest areal (Branteström, 2014, p. 17; Skogsindustrierna, 2017). However, being an industrialized country, the general public is not depending on the forest for their survival. One group, apart from reindeer herders and people working in the forestry industry, who uses the forest as direct resource for their livelihood, are migrant berry-pickers. Hedberg (2015) highlights that these berry-pickers, who tend to migrate seasonally from Thailand and poorer European countries, often go and work long hours in Sweden in order to send the money earned back to their families. This money serves as a substantial addition to these households. This type of livelihood was however not mentioned by any of the respondents interviewed for this thesis, nor is it discussed in governmental documents related to forest bioeconomies or the forest bioeconomy transition.

Interestingly, only one respondent (a forest researcher) talked about the importance of forestry as an employer in the northern rural parts of Sweden. However, many representatives discussed the importance of forestry on a national level in terms of its contribution to the GDP and the trade balance. This, together with the creation of rural jobs in the north of Sweden, is highlighted as one of the main purposes of the forest bioeconomy transition through the National Forest Program (Government Offices of Sweden, 2015b; Government Offices of Sweden, 2016a). The policy problem framed here is thus not only climate change, but also the death of the countryside as it comes to lack of job opportunities and industrial development.

As mentioned, Swedish forest governance have since long time been relying on a consensus-based relationship between the state and the forest industry (Beland Lindahl et al., 2015). One of the forest researchers argued that this relationship had weakened during the past years, but that signs were now starting to show that this state/industry relationship between the state and the forestry industry would regain its former strength. The renewal of a social contract between the state and the forestry industry is also something that LRF has asked explicitly for in the light of the National Forest Program. For instance, in a statement regarding the working group reports from work preceding the National Forest Program, LRF writes that such a social contract is vital for the transition to bioeconomy (LRF Skogsägarna, 2016).

It is not unlikely to think, deeming from how the government has expressed its rationale behind the forest bioeconomy transition, that the government is now looking to strengthen its bonds to the forest industry. What implications this would have for the multi-uses of forests are hard to say something certain about. However, from a constructivist point of view, it is certain that this would work to further re-establish dominating power structures on the political forest arena. As Burns (2016) argues, when an agent gains power, it works to further influence existing institutional and cultural systems.

One forest researcher wished that Sweden in the future would explore other livelihood uses of forests, such as food production. It was stated here that the only ones who actually produce something else from forests than forestry related products today were reindeer herders. However, this researcher saw possibilities and a necessity for other kinds of food production taking place in the forest, such as more kinds of pastureland grazing than reindeer, or agroforestry. The forest owner representatives however strongly argued that agriculture is located where it should be today, and that it should not spread towards forestlands.

The reindeer herders talked about the forest as an important space for their own livelihood and the survival of Sami culture. Multi-use was approached from a perspective of respecting minority rights, with a particular focus on indigenous rights. As previously argued in this thesis, forests are characterized by multi-use as a lot of stakeholders have interests that are tied to the forest, either directly to their livelihood or to the freedom of engaging in different activities in the forest. This ultimately makes the forest into an arena for power struggle. The reindeer herder view upon multi-use reflected in the interviews goes largely hand in hand with the kind of agroecology that deals with politics, works to question existing power structures that govern food systems, and claims that strengthened local and minority influence in these processes does not only lead to more democracy, but also to more socially, economic and environmentally sustainable solutions (FAO, 2017; de Molina, 2013).

On the same note, in the work preceding the National Forest Program, it was mentioned previously in this thesis that the Sami Parliament has called for a more holistic view of the forest where all values of the forest (especially biodiversity) are included and subject for consequential analysis. Moreover, they have complained about the lack of knowledge about reindeer herding in the working groups and in the forestry industry (Sametinget, 2016b). This lack of knowledge among other stakeholders could

be said to function as a barrier to Sami influence in issues that affect them, and was mentioned by the reindeer herders interviewed for this thesis as well. However, the reindeer herders interviewed here were both of the opinion that the forestry industry knew what effects forestry could have on reindeer herding and biodiversity depending on what management procedures were chosen, but had other priorities due to a production-based value system.

As mentioned in the background section, Sweden has not ratified the ILO Convention on Indigenous Rights, which means that reindeer herders have to prove that Sami's have had a historical presence at a site in order to gain the right to graze their animals there, instead of that conflicting parties sharing the same land would have to prove the opposite (as is the case of, for instance, Norway) (Samiskt Informationscentrum, 2016; Hamilton, 2003, p. 5-7). The reindeer herders interviewed for this thesis had experiences of similar kinds of conflicts too, where the reindeer herders then have had to come up with alternative solutions to compensate for lost grazing lands. Such alternative solutions were for instance making individual access-to-land deals in with each forest owner, or feeding the animals fodder during the winter, which can be seen as both costly and time-consuming for the individual herder. One positive aspect that was brought up partly as a result of these external challenges due to shared land-access was that reindeer herding have had to develop quickly during the last 50 years or so; from following the reindeer around on skies or sledge, to now using snowmobiles or quads to herd the reindeer, trucks to move them over paths that are no longer accessible, as well as monitoring them with GPS or even drones.

Sharing grazing lands with forestry was depicted by the reindeer herders as the major challenge to reindeer herding. The prime reasons mentioned were Contorta pine plantations and fertilization. One forest owner representative also mentioned reindeer herders as another stakeholder in the forest, and highlighted the value of conflict management that could make sure that all stakeholders had access to land. As mentioned in the background section, Sami interests are represented in one of the four working groups preceding the work with the National Forest Program (Berglund et al., 2016). As discussed, this working group was unable to lay forward a collected recommendation regarding key biotopes in the forest, the use or non-use of foreign tree species, stump-harvesting and fertilization in forests, or full recommendations regarding suggestions for additional production that should take place in the forest (Berglund et al., 2016, p. 61-62).

Multifunctional landscapes

As previously touched upon, both forest researchers argued that they thought future forest would have two primary functions due to the forest bioeconomy transition. These functions were production and recreation. The researchers argued that forest production would take place in rural areas of Sweden, whereas recreational forests would be managed to have higher nature values for recreation and knowledge purposes, and would be located close to the larger urbanized centers. One worry was also expressed that some forests and previous agricultural land in the rural parts of Sweden would be left unmanaged, and thus subject to slug. One of the forest researchers highlighted that if Sweden were to have a bioeconomy that relies on forestry, and live up to the Paris Agreements, we would have to increase forest production with up to 50 %.

The forest owners, as mentioned, argued that the forestry industry holds an environmental responsibility to increase forest production, in order to contribute to climate change mitigation. They saw a potential for this due to the current governmental investments in the bioeconomy, as well as in governmental innovation investments in the forestry industry in general. This viewpoint, or value base, where climate work is done through economic growth and innovation with the ultimate goal to replace products with products made in fossil free processes, are also seen in statements by LRF relating to the National Forest Program quoted previously (LRF, 2017).

From a perspective of multifunctionality in the landscape, the idea of geographically divided two-function forest is problematic. Referring back to the theoretical framework, multifunctional landscapes that can support various activities, and thus have several functions at the same time, are often claimed to be more resilient, and thereby more sustainable in a long-term perspective. This resilience includes economic resilience (the ability for household economies and local economies to remain stable due to diversified income fluxes), environmental resilience (the ability of ecosystems to be able to withstand environmental hazard and mitigate climate change), as well as social resilience (Mander et al., 2007, p. 1 in Mander et al., 2007; Mijatovic´et al., 2012). Thus, a multifunctional landscape carries with it buffers against economic, environmental and social stress in ways that a streamlined production- or recreation landscape does not.

Both reindeer herders had experience from sharing reindeer migration paths and grazing lands with other land-uses, such as forestry, mining, wind-power, water power

plants, hikers, hunters, skiers and snowmobile tourism. One of the reindeer herders said that they experienced a lack of cooperation from all other land-uses, and that it was rather a question of the Sami villages existing on their own and trying to face each problem one after one, than a matter of coexisting with other branches and agents. The other reindeer herder had experience from stopping plans for wind power plants and mines. As for the possibilities for forestry and reindeer herding to coexist, both reindeer herders highlighted that they believed that coexisting was possible, if the forestry industry accepted not to plant Contorta pines or other foreign tree species, and avoid fertilizing in areas where reindeers graze. One of the reindeer herders also said that if the forestry industry lowered their deforestation targets, it would make coexisting simpler.

Discussion

So, in the light of the National Forest Program, what suggested changes in forestry and forest governance follow from the different visions of the forest bioeconomy transition that have been researched through this thesis, and what impacts do these have on aspects of diversity in forests in the north of Sweden? In order to approach the thesis question, this discussion section will discuss the biodiversity, cultural diversity and multifunctionality landscape aspects brought up by the stakeholder groups interviewed for this study.

As it comes to biodiversity and the values, perceptions and expectations expressed by the stakeholders on this notion, a number of aspects were found. The primary dichotomy observed here was in how the problem of sustainability was formulated in two different ways. In the first view, sustainability is equaled to the mitigation and capturing of CO₂ emissions, whereas in the second view, sustainability is seen in more holistic terms. Furthermore, in the first group, the fact that Sweden has natural reserves in places where forestry could take place was questioned from an environmental sustainability point of view, as growing forest (as in planted) was said to be more efficient as it comes to carbon sequestration. While presented as a fact by representatives for this perspective, it can be acknowledged that several researchers have pointed out that this idea is not scientifically grounded (Beland Lindahl et al, 2015; van der Spoel et al., 2017) As described by five Swedish researchers in a recent debate article, the transfer from mixed forests to planted conifer forests in the Nordic countries

have led to decreased climate change mitigation. Furthermore, these researchers argue that the conflict does not stand between climate change mitigation and biodiversity, but rather between climate change mitigation and biodiversity on the one hand and human consumption on the other hand (van der Spoel et al., 2017-05-11).

Østergaard et al. (2010) highlights that it is often the case that attention is given primarily to greenhouse gas emission when evaluating the sustainability of biobased production systems. However, the authors claim, that it is questionable whether a production system can be viewed as sustainable if reduction of greenhouse gas emissions is the only sustainability parameter. This since if an evaluation of the production's long-term effects on land and ecosystems is missing, the evaluation risks leaving out issues of ecosystem services such as biodiversity, biological control, water and soil quality, soil erosion, waste treatment, nutrient cycling, pollination and the ability of the system to recover and mitigate pollution and climate change effects (Østergaard et al., 2010, p. 33-41). To this list we could also add the socioeconomic aspects of sustainability, which should be included in definitions of sustainability according to e.g. the original Brundtland report, and many others (UNWCED, 1987; Leach et al., 2010). Meeting this dimension of sustainability could for instance include the possibility for reindeer herders to continue grazing their animals. Here we can note, going back to Bacchi et al (2010), how the problem representation connecting sustainability and climate change mitigation through intensive forestry creates reindeer herders as 'out-people' whose interests are not considered in the problem definition. Indeed as seen in the interviews, the reindeer herders interviewed expressed significant worry that this could be an outcome of the bioeconomy transition.

In addition to providing for reindeer herders' rights for the sake of meeting their interests in the forest and contributing to social sustainability, the fact that Sami graze their reindeer in the forest might also be an important factor for preserving forest biodiversity. As argued by for instance Altieri et al. (2012) and Berkes et al. (2000) which were referred to previously in this thesis, traditional knowledge about the land and traditional management often results in for instance higher biodiversity, enhanced soil health and diverse landscapes which all contribute to maintaining resilience towards natural hazards and climate change (Altieri et al., 2012; Berkes et al., 2000). The importance of biodiversity and landscape diversity through conscious management of forest land was also argued for by three forest owners in a debate article previously this year, who argued that "[a] biodiverse and varied nature is the key to robust

ecosystems which can manage disturbances such as climate changes” (Westholm et al., 2017-03-26).

In their debate article, these forest owners argued that Swedish forestry is traditionally seen as sustainable since forest owners have an interest in attaining good yields in a long-term perspective. However, they claimed that the freedom under responsibility had taken the overhand over environmental policy in Swedish forest governance. One example was that the Swedish Forest Agency recently stopped their key biotope inventory in the northwest of Sweden, as they concluded that it was hard to conclude where to put the borders to these biotopes. In other words, there were too high nature values to know where to draw the boundary for such inventories. These kinds of governance measures are, according to these forest owners, made in order to respect the freedom under responsibility principle. However, the authors argue that the result is that 1) the efforts to establish a framework for sustainable forestry suffers, as the selection of key biotopes indicates where the forest owner is allowed to deforest without losing environmental certificates, and 2) that the forest owner is now free to deforest areas that should be considered highly valuable from a biodiversity perspective (ibid).

The transition towards a forest bioeconomy in Sweden relies heavily on the forestry industry, and as shown in this study, a lot of the governmental arguments behind for instance the National Forest Program are connected to lowering CO₂ emissions without decreasing production (Government Offices of Sweden, 2015b; Government Offices of Sweden, 2016a). This is a vision that the government shares with the forest owner representatives in this study, who highlighted the importance of increasing forest production and export in order to provide Sweden and the world with products from a renewable source that, while growing, also contributes to the capturing of CO₂ emissions.

The side effects of some forestry management procedures were highlighted by the reindeer herders, who complained about fertilization and foreign tree species (such as Contorta pine), the negative effect that this had on lichens and on the physical attributes in the landscape. These views are shared by for instance environmentalist groups and the wider Sami community, which can be seen in the discussions on forestry management following the work with the National Forest Program that was presented in the background of this study (Berglund et al., 2016, p. 61-65). Furthermore, the Finnish researchers’ objection to the Finnish forest bioeconomy transition that argued

that the current policy on increasing forestry production would in fact work to undermine biodiversity and increase climate change (BIOS, 2017) argue on behalf of this side of the dichotomy as well.

As argued by Beland Linddahl et al. (2015) in the background section, the Swedish government has a history of promoting the maintenance of a strong forestry industry, while being more vague in terms of environmental protection in national policy (Beland-Lindahl et al., 2015). This can also be sensed in the governmental framing of the transition towards a forest bioeconomy. Sandström and Sténs (2015, p. 154) argue that intensive forestry, economic growth and increased forestry production now remain to be upheld by the government as strategies to mitigate climate change. This, according to the authors, is a way of intentionally interpreting science on climate change in a way that supports intensive forestry. As we have seen above this interpretation has been refuted as unscientific by several researchers (Beland Lindahl et al., 2015; van der Spoel et al., 2017) as well as the environmental movement (Sandström and Sténs, 2015, p. 154).

However, many who are in favour of this approach to the bioeconomy point out the many positive secondary effects for Swedish economy of promoting intensive forestry. The positive impacts of a bioeconomy transition through intensive forestry is for example described in a report by Growth Analysis for the Ministry of Enterprise and Innovation as contributing to 1) issues of economic development (increased GDP through increased production and production efficiency, and trade benefits), 2) industrialization (innovation and the creation of rural jobs) and 3) energy security (independence from oil and through this, an economic and political independence from oil nations) (Growth Analysis, 2015, p. 13).

All in all, the dominant discursive construction of bioeconomy, supported by the government, the forest owners and one of the forest researchers in this study presents one way of reality where certain aspects are highlighted (such as possibilities of more rural jobs) and other hidden (such as the outcomes for reindeer herders grazing their animals in the forest) (cf. Fitzgibbon, 2016). Science is also interpreted selectively to support this discourse, in the present case regarding the connection between climate change mitigation and forestry. Comparing the emerging dominant discourse on the bioeconomy with the background information in this thesis on Swedish forest policy we can also see that the dominant bioeconomy discourse represents a reconstruction of already dominating discourses and power relations in Swedish forest governance. As it

does not challenge status quo, it instead, in Burn's (2016) reasoning, serves to strengthen already existing discourses, which are reincorporated into cultural and institutional institutions in the forest as a political arena (Burns, 2016). It can also be said to strengthen the bond between the state and the forestry industry, and lay out the foundation of a renewed social state/industry contract.

By asking what the problem is represented to be, Bachhi et al. (2010) questions on problem representations and their outcomes, it becomes clear that this way of phrasing the problem, or the discourse, of forest bioeconomy has the limiting effects that it leaves out aspects of biodiversity and people such as reindeer herders, and it creates a dichotomy between mitigating global climate change and biodiversity. As global climate change creates the feeling of doom that Pültzl et al. highlights (Pültzl et al., 2014), it poses a more acute problem. Thus, biodiversity and ecosystem fluxes are down prioritized. Van der Spoel et al. (2017) recently described in a good way how this dichotomy between climate change mitigation and biodiversity is discursively constructed to favor interests in intensive forestry, but that the problem equally can be constructed as a dichotomy between climate change mitigation and biodiversity preservation on the one side and continued high consumption on the other side. This way of framing the problem is however not supporting intensive forestry and thus, strong interests in the forestry sector are unlikely to support this alternative problem representation.

When acknowledging a broad definition of diversity that encompasses social as well as natural science, it becomes evident that holistic sustainability – including environmental, social and economic aspects – is interlinked by this concept. As for diversity in activities taking place in the forest, it is possible to see how this former discourse described works to limit this kind of diversity as well. This since the truth described through this discourse is that increasing forest production to phase out fossil fuels is necessary, and in order to go about it, we might even find ourselves in a situation where the rural parts of Sweden are intended for forestry production only and where forested areas close to large urbanized centers are managed to preserve high natural values.

In fact, Sandström and Sténs (2015, p. 153) highlight that this approach of dividing landscapes into production and conservation areas in order to maintain high forestry production while also (to some extent) coping with issues of biodiversity protection was described in 2006 by the Swedish Forest Industries Federation (SFIF) as being

more efficient, as they saw it as impossible to tend to both benchmarks in the same hectares. It can be noted that this kind of division of productive and recreational forests would exclude reindeer herders, as these graze their reindeer in forests that are not close to urban areas. It also leaves out other agents, including industries, which would otherwise be seen as contributors to a bioeconomy transition. For instance, agroforestry, suggested by one of the respondents in the interviews made for this thesis as something Sweden should explore in the future for food security reasons, is much discussed in other countries. However, it is not mentioned as an alternative in Swedish forest bioeconomy discussions. Examples of agroforestry are integrated systems of agriculture and silviculture, silvopasture (integrated forestry and livestock pasturage), integrated riparian management (integrating agriculture/silviculture and waterbodies in order to provide environmental protection to those waters whilst also producing yields), using timberbelts in between fields, as well as sun systems (systems that makes use of the sun by intercropping trees and other crops) (Wetzel et al., 2006, p. 73), and have been featuring in for instance German and Canadian bioeconomy transitions (Pott, 2017; Pagé & Caron, 2006).

Regarding diversity as in the multifunctionality of landscapes, Mander et al. argued previously in this thesis that the degree of multifunctionality also depends on the intensity of land-use. In a landscape where one type of production (such as forestry production) is planned for, designed for and carried out, little space is left for other activities and functions. At the same time, heterogenic multifunctional landscapes are viewed as more resilient in economic, social and environmental terms as they support many function simultaneously. For instance, in a landscape where communities engage in various economic activities, not forestry production alone, families are more resilient should a forestry company run out of business. Moreover, in a landscape where forestry production shares land-use with other stakeholders on equal terms, habitat and ecosystems are given more space to thrive (Mander et al, 2007, p. 2 in Mander et al., 2007). However, in the national politico economic perspective, this might not be the way to generate competitive growth, innovation and trade benefits. This strengthens van der Spoel et al.'s argument that the conflict should not be framed as being between climate change mitigation and biodiversity as it is described in the dominant bioeconomy discourse today, but rather between production and environment (van der Spoel et al., 2017-05-11).

Ultimately, the issue of multifunctionality in northern Swedish forest landscapes could be argued to come down to forest values, and what values are prioritized. As mentioned, it was highlighted by the reindeer herders at many times during the interviews made for this thesis, that they wished that all forest values would be tended for in the future. Moreover, one of the forest researchers wished that public attitudes and values should be taken into forest policy processes to a greater extent, and claimed that this was necessary in order to lay a path for the multi-uses that could contribute to truly multifunctional forest landscapes in Sweden. Regarding the National Forest Program and the future uses of Swedish forests, multi-use is one of the target goals in the working process to formulate the policy. However, as Kardell et al. (2014) have argued previously in this thesis, the Swedish definition of multi-use is yet to be put down. At the moment, it includes recreation, which is seen as a result of the almost 80-year-old law on All Mans Right (Kardell et al., 2014).

Kardell et al. (2014) are positive that a future Swedish definition of multi-use could serve to be very inclusive. However, with the current discourse on the forest bioeconomy transition evolving primarily on forestry production, which works to leave out other forest values or to divide the landscape up into enclaves that are streamlined to either serve the value of production or the value of recreation, it is hard to see that this definition of multi-use would be practically enforced in existing forest landscapes, unless a broader definition of multi-use is embraced by policy makers already now in the National Forest Program.

Conclusion and final comments

This thesis has approached the Swedish forest bioeconomy transition and suggested changes in forestry and forest governance through investigating some of the different values, attitudes and expectations that three stakeholder groups in the Swedish north hold. Moreover, it has attempted to see what impacts these future visions would have on aspects of diversity in the forest, by embracing a wide definition of diversity that rests upon an agroecological foundation. More specifically, this definition of diversity is multidisciplinary, covers social and natural science as it highlights biodiversity, cultural diversity and the multifunctionality of landscapes, and argues that diversity, resilience and sustainability are interlinked concepts. The broad definition of diversity was coupled with a soft constructivist approach to how ‘truth’ is expressed by agents

in discourse, and the assumption that these relative ‘truths’ have differing degrees of power to influence the future, as they may or may not be accepted as general ‘truths’ and thus influence cultural and institutional institutions, such as public policy.

When analyzing the values, attitudes and expectations expressed by the stakeholder groups, and connecting these to the general discourse on the forest bioeconomy transition seen in forest governance today, it became evident that this holistic view upon diversity is useful in order to be able to see what ‘truths’ are being taken for granted, and the implications this may have.

This thesis has shown that there exist a number of interrelated dichotomies related to the forest bioeconomy transition today. The first dichotomy stands between those who argue that forestry production should increase in order to mitigate climate change, and those who argue for a more holistic approach, biodiversity included. It was found that the former argument which embraces global climate change as the most acute problem and increased forestry production as the solution is held by the government and the forestry industry, in a way that takes the discursive focus away from what many environmental researchers and organizations argue, that increased forestry production may in fact increase climate change, and that the real conflict stands between production and the environment (including both climate change mitigation and biodiversity). The latter perspective was held by reindeer herders, which expressed a lack of power to influence forest governance on regional as well as national levels. This perspective was also supported by one of the forest researchers.

The second dichotomy stands between whether the landscape should be multifunctionally integrated or divided up according to the two different land-uses recreation and production, which would have negative impacts on diversity as it comes to serving the multi-uses of forests. Neither of the respondents interviewed for this thesis expressed a wish for the latter, but some thought that this was something we would have to see in the future due to the forest bioeconomy transition and its focus on increased forestry production. Once again, the necessary bad of implementing such divisions of land-uses were excused by the ‘truth’ held in the first dichotomy, namely that if Sweden wants to contribute to climate change mitigation, forestry production needs to increase. In the light of that discourse, this streamlined use of the landscape was seen as unavoidable.

The third dichotomy was found between how stakeholders viewed their own relationship to forests. Here, all stakeholder representatives highlighted that they had a

personal bond to the forest, and that the forest serves as a source of recreation, meditation and solitude. The dichotomy stood between those stakeholders saw their own relationship to the forest as disconnected to the general discourse on forest governance, and those who saw it as equally important to other issues. This latter dichotomy should not be discarded as irrelevant, as the degree to what importance policy makers give to the personal benefits people get from the forest on a spiritual level must be assumed to affect future forest policy.

These dichotomies, as well as some suggestions from the author on how policy makers and the government by large could approach this in the policy-making process surrounding the development of the National Forest Program, are presented in Table 2 below.

Table 2: Forest dichotomies and suggestions for actions in policy-making process

Forest dichotomy:	Suggested action in policy-making process:
<p>Differences in how the problem of sustainability is framed as either</p> <ol style="list-style-type: none"> 1) a problem of global warming (which is the framing used by the government and central policy and administration), 2) a holistic problem, including biodiversity, as well as social and cultural aspects (which is represented by groups with limited impact in the current policy process for the bioeconomy transition in the forest). 	<ul style="list-style-type: none"> - Tend to that represented minorities and less resource strong groups in the policy making process are not just merely represented, but have equal access to power as it comes to influence in the final policy proposal.
<p>Differences in expectations and hopes on future multifunctionality of forest landscapes, as either</p> <ol style="list-style-type: none"> 1) a future where landscapes are geographically divided according to the functions of forestry production and recreation, 2) a future where landscapes are to a higher degree multifunctionally integrated (which would benefit 	<ul style="list-style-type: none"> - Inclusion of rural planners and other academics with social science background in the policy process, as these can contribute with knowledge on sustainability from a rural community planning perspective. - Decide upon a mutual Swedish definition of multiuse/multifunctionality in landscapes, and integrate this into the vision, mission and final product of the policy.

<p>multiple uses of land, as well as biodiversity).</p>	<ul style="list-style-type: none"> - Embrace a democratic and locally anchored value base throughout the policy process, where local stakeholder values and the values of the general public are given more attention in policy discussions and in the final policy.
<p>Differences in what relevance is given to ‘softer’ values in the forest, including the forest as a space for meditation and solitude, where these issues were either</p> <ol style="list-style-type: none"> 1) seen as irrelevant in the general discussion on bioeconomy and forest land use, 2) seen as equally important to other issues such as trade and production. 	<ul style="list-style-type: none"> - Recognize the importance of private perspectives on forests (such as feelings, values and personal use) in forest policy-making and work to not automatically down prioritize such perspectives in favor of ‘professional’ perspectives. Private perspectives holds importance as Sweden has the ‘All Mans Right’, and since environmental/social goals should de facto be equal to production goals in Swedish forest policy. - Promote further research on public uses, values and future expectations on forests and forest land-use, and use such research as input for policy formation.

The suggestions for consideration in the policy-making surrounding the development of the Swedish National Forest Program listed in table 2 above could be said to embrace a more participatory approach where power holders acknowledge their position and the existence of complex power structures among involved stakeholders in discourse, as well as in material access to influence the policy making process. With this acknowledgement, this thesis suggests that power holders act practically in order to provide space, resources and backing for otherwise less influential or less resource strong groups to truly have a say in policy discussions. Furthermore, the suggestions also embrace a more holistic view upon forest land-use. By engaging more social scientists in the work with the National Forest Program - in particular researchers with knowledge about planning for sustainable rural communities - this thesis is positive that power holders can use forest policy as a means to plan for multifunctionality and communities that are resilient from all angles of sustainability, including social, cultural, economic and environmental sustainability.

All in all, values, attitudes and expectations have power in this world as the narratives they produce are, to differing extents, influencing the institutions that carry out change. How this change is organized, and to what extent it promotes diversity and thereby resilience that works for economic, social and environmental sustainability, is determined by the power relations between different stakeholders and their agency to get their version of ‘truth’ acknowledged by the forest governing systems. This shows the importance democratic influence of minorities and the public in Swedish forest governance.

Hence, in the light of the National Forest Program that is to set out the route for a forest bioeconomy transition, it could be stated that we are standing on the edge of future. Whether this future holds diversity is hard to predict. Now is the time for stakeholders - such as citizens, environmentally concerned forest owners, researchers, environmental and indigenous organizations - that wish to see diversity as a founding principle of the forest bioeconomy transition, to organize and raise their voices.

Critical reflections and suggestions for further research

It would have been very relevant for this research to also include interviews with representatives from the big forest companies in Sweden. Unfortunately, there was not enough time provided during this thesis writing to expand the span of stakeholder groups included. Moreover, as argued throughout the thesis, the aim has not been to give a full account of all values and viewpoints in the transition towards a forest bioeconomy in Sweden, but rather to provide examples of some values, perceptions and expectations in order to analyze these with the help of a holistic concept of diversity. Furthermore, I do argue that the inclusion of LRF as representing forest owners is very relevant, as small private landowners own more than half of the total forestland in Sweden, and contribute with 60 % of the annual forest yields to Swedish forestry production.

For future research on the National Forest Program and the forest bioeconomy transition, it would indeed be interesting to analyze values, perceptions and expectations among more forest stakeholders, including the big forest companies. Other stakeholders that I would highlight as very relevant to include in further research are for instance other types of livelihoods and activities in the Swedish forest, such as people involved in agroforestry, migrant berry pickers and tourism representatives.

Moreover, research on public values in the forest, how the public uses the forest, and what kind of forest the public wishes to see in the future is a field that is relatively new but highly important as it comes to planning for future forest policy.

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Appendix 1: Interview guides (in Swedish)

Intervjuguide: Renskötare

- Berätta gärna lite om dig själv, din yrkesroll och din bakgrund.
- Vad pratas det mest om inom svensk rennäring idag?
- Varför är det viktigt med rennäring i Sverige?
- Var betar era renar?
- Vilka andra markanvändningar sker på samma land?
- Hur fungerar det att samexistera på dessa marker?
- I vilken utsträckning betar renar i skog som också är produktionsskog?
- Hur är rennäringens relation till skogsindustrin idag? Vad ser du i din vardag?
- Finns det forum för rennäringen och skogsindustrin att mötas i? Hur ser den dynamiken ut?
- Finns det möjlighet för skogsindustrin och rennäringen att samexistera?
- Hur kan ett samexisterande organiseras? Hur skulle det se ut enligt dig?
- Det talas ju ofta i dag om ekosystemtjänster, dvs. tjänster som t ex skogen ger till oss människor. Skulle du kunna lista vilka ekosystemtjänster du tänker att skogen ger i dag?
- I traditionella produktionssystem talas det ofta om traditionell kunskap: Använder du/människor du känner någon traditionell kunskap inom rennäringen?
- Använder du/människor du känner någon traditionell kunskap inom rennäringen som specifikt relaterar till skogen?
- På vilka sätt utvecklas rennäringen?
- Vet du vad bioekonomi är?
(Om ja: Vad är bioekonomi för dig?
Om nej: Tove berättar kort om bioekonomisatsningarna i Sverige, vad som är tanken med det och dess relation med det nationella skogsprogrammet).

- Är det viktigt med bioekonomisatsningar i Sverige? Varför/varför inte?
- Ser du några möjligheter för rennärigen i och med bioekonomisatsningarna?
- Ser du några styrkor för rennärigen i och med bioekonomisatsningarna?
- Ser du några framtida utmaningar för rennärigen i relation till bioekonomisatsningarna?
- Ser du några hot för rennärigen i och med bioekonomisatsningarna?
- Om svensk skog:
 - Vad är skogens huvudsakliga syfte(n) enligt dig?
 - Finns det fler syften? Lista gärna!
 - Vilka använder skogen? Till vad?
 - Hur fungerar de här användningsområdena/intresseområdena ihop?
- Ser du några tydliga skillnader i vilka ekosystemtjänster som skogen ger i dag till hur du tror att det kommer bli i framtiden?

Övning – rita och scanna till mig!

”Nu skulle jag vilja testa en lite annan grej på er, det är inte riktigt en rak fråga utan i stället så ska jag be er att rita skogen så som den ser ut om 20 år:

- Beskriv hur det ser ut när man kommer in i skogen.
- Vilka trädslag finns
- Vilka andra växter
- Vilka djur
- Vilka insekter
- Annat, t ex bär, svamp, mossor, lavar
- Vilka människor använder skogen
- Hur...

Intervjuguide: Skogsägare, representanter

- Berätta gärna lite om er själva, er yrkesroll.
- Vad är bioekonomi för er?
- Är det viktigt med bioekonomisatsningar i Sverige? Varför/varför inte?
- På vilket sätt kan skogsindustrin bidra till bioekonomin?
- Vilka möjligheter ser ni för skogsindustrin i och med bioekonomisatsningarna?
- Finns det några begränsningar?
- Ser ni några framtida utmaningar för svensk skogsindustri i relation till bioekonomisatsningarna?
- För sektorn i stort på en global marknad?
- Hur tror ni att skogsproduktionen kommer förändras i och med bioekonomiomställningen?
- Mer filosofiska frågor:
- Hur kommer skogen se ut om 20 år?
 - Vad är skogens huvudsakliga syfte(n)?
 - Finns det fler syften? Lista gärna!
 - Vilka använder skogen? Till vad?
 - Hur fungerar de här användningsområdena/intresseområdena ihop?
 - Utbredning (geografiskt) i framtiden?
 - Vilken produktionstakt kommer det vara?
 - Vilken marknad kommer finnas tror ni? Och vad kommer produktionen bestå i (Virke? Pappersmassa? Annan produktion?)
 - Vilka arter kommer användas i produktionen?
 - Vilka arter kommer finnas i den övriga skogen?
 - Vilka kommer använda skogen och till vad?

Övning – rita och scanna till mig!

”Nu skulle jag vilja testa en lite annan grej på er, det är inte riktigt en rak fråga utan i stället så ska jag be er att rita skogen så som den ser ut om 20 år:

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 - Vilka djur
 - Vilka insekter
 - Annat, t ex bär, svamp. mossorm lavar
 - Vilka människor använder skogen
 - Hur...
-
- Det talas ju ofta i dag om ekosystemtjänster, dvs tjänster som t ex skogen ger till oss människor. Skulle du kunna lista vilka ekosystemtjänster du tänker att skogen ger i dag?
- (lista på sidan av teckningen)
- Skiljer detta sig från vilka ekosystemtjänster skogen kan tänkas ge i framtiden?

Intervjuguide: Skogsforskare

- Berätta gärna lite om dig själv, din yrkesroll.
- Vad pratas det mest om inom svensk skogsforskning idag?
- Vad är bioekonomi för dig?
- Är det viktigt med bioekonomisatsningar i Sverige? Varför/varför inte?
- Vilka möjligheter ser du i och med bioekonomisatsningarna?
- Ser du några framtida utmaningar för skogen i relation till bioekonomisatsningarna?
- Hur tror du att skogsproduktionen kommer förändras i och med bioekonomiomställningen?
- Varför är skogsforskning viktigt då det kommer till bioekonomi?
- Om svensk skog:
 - Vad är skogens huvudsakliga syfte(n)?
 - Finns det fler syften? Lista gärna!
 - Vilka använder skogen? Till vad?
 - Hur fungerar de här användningsområdena/intresseområdena ihop?

I framtiden:

- Utbredning (geografiskt) i framtiden?
- Vilken produktionstakt kommer det vara?
- Vilken marknad kommer finnas tror ni? Och vad kommer produktionen bestå i (Virke? Pappersmassa? Annan produktion?)
- Vilka arter kommer användas i produktionen?
- Vilka arter kommer finnas i den övriga skogen?
- Vilka kommer använda skogen och till vad?

Övning – rita och scanna till mig!

”Nu skulle jag vilja testa en lite annan grej på er, det är inte riktigt en rak fråga utan i stället så ska jag be er att rita skogen så som den ser ut om 20 år:

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- Vilka djur

- Vilka insekter
 - Annat, t ex bär, svamp, mossor, lavar
 - Vilka människor använder skogen
 - Hur...
- Det talas ju ofta i dag om ekosystemtjänster, dvs tjänster som t ex skogen ger till oss människor. Skulle du kunna lista vilka ekosystemtjänster du tänker att skogen ger i dag?
- (lista på sidan av teckningen)
- Skiljer detta sig från vilka ekosystemtjänster skogen kan tänkas ge i framtiden?